

VALIDATION OF THE URDU VERSION OF EPIDEMIC PANDEMIC IMPACT INVENTORY AMONG PAKISTANI ADULTS

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ABSTRACT OBJECTIVE

The current research aimed at evaluating the psychometric properties of the EPII-Urdu version by analysing reliability and construct validity among Pakistani population.

STUDY DESIGN

Cross-sectional study design was followed.

PLACE AND DURATION OF STUDY

Data were collected during the first, second and third phases of COVID-19 in Pakistan, from June 2020 to July 2021.

SUBJECTS AND METHOD

A convenience sample of 580 individuals above age 18 ($M = 27.38$, $SD = 9.19$) was drawn from different areas of Lahore and Faisalabad (Pakistan). First of all, written informed consent was given to the participants to follow ethical standards. Translated Urdu versions of The Epidemic Pandemic Impact Inventory, Flourishing Scale, WHO Brief Quality of Life Questionnaire, Depression Anxiety Stress Scale (DASS-21), and demographic sheet were applied to the participants.

RESULTS

Results indicated excellent internal consistency of overall EPII Urdu version ($\alpha = .92$); while all the subscales of EPII also showed good alpha reliability coefficients [work ($\alpha = .75$), Education & Training ($\alpha = .73$), Home Life ($\alpha = .78$), Social Activities ($\alpha = .78$), Economic ($\alpha = .70$), Emotional Health & Wellbeing ($\alpha = .73$), Physical Health Problems ($\alpha = .71$), Physical Distance & Quarantine ($\alpha = .81$), Infection History ($\alpha = .74$) and Positive Change ($\alpha = .76$)]. Findings of test-retest reliability with a gap of three weeks on 31 participants were found to be satisfactory. Positive correlation of EPII Urdu version with subscales of DASS-21 and negative relationship with Flourishing Scale, and WHO BRIEF-QoL provided evidence for convergent and divergent validities respectively for Urdu version of EPII.

CONCLUSION

Findings indicated that the EPII Urdu version proved to be a psychometrically sound instrument for measuring the impacts of COVID-19 among the Pakistani population.

KEYWORDS

The Epidemic Pandemic Impact Inventory, COVID-19, Reliability, Validity.

INTRODUCTION

Despite the availability of vaccinations for COVID-19 and by taking all the effective measures (imposing lockdown, quarantine, maintaining social distancing, wearing masks, using sanitisers, etc.) to tackle the spreading of COVID-19, this outbreak still exists and greatly influences all aspects of an individual's life. This pandemic had adverse psychological, physical and even economic effects all around the world. The first two confirmed cases of COVID-19 in Pakistan were reported in patients returning from a pilgrim in Iran on 26th February 2020. Within the next fifteen days, the number of confirmed cases increased to 20 and all of them had a travel history of China, Syria, London, and Iran.¹ A national action plan has been designed to tackle the outbreak and government enforced a lockdown for more than a month, which significantly slowing the spread of COVID-19, however, the government gradually eased the lockdown in the last week of April 2020 to relieve economic pressure.

If we compare the performance of Pakistan during COVID-19 as a developing country having limited health care facilities, with a state-of-the-art healthcare system of developed countries, then it was quite surprising. Pakistan effectively managed the crisis of COVID-19, even with limited resources and poor economic conditions. According to The Economist's Normalcy Index 2021, Pakistan ranked among the 3rd successful country in the world in managing the COVID-19 outbreak effectively after Hong Kong and New Zealand. After experiencing a decrease in spreading of the virus, the Government of Pakistan introduced the policy of Smart Lockdown, which effectively worked and praised by WHO and other countries as well.

Researches revealed that due to strict lockdown, social isolation, uncertainty, and deteriorated economic conditions, people faced negative mental health issues and deteriorated wellbeing;² people in Pakistan also faced severe psychosocial, mental health issues and poor quality of life during COVID-19.^{3,4} All over the world, people were very much affected by COVID-19 in terms of physical, psychological, social, and economic perspectives; so, different measures have been developed and validated in different languages to measure all of these factors related to COVID-19. Some of these measures are as follows: The Coronavirus Anxiety Scale,⁵ the Fear of COVID-19 Scale,⁶ the Obsession with COVID-19 Scale,⁷ COVID-19 Stress Scale,⁸ the COVID-19 Pandemic Mental Health Questionnaire⁹ and many more. All of these scales measure only the negative impact of the pandemic and literature revealed that COVID-19 had both positive and negative



