DEATH ANXIETY SCALE;
TRANSLATION AND VALIDATION IN PATIENTS WITH CARDIOVASCULAR DISEASE

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ABSTRACT… Patients with cardiovascular disease (CVD) have the symptoms of anxiety in common that may result in adverse outcomes. **Objectives:** Due to the significant association of anxiety and CVD, scheduled screening of all cardiac patients has been recommended by the medical authorities like the American Heart Association. But in Pakistan it is not a common practice to use such tools, reason being unavailability of such screening tools in national language therefore specifically death anxiety is unrecognized and no measures are taken for it and patients remain undertreated with death anxiety that may eventually influence on the treatment and prognosis of the patients. **Data source& Settings:** Colleges and hospitals of the Rawalpindi and Islamabad. **Period:** 6 months. **Methods:** The study was designed to translate and validate the Death Anxiety Scale in Urdu language to be used with Pakistani population. The sample consisted of 210 participants (70 Youngsters (normal group) 70 Elderly and 70 patients with cardiovascular diseases (clinical group) from colleges and hospitals of the Rawalpindi and Islamabad. To determine the psychometric properties, reliability and validity; cronbach alpha, split-half reliability, correlation, factor analysis were computed. **Results:** Death Anxiety Scale-Urdu (DAS-U) (خوف مرگ کا پیمانہ) has adequate reliability and validity. Factor analysis showed multifaceted structure for the DAS-U, bearing in mind the apposite psychometric characteristics; it can be used in researches about death anxiety. **Conclusions**: The use of the scale is reasonable for the measurement of death anxiety in CVD patients and it can be employed in order to have successful treatment and improve the prognosis of the patients.

Key Terms: Death anxiety, Templer Death Anxiety Scale, Reliability, Validity

INTRODUCTION

A cardiac event directs the patient towards a misinterpretation of his health state and restrains him from resuming the former activities and also evokes a state of fear for another cardiac event or even death which can hinder his successful rehabilitation. This also infuses a state of anxiety and fear of death among the patients.[1] A significant and reliable association between cardiovascular disease (CVD) and psychological factors have been found in the literature.[2,3] The psychological factors considered as an important contributors to health important contributors to impoverished health in the patients with cardiovascular disease are stress, depression and anxiety.[4,5] In contrast to the immense literature available on depression in patients with CVD, the studies that have examined the role of anxiety in CVD are few. But the researches indicate that the comorbidity of anxiety symptoms are found commonly in patients with CVD, with prevalence rates ranging between 24%-31%.[6,-8] Heart patients with anxiety disorder experience more cardiovascular events, deaths.[9]

Death is a phenomenon that is largely beyond the control of human beings, it produces immense worry, distress and apprehension among nearly every human being.[10] Nevertheless, the degree upon which death anxiety is felt and communicated seems appears to divergesignificantly from oneperson to another. Measurement of death related anxiety is an imperative subject of interest in empirical research work as well as for the therapeutic treatment. Up till now at hand have been various direct and indirect techniques of evaluating death anxiety.[11,12,13]

"Death anxiety" is a notion utilized to theorize the

apprehension crafted by death consciousness[14] and is used interchangeably with fear of death.[15] Humans are distinctive in the characteristic of learning to live and acclimatizing to the restricted cognizance.[16] Therefore, a foremost mission for cultural structure is to make available a emblematic system that concentrates on death and grants explanations for its occurrence and a backdrop for its divine existence.[16,17] But over 95% of researches so far have counted on several types of direct questionnaire method.[18]

Numerous research studies carried out on death anxiety have classically postulated that the thought of death fundamentally transforms into anxiety. Death Anxiety is well thought-out as a universal phenomenon and throughout the literature it has been defined in multiple of ways according to different conditions and situations. Death anxiety narrates the perception of intimidations/hazard to life in day-to-day interactions more readily than the acute scenarios. Death anxiety has several constituents which comprise anticipation of oneself as deceased, frightful by the way of dying and trepidation about relatives' death.[13] Riscoff has suggested that dying is merely not a course of departure from life rather it encompasses an intricate multiplicity of its perspectives and circumstances.[19]

Death anxiety has been assessed majorly through the self-report measures. Templer's Death Anxiety Scale (DAS) developed in 1970, has been the most repeatedly employed scale to for measuring death anxiety.[20,21,22,11,23,24] It consists of 15 items. It was developed on a two-factor model of death anxiety including psychological factors that are internal and external factors about life experience related to death.[25] DAS has been usedwith college students' samples in Western as well as Mid-eastern countries. DAS was developed a theoretically and has been translated and validated in 26 languages.[26] Literature reveals that explained that the scale has been translated into 54 distinctive languages like German, Arabic, Korean, Chinese, Dutch, Russian, Farsi, Portuguese, Japanese, French, Hindi, Italian, Spanish and Swedish.[27] The benefit of using

the DAS in this study is to further strengthen the use the scale in measuring of death anxiety in Pakistani population.

The Death Anxiety Inventory having 20 items, was developed and validated for a Spanish health care professionals working with people coping with death.[28] The 25-item Revised Death Anxiety Scale is an age-responsive assessment providing ways of exploring group differences.[29] Collett-Lester Fear of Death of Self Scale evaluates fear of death at the conscious level.[30] Spilka's Death Perspective Scale measures eight death perspectives perceiving death as; courage, pain and loneliness, afterlife-reward, failure, forsaking dependents and guilt, and natural end.[31] Death Anxiety Questionnaire is self-report measure consisting of 15 items that is used with population drawn against life-threatening illness.[32]

The Death Anxiety Scale developed by Goreja and Pervez[33] in Urdu consists of 20 items involving the fright of personal demise. The items are grouped into six aspects of death anxiety:subjective proximity to death, distressing death thoughts, concern over suffering and lingering death, impact on the survivors, fear of not being and fear of punishment.The responses are recorded on a 5-point continuum. Categories oscillated between Always (100%)= 5 to Never (0%) = 1. It has a cut off score= 50. The scale has cronbach alpha = 0.89.

The present study focused to adapt and validate the Death Anxiety Scale developed by Donald Templer. It is the most reliable and used psychometric test available to measure death anxiety it has been translated in more than 26 languages. Therefore, the scale was selected for translation in urdu. It consists of 15-items developed on two-factor model psychological (internal) and life experience (external) elements linked to death. The nationalized language of Pakistan is Urdu and most of the people do not understand English language completely therefore, translation of a construct like death anxiety would be of help. It may be utilized with convenience with the population. It would

render a valid assessment of relevant and salient dimensions of death anxiety through a measure that would be in a native language. The present research is an attempt to explicate the construct of death anxiety by translating and validating instrument of Death Anxiety.

The study has been designed in two phases: translation of the scale and determination of the psychometric properties.
Objectives of the Study are;
1. To translate and validate the Death Anxiety Scale in Urdu (Nationalized language of Pakistan).
2. To analyze the reliability and validity of the Death Anxiety Scale -Urdu.

METHODS
In the initial step forward translation was carried out with the help of bilingual (English and Urdu) professionals. There were 11 bilingual specialists who translated the items of scale from English language to Urdu language. The bilingual experts were selected from Urdu department of IIUI, News Editors from Al-akhbaar and Model colleges for Islamabad. Five Urdu M.Phil scholars from International Islamic University Islamabad (IIUI) were recruited for the translation. Bilingual specialists from these miscellaneous arenas had exceptional expertise in both languages. All fellows were asked to translate the scale items from English to Urdu language with distinctive concentration on content equivalence.

A committee comprising of four experts; an assistant professor (PhD) and three Ph.D scholars analytically assessed and transformed the translated items in Urdu. They also evaluated the equivalency of the content between items of English and Urdu versions. Committee fellows assessed the translated items pertaining to the meaning, background, wordings and grammar. Most consistent items were added in the reconciled translated version. After finalizing the procedure of choosing items that communicated the connotation similar to the original items, he reconciled version of scale was handed over to the bilingual specialists for back-translation procedure.