consequences on personal and community life so there was a need to measure these effects through a single scale, for this purpose Epidemic Pandemic Impacts Inventory was developed by Grasso et al. in 2020.¹⁰ Since then, the inventory has received wide-ranging recognition from research community around the world and has been translated into different languages i.e., Urdu, Spanish and Brazilian Portuguese. This inventory covers socioeconomic, psychosocial, physical health, and quarantine-related aspects of COVID-19 on the population. EPII is in the development stage, that is why the psychometric evaluation is needed yet. So, the present research was carried out to evaluate the initial psychometric features of EPII in Urdu among the Pakistani population. By evaluating the psychometric properties of EPII Urdu, it will be helpful for health care professionals, psychologists, and researchers to make interventions and taking effective steps to uplift the social, psychological, and emotional health of individuals.

SUBJECTS AND METHOD

Procedure

The main purpose of current cross-sectional research is to assess the psychometric features of the Urdu version of The Epidemic Pandemic Impact Inventory (EPII) by analyzing reliability (internal consistency, test-retest reliability), content and construct validity (convergent & discriminant), among Pakistani population. Data were collected during the first, second and third phases of COVID-19 in Pakistan, from June 2020 to July 2021. First of all, permission was obtained from the original author for psychometric evaluation of EPII Urdu. The measure was translated in Urdu in 2020.¹¹ We collaborated with translators in the psychometric evaluation process to build an impactful research scenario. After getting approval from the Institutional Research Ethics Board (IRB) of University, we started data collection. The data were collected from two cities (Lahore & Faisalabad) of Pakistan through face-to-face interviews, apart from these cities online data through different social networking sites (Facebook, WhatsApp, LinkedIn, etc.), were also collected from other areas of the Pakistan (Multan, Islamabad, Sargodha, Toba Tek Singh, and Bahawalpur). Participants signed a written informed consent form and were assured that their personal information will be kept confidential and exclusively used for research purposes. For test re-test reliability, the EPII-Urdu was administered to 31 participants after a gap of 21 days. A demographic information sheet to record the demographics of participants along with EPII Urdu was also administered to the sample. Brief instructions were given about questionnaires to the participants.

Participants

A total of 640 questionnaires were distributed to the participants; out of these, 15 participants did not meet the inclusion criteria; 27 questionnaires were incomplete; 12 persons did not return the protocols and the data of 6 participants showed outliers. So, the final sample consisted of 580 individuals, both men ($n = 209$) and women ($n = 371$) above 18 years of age (Mean age = 27.38, SD age = 9.19). Data were collected through the convenient sampling technique. To adapt a measure in another language, 5 to 10 participants

are required against 1 item.¹² So, the sample size for evaluating the psychometric properties of EPII in Urdu language with 92 items was calculated as ($92 \times 5 = 460$). The sample consisted of Health care professionals (doctors, nurses, ward boys, etc.), educationists, college and university students, business owners, police officers, engineers, housewives, and laborers, etc. Participants were approached through an online survey (www.googleforms.com) and from different hospitals, educational institutes, shopping malls, shops, etc. It was made sure that participants were healthy and can comprehend Urdu language. Individuals below 18 years of age and suffering from any physical and psychological illness were excluded.

Measures

The Epidemic Pandemic Impact Inventory (EPII)

The Epidemic Pandemic Impact Inventory (EPII) was developed by Grasso et al. in 2020. EPII measures both positive and negative effect of COVID-19 including socioeconomic, physical health & quarantine, and psychosocial impacts on the population. EPII consists of 92 self-report items divided into ten subscales; Work (11 items), Education and Training (2 items), Homelife (13 items), Social activities (10 items), Economic (5 items), Emotional health and well-being (8 items), Physical health problems (8 items), Physical distance and quarantine (8 items), Infection history (8 items), and Positive change (19 items). Items were responded to three types of answers, Yes me or Yes a person at home, No, and N/A. As EPII is a newly developed instrument, that is why optimal scoring procedure and psychometric properties were not clarified yet and will be provided in the future.