In order to determine the accuracy and legitimacy of Urdu translated version, it was translated again, back into English by bilingual professionals. The five specialists assessed the reconciled translated version and gain translated it back into English known as the Forward translation without looking at the items of original English version. The bilingual specialists comprised of four Masters of English from IIUI, Preston University and Model college of Islamabad and one professional translator from NIRM-USAID. Merely those bilinguals participated for back-translation who were not a part of initial translation phase and had no acquaintance with the original items in English.

A group of specialists including, an associate professor (PhD) and PhD scholars significantly assessed the items obtained through back-translation and chose items for final list of Urdu version. In this step the back translated version was compared with the original English version. The review and evaluation was conducted to assess the entire forward-backward-process in order to provide a Final Forward Translation. The 3 experts reviewed the translation process item-by-item by comparing the back-translated items to the English original items and suggesting a version for the Final Forward Translation.

After the finishing point of forward-backward translation process, the subsequent phase of the determination of psychometric features of the Urdu version of Death Anxiety Scale was carried out.

The reliability and validity was measured for Death anxiety Scale- Urdu for the total sample by analyzing the data in terms of cronbach alpha reliability, correlations, item-total correlation, inter-item correlation and factor analysis.

For the present study, a total of 210 participants were employed (70 Youngsters (normal group) 70 Elderly and 70 patients with cardiovascular disease (clinical group) from colleges and hospitals of the Rawalpindi and Islamabad. Age

range was between 15 and 85 years. The sample was obtained by purposive sampling.

Demographic information was obtained through questions concentrating on the respondents' age, gender status, marital category, and socio-economic status, number of family members, family income, and history of medical and psychological illness in their first degree relatives.

Templer Death Anxiety Scale (1970) developed by Donald I. Templer measures the extent of death anxiety a person experiences. The DAS consisted of 15 items intended to be rated on a dichotomous scale of true or false by the respondents. Test-retest of DAS with an interval of three weeks demonstrated .83 correlation coefficient. A good internal consistency .76 was obtained with 31 participants through Kuder-Richardson Formula 20. DAS response category was revised by Templer and McMordiein 1979, introducing alikert format for the scale. Therefore it can be used on both true-false and likert formats (McMordie, 1979). The Likert type format provides a rating on a continuum of 1= strongly disagree, 3= Neutral, 5= strongly agree. Score ranges between 15-75, where low death anxiety=15-35, moderate death anxiety=36-55, and high death anxiety=56-75. Hence, high score reveal high death anxiety. For likert type format the Test retest reliability is .83 whereas internal consistency is .84. McMordie (1979) stated that Likert scale format amplifies the capacity to differentiate between high and low scores. Furthermore, Hayes and Gelso (1993) stated that using a 5-point Likert scale enhances the scale's sensitivity to differences among participants.

After the completion of the translation process, the researcher personally administered the instruments to the participants. Participants were informed that their participation will be voluntary and their responses will be kept confidential. They were requested to respond as honestly as possible according to the key available for responding. Necessary help was provided and it was made sure that the participants completed the questionnaires correctly and completely.

RESULTS

For determination of reliability and validity was analyzed by utilizing the Cronbach Alpha, Split Half Reliability, Inter-item correlation, Item Total Correlation and Factor Analysis.

Table-I shows Cronbach Alpha coefficient for entire items for Death Anxiety Scale-Urdu Version (DAS-U). The table also indicates that alpha reliability for Death Anxiety Scale – Udru is .88, which indicates high internal consistencies. So, the scale is reliable to be used with the study population.

For calculating the split half reliability coefficient, DAS – Urdu version was split into two divisions: 8 items in first division and 7 in the second division. The correlation coefficient computed between the two divisions was obtained as .78 and split half coefficient was .85.

Scale	No. of Items	Cronbach Alpha
DAS (Urdu version)	15	.88

Table-I. Reliability Analysis of Death Anxiety Scale (original version), Death Anxiety Scale (Urdu Version/ Khauf-e-MargkaPaymana), (N=210)

Cronbach's Alpha	Part 1	Value	.814
		N of Items	8(a)
	Part 2	Value	.766
		N of Items	7(b)
	Total N of Items		15
Correlation Between Forms			.781
Guttman Split-Half Coefficient			.854

Table-II. Split half Reliability for DAS (Urdu version) (N=210.)

Table-III indicates item total correlation. For the determination of internal consistency of the scale and examination of item relevancy with the scale, item total correlation was calculated to reflect the reliability of the scale. The table-III reveals that all items of the scale are significantly correlated with total score of DAS-U. For all the 15 items of DAS-U the values of correlation coefficient ranges from .30 to .89 with significance level of 0.01. The standardized criteria for inclusion of an item in a scale should correlate .30 and beyond with the

total (Nunnally & Berstein, 1994). The findings reveal that all items are equal to or above .30. Thus, this establishes the reliability of the scale.

Item total correlation				
1	.746**	9		.699**
2	.750**	10		.801**
3	.593**	11		.803**
4	.537**	12		.705**
5	.508**	13		.446**
6	.608**	14		.696**
7	.664**	15		.309**
8	.777**			

Table-III. Item-total correlation for DAS (Urdu version). (N=210)

The inter-item correlation utilizing all of the 15 items on the scale to measure the DAS-U was computed. Table-IV indicates the correlation between each pair of items. The average inter-item correlation is simply the average or mean of all these correlations. The table indicates the individual correlations ranging from .22 to .74.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.795
Bartlett's Test of Sphericity	Approx. Chi-Square	1298.654
	df	
	Sig.	.000

Table-V. KMO and Bartlett's Test of spherecity values of Death Anxiety Scale – Urdu (N=210)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	.375	1.00													
3	.399	.642	1.00												
4	.510	.275	.151	1.00											
5	.197	.279	.190	-.022	1.00										
6	.224	.733	.584	.182	.208	1.00									
7	.425	.404	.287	.263	.538	.413	1.00								
8	.603	.590	.371	.461	.276	.310	.407	1.00							
9	.595	.539	.333	.654	.073	.375	.414	.642	1.00						
10	.744	.483	.369	.379	.323	.394	.444	.704	.548	1.00					
11	.748	.520	.467	.337	.395	.264	.390	.718	.454	.815	1.00				
12	.518	.581	.313	.556	.086	.413	.365	.686	.626	.512	.518	1.00			
13	.389	.094	.008	.266	.384	-.072	.347	.382	.121	.550	.527	.165	1.00		
14	.717	.516	.307	.523	.012	.446	.224	.578	.689	.626	.603	.686	.073	1.00	
15	-.001	.111	.042	.053	.364	.211	.158	.009	.048	-.024	.055	.140	-.055	.178	1.00

Table-IV. Inter-Item correlation for DAS (Urdu version). (N=210)

The Kaiser-Meyer-Olkin measure of sampling adequacy was .79, which is above the recommended value of .60, and Bartlett's test of sphere city was significant (1298.65, $p < .05$). The related probability is lesser than 0.05. Indeed it was 0.000 which reflects that the correlation matrix is not an identity matrix.

The table-VI demonstrates the Eigen values and percentages of variance described by means ofthe four factors. Thisillustrates that F1 has an Eigen value of 6.69 and explain 44.6 % of the total variance that is the highest value among four

factors. All the other factors have Eigen values above 1.13 and a total variance explained by the four factors is 75.3%.

	Eigen Values	% of Variance	Cumulative %
F1	6.69	44.61	44.61
F2	1.76	11.76	56.37
F3	1.71	11.42	67.80
F4	1.13	7.57	75.38

Table-VI: Eigen Values and percentage variances explained by the extracted factors for Death Anxiety Scale- Urdu (DAS-Urdu)

Table-VII shows the loading of the items of DAS Urdu on four factors. These factors were named as thought of death, death representation, subject of death, and future anxiety. The loadings were obtained when principle factor analysis was run to determine the structure of the scale. The criterion for the selection of the items was loading of .3 and above. All the items were suitable to the criteria and showed the clear picture of its dimension therefore none of the items were excluded from the scale. All 15-items were retained for the final version of the Death Anxiety Scale- Udru (DAS-Urdu).