Flourishing Scale (FS)¹³

Flourishing Scale is a brief 8-item self-report measure that is used to evaluate the participant's self-professed achievements in key areas for example self-worth, determination, associations, and optimism. FS offers a single psychological well-being total on 7 point Likert scale, from 1 (strongly disagree) to 7 (strongly agree). High scores indicated an individual with more psychological strengths and resources. In the present research Urdu version of Flourishing Scale with strong psychometric properties was used.¹⁴

Depression, Anxiety, Stress Scale (DASS-21)¹⁵

DASS-21 was used to assess the individual's psychological distress (depression, anxiety, stress) over the past two weeks. It is a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (very much applied to me). The scale was divided into 3 subscales and each subscale contains seven items. For current study two subscales, depression and anxiety were included. DASS-21 showed good psychometric properties. In current research Urdu version of DASS-21 was used.¹⁶

WHO Brief Quality of Life Questionnaire (WHOQOL-BRIEF)¹⁷

WHO QoL is a 26 items self-administered questionnaire that assesses one's quality of life in four areas (psychological, physical, environmental & social). It is a 5 point Likert type scale, ranging from 1 to 5 (very dissatisfied to very satisfied) and high scores indicate better quality of life. WHOQOL-BRIEF Urdu version had strong psychometric properties.¹⁸



Socio-demographic Information Form

A socio-demographic information form was used to collect the essential demographics of the sample including name (optional), gender, age, family size, education, marital status, area of residence, monthly income, occupation, etc.

Statistical Analyses

Data were analysed by Statistical Package for Social Sciences 22 version (IBM SPSS Corp.; Armonk, NY, USA). For categorical variables, the frequency of demographic information was determined, while for continuous data, the mean and standard deviation were calculated. Reliability analyses were computed through internal consistency, test-retest reliability and intra-class correlation coefficients. Convergent and divergent validities were established with respect to Flourishing Scale, Depression Anxiety Stress Scale (DASS21) and WHO Brief Quality of Life Questionnaire.

RESULTS

Demographic Characteristics of Sample and Descriptive Statistics

Table 1 showed the detailed socio-demographic characteristics of the individuals such as gender, age, residence, family size, marital status, and occupation, etc. Frequency and percentages of categorical variables (gender, marital status, residential area, occupation) and descriptive statistics of continuous variables (age, education, family size, monthly income, and earning members) were given in the table.

Table 2 showed that data is normally distributed as per criteria for social sciences (skewness <+ 2, & kurtosis <+ 7) that is suitable for parametric statistics.

Table 1
Socio-Demographic Characteristics of the Participants

Variables	Groups	M(SD)	f(%)
Age		27.38 (9.19)	
Education		14.29 (4.68)	
House Area (Marla)		6.51 (4.53)	
Family size		6.89 (2.83)	
Total monthly Income (In PKR)		51462.18 (57537.35)	
Earning members in family		1.92 (1.33)	
Gender	Male		209 (36)
	Female		371 (64)
	Total		580 (100)
Marital Status	Single		412 (71)
	Married		157 (27.1)
	Separated/Widowed/Divorced		11 (1.9)
Residence	Total		580 (100)
	Urban		509 (87.8)
	Rural		71 (12.2)
Occupation	Total		580 (100)
	Health professionals		80 (13.79)
	Educationists		65 (11.21)
	College & University Students		200 (34.48)
	Business owners		70 (12.07)
	Police officers		25 (4.31)
	Engineers		10 (1.72)
	House Wives		50 (8.62)
	Laborers		40 (6.90)
	Others		40 (6.90)
	Total		580 (100)

Table 2
Descriptive Statistics for Urdu Version of the Epidemic–Pandemic Impacts Inventory (EPII)

Scales	N	Mini	Max	I	M	SD	Skewness		Kurtosis	
							Statistic	SE	Statistic	SE
Work	580	0	11	3.16	2.66	.478	.101	-.399	.203	
Education & Training	580	0	2	1.31	.844	-.642	.101	-1.295	.203	
Home Life	580	0	13	2.96	2.74	.958	.101	.672	.203	
Social Activities	580	0	10	5.30	2.73	-.275	.101	-.816	.203	
Economic	580	0	5	1.25	1.40	1.034	.101	.215	.203	
Emotional										
Health & Wellbeing	580	0	8	2.66	2.03	.511	.101	-.456	.203	
Physical Health	580	0	8	2.85	2.08	.337	.101	-.605	.203	
Problems										
Physical Health & Quarantine	580	0	8	2.02	2.27	.981	.101	-.056	.203	
Infection History	580	0	8	1.03	1.58	1.961	.101	4.002	.203	
Positive Change	580	0	19	9.67	3.96	-.014	.101	-.194	.203	