Items	F1	F2	F3	F4
	Items (6)	Items (5)	Items (3)	Items (1)
1	**.830**	.104	.292	.035
2	**.809**	.112	-.074	.063
3	**.807**	.132	.267	.049
4	**.765**	.138	.302	.120
5	**.643**	.533	.184	-.095
6	**.607**	.500	.313	-.025
7	.095	**.852**	-.189	-.004
8	.439	**.715**	.321	-.050
9	.494	**.688**	.307	-.084
10	-.178	**.625**	.205	.602
11	.181	**.512**	.316	.419
12	.220	-.033	**.830**	.236
13	.118	.163	**.830**	-.081
14	.357	.169	**.806**	.104
15	.114	-.101	.024	**.879**

Table-VII. Factor loadings for the items of Death Anxiety Scale – Urdu obtained from the principle component Factor Analysis (N=210)

Item loading > .35
Extraction Method: *Principal Component Analysis.*
Rotation Method: *Varimax with Kaiser Normalization.*

	Normal youngsters (n=70)		Patients (n=70)			
Item	M	SD	M	SD	t	p
1	3.28	1.13	4.75	.70	-6.98	.000
2	3.43	.71	5.00	.00	-13.98	.000
3	2.58	1.05	5.00	.00	-14.47	.000
4	3.73	.96	4.48	.84	-3.70	.000
5	2.78	1.31	3.53	1.85	-2.09	.040
6	3.68	.73	5.00	.00	-11.48	.000
7	2.88	.99	4.20	1.47	-4.72	.000
8	3.43	.74	4.88	.33	-11.19	.000
9	3.83	.87	4.88	.33	-7.09	.000
10	3.13	.99	4.85	.36	-10.33	.000
11	3.23	1.05	4.90	.37	-9.49	.000
12	3.83	.67	4.90	30	-9.18	.000
13	2.75	1.33	3.90	1.27	-3.93	.000
14	3.95	.67	4.83	.67	-5.78	.000
15	3.80	.56	3.48	1.90	1.03	.305

Table-VIII. Mean, Standard deviation and and t-value of normal (youngsters) and clinical population (patients with cardiovascular disease) on Death Anxiety Scale-Urdu (N=140)

To determine if the Death anxiety scale – Urdu could differentiate between normal people and patients experiencing death anxiety the discriminant validity of the scale was tabulated. T-test was applied to the two set of the scores of 70 normal youngsters and 70 patients with cardiovascular disease (clinical group). The Table VIII reveals significant differences between the two groups and as such demonstrates very well the discriminant validity of the scales.

DISCUSSIONS
Death anxiety is a unique and fundamental characteristic of people, since humans are the only species that recognize the inevitability of their own death.[34] A growing number of researchers agree on a multidimensional approach of this construct.[35,36]

The present study was designed to translate and validate the Death Anxiety Scale in Urdu language to be used with Pakistani population.

The process of translation has been discussed in this study in Phase-I.

In phase II, the exploration of psychometric properties of the scale DAS-U was conducted. The objective of was to pre-test the translated scale (DAS-U), translated in the Phase I and to find out the flaws that may interfere with the findings.

The present study was carried out with a sample of 210 participants. The psychometric properties of the scale were also determined in the present study. The empirical data showed that the scale has sufficient reliability and validity and can be used confidently for research purposes.

The Kaiser-Meyer-Olkin for data was .90 that revealed the suitability of the confirmatory factor analysis. The Bartlett test for Spheri city was significant (1298.65; $p < 0.000$). The values reflected to progress comfortably with factor analysis, which indicated four factors with Eigen values of greater than 1. Also, item-total correlations were evaluated. The reliability coefficient using split half and cronbach alpha were .85 and .88 respectively.