Reliability Analysis for Overall and Subscales

Table 3 showed the results of reliability analysis; it indicated excellent internal consistency of overall EPII Urdu version ($\alpha = .92$); while all the subscales of EPII showed good alpha reliability coefficients [work ($\alpha = .75$), Education & Training ($\alpha = .73$), Home Life ($\alpha = .78$), Social Activities ($\alpha = .78$), Economic ($\alpha = .70$), Emotional Health & Wellbeing ($\alpha = .73$), Physical Health Problems ($\alpha = .71$), Physical Distancing & Quarantine ($\alpha = .81$), Infection History ($\alpha = .74$) and Positive Change ($\alpha = .76$)]. All of these subscales showed good to excellent alpha reliability.

Table 3
Reliability Coefficients for Total and Subscales of EPII- Urdu

Scales	K	M	SD	α
Total scale	.92	32.66	13.29	.91
Work	.75	3.61	2.66	.75
Education & training	.73	1.31	.84	.73
Home life	.78	2.96	2.74	.78
Social Activities	.78	5.30	2.73	.78
Economic	.70	1.25	1.40	.70
Emotional Health and Wellbeing	.73	2.66	2.03	.73
Physical Health Problems	.71	2.85	2.08	.71
Physical Distancing and Quarantine	.81	2.02	2.27	.81
Infection History	.74	1.03	1.59	.74
Positive Change	.76	9.67	3.97	.76



Test-retest Reliability Analysis

Table 4 showed the results of test-retest reliability coefficients for all the subscales of Epidemic Pandemic Impact Inventory (EPPI) on 31 participants with a gap of 21 days (three weeks). Results indicated that all the subscales (except education and physical health & quarantine) had significant test-retest correlation ranging from .42 to .82. The means and standard deviations of time 1 and time 2 were approximately the same. The interclass correlation coefficients for all the subscales (except physical health & quarantine) with the absolute agreement were also significant, ranging from .51 to .89. The overall table showed significant satisfactory test-retest reliability coefficients for subscales of Epidemic Pandemic Impact Inventory.

Table 4
Test re-test Reliability and Intra-Class Correlation Coefficients for Epidemic-pandemic Impacts Inventory (EPII)

Scales	T1M(SD)	T2M(SD)	t	r	ICC
Work	2.74 (2.48)	2.81 (2.76)	-.15	.56**	.72**
Education & Training	1.52 (.76)	1.55 (.67)	-.21	.33	.51 [†]
Home life	2.94 (2.17)	2.77 (2.03)	.68	.81***	.89***
Social activities	4.19 (2.41)	4.19 (2.44)	.00	.77***	.87***
Economics	1.10 (1.04)	1.00 (.89)	.90	.82***	.89***
Emotional health & well-being	2.55 (1.85)	2.42 (1.65)	.45	.58**	.74***
Physical health problems	2.68 (1.93)	2.94 (1.88)	-.76	.51**	.67**
Physical health & Quarantine	1.65 (1.89)	2.13 (1.72)	-1.24	.28	.43
Infection history	1.68 (1.83)	1.65 (2.02)	.14	.79**	.88***
Positive change	9.58 (3.37)	9.74 (3.95)	-.23	.42 [†]	.59 [†]

*p < .05, **p < .01, ***p < .001.

Construct Validity (Convergent & Divergent Validities)

Table 5 showed inter-correlation among subscales of Epidemic Pandemic Impacts Inventory, flourishing scale, two subscales of DASS-21 (depression, anxiety) and subscales of WHO Brief QoL (physical health, psychological health, social relations & environmental health). All the subscales of EPII (except social activities and positive change) were negatively correlated with flourishing, quality of life subscales and had a positive association with depression and anxiety scales; while social activities and positive change were positively associated with flourishing and quality of life and negative relationship was found with depression and anxiety. Work (subscale of EPII) showed a significant negative relationship with psychological and environmental quality of life. Positive change (subscale of EPII) had a significant positive relationship with flourishing, physical and psychological well-being. These findings provided evidence for establishing convergent and discriminant validities respectively for the Urdu translated version of EPII.