Abdel-Khalek, Beshai, and Templer[26,27] identified five factors in structural validity through factor analysis in Arabic edition of DAS among Egyptian students, which totally indicated 53.7% variance among males and 52.9% variance among females.[37] Also, Abdel-Khalek[22] reported four factors named fear of death, fear of postdeath, fear of fatal disease, and death intellectual employment through factor analysis of the construct validity when he studied death anxiety among Lebanese students.[37] Levin[38] also introduced five factors in the analysis of DAS which indicated 35% common variance. Abdel-Khalek [20] reported 0.57 split-half reliability coefficiency for males and 0.78 for females in Arabic version of DAS. Another study by Elarja and Abdollah (2005) reported 0.92 Cronbach alpha coefficients.[37]

The sample for the study consisted of Normal youngsters, Elderly and patients with cardiovascular disease. Such sample was selected for the reason to explore the differences of death anxiety between three groups of the population.

In 2005, 245 million people in the world were over 60 years old. It is estimated that by 2050, this number will have increased to 406 million, whereas the population under the age of 60 will have decreased in the meantime.[39] This worldwide trend is recognized even in Pakistan as many non-governmental organizations are working for the benefits of the elderly people. Besides posing a rather large problem for societies, economies and health care in the near future, this statistic also signifies the importance for researchers and health care professionals to turn their attention to this elderly population. It may be interesting to determine the specific problems that the elderly encounter. With death statistically close, it seems plausible that elderly people have to find ways to deal with anxieties concerning death and dying. For them, death is not a remote problem that they can easily ignore or cognitively push aside like younger people can. Instead, as they grow older, elderly people must face up to the undeniable finitude of their own lives. Some researchers have made attempt to explore the various correlates of death anxiety in a Dutch elderly community sample.[40]

Physical health and illness are considered as one of the main correlates of death anxiety, specifically for the clinical sample. Physical illness may arouse death anxiety, because one's mortality and diminished feelings of invincibility may become more salient when one's health is at risk. This relation is confirmed in prior research, where lower physical health is related to high levels of death anxiety.[41,42,43] Therefore, a sample of patients with cardiovascular disease was also selected for the present study. The results also revealed that there exists a difference in scores on death anxiety and levels of death anxiety among the normal youngsters and patients with cardiovascular disease. This reveals that the patients with cardiovascular disease have prevalence of death anxiety that should be treated

in order to boost the interventions for a better outcome. The scale revealed a good discriminant validity as well as existence of high death anxiety more in patients.

Thurstone[43] & Burt[44] have regarded factor analysis as the most important method for a scientific psychology. For the selection and suitability of best items for the scale and construct validity determination, factor analysis was performed. The objective of this analysis was to select valid items to be included in the translation of the DAS –Urdu final version. The testing consisted of 15 items which were subjected to Factor Analysis. All the items were according to the criterian .30 therefore all the items were selected for the translated version.

The cronbach alpha reliability, split half reliability, item-total correlation and inter-item correlation were computed for reliability and validity testing and results showed significant reliability and construct validity. Discriminant validity was demonstrated by the significant difference between the scores of the normal and clinical group. A significant difference between the scores of the two groups is evidence that the present scale can discriminate well between normal people and those who have some illness. The discriminant validity was computed for each item of the scale.

Establishing patients' level of death anxiety is an important step towards planning interventions that deal with the cause of fears among elderly or CVD patients or elderly sick people. In this way, we can explore patterns that are specific to elderly patients, and identify features of anxiety that are specifically problematic for patients as opposed to non-patients.

The translated version of death anxiety scale named DAS – Urdu is a reliable and valid scale to be used with the Pakistani population. It can be confidently used for the research purposes.

LIMITATIONS AND SUGGESTIONS
Based on the findings yielded by this research and their relationship to the review of related literature the following Limitations for present study and recommendations for future research are presented:

The data collection period was 6 months long, which may have generated unpredictable biases. The finding of this study cannot be generalized to other groups, industries or countries. The current study included sample belonging to Rawalpindi and Islamabad. Therefore, nature of this study was limited. A more in-depth result could be found by classifying the different cities or types patients.

Future studies may try to explore the relationship between religiosity and death anxiety. Death anxiety has rarely been investigated among physically ill elderly people. Therefore, it is suggested to explore the death anxiety among ill elder people.

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"Failure is not fatal,
but failure to change might be."

John Wooden

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