Table 5
Inter correlation among Subscales of The Epidemic Pandemic Impacts Inventory (EPII), Flourishing Scale, DASS-21 and WHO Brief QoL

Variables	Flourishing	Depression	Anxiety	Physical health	Psychological health	Social relations	Environmental health
Work	-.07	.13	.03	-.15	-.20*	-.15	-.29***
Education & Training	.20*	-.03	-.03	.08	.06	.18*	.00
Home Life	.10	.06	.16	-.13	-.08	.04	-.14
Social Activities	-.06	.03	.07	-.01	-.11	-.11	-.09
Economics	-.02	.12	-.05	-.02	-.02	-.02	-.23**
Emotional health & well-being	-.01	.09	.01	-.03	-.004	-.05	-.07
Physical health problems	-.03	.07	.03	-.03	-.03	-.01	-.12
Physical health & quarantine	-.02	.01	.03	-.04	-.08	-.01	-.19**
Infection history	-.05	.05	.01	-.12	-.08	-.07	-.17*
Positive change	.23**	-.04	-.04	.16*	.24**	.08	.09

**p < .01, *p < .05.

Logistic Regression Analysis

Results of Logistic regression analysis through enter method (Table 6) showed that only two subscales of EPII economic conditions and infection history proved to be significant predictors among males by explaining 4% of the variance. For residential area, two dimensions (health & wellbeing and physical health & quarantine) emerged as significant predictors for people resident in rural areas while the infection history subscale proved to be a significant predictor for urban areas by explaining 8% of the variance.

Table 6
Logistic Regression Analyses for Gender, Area of Residence and Family Type across Subscales of EPII

Variables	Gender				Area of Residence					
	B	p	OR	95% C.I.		B	p	OR	95% C.I.	
				LL	UL				LL	UL
Work	.03	.407	1.03	.95	1.11	-.07	.223	.93	.83	1.04
Education & Training	.05	.608	1.06	.85	1.31	.22	.199	1.25	.89	1.74
Home Life	-.08	.059	.92	.85	1.00	-.07	.320	.94	.82	1.07
Social Activities	.07	.088	1.07	.99	1.15	-.10	.087	.90	.80	1.01
Economic	.18	.029	1.20	1.02	1.40	.21	.082	1.23	.97	1.55
Emotional Health & Wellbeing	-.03	.682	.97	.86	1.10	.22	.017	1.25	1.04	1.50
Physical Health	-.06	.297	.94	.84	1.05	-.14	.103	.87	.74	1.03
Physical Health & Quarantine	-.02	.702	.98	.89	1.08	.14	.039	1.15	1.01	1.32
Infection History	.14	.036	1.15	1.01	1.30	-.28	.016	.76	.60	.95
Positive Change	-.02	.382	.98	.94	1.03	.04	.237	1.04	.97	1.12



Note: * $p < .05$.
Gender: $R^2 .03$ (Cox & Snell), $.04$ (Nagelkerke); Omnibus Model Chi Square = 15.84, $p = .104$.
Area of Residence: $R^2 .04$ (Cox & Snell), $.08$ (Nagelkerke); Omnibus Model Chi Square = 25.37, $p < .01$.

DISCUSSION

The main objective of the present research was to determine the psychometric features of the Urdu version of the Epidemic Pandemic Impact Inventory (EPII) among the Pakistani population. Cronbach's alpha level was used to assess the internal consistency of overall EPII and subscales. Alpha reliability is directly influenced by the number of items in a measure; more the items higher the alpha level will be. EPII Urdu showed excellent Cronbach's alpha level (.91) for the overall scale, while all the subscales also showed good internal consistency ranging from .70 to .81. These findings are consistent with other COVID-19 related measures, i.e., COVID-19 related Psychological Distress, Fear of COVID-19, and Coronavirus Stress Measure. Other COVID-19 related measures translated into Urdu language, i.e., Obsession with Covid-19 Scale and Fear of COVID-19 Scale Urdu versions also showed good alpha reliability, which is in compliance with our findings.^{19,20}

Results of test-retest reliability with a gap of 21 days on 31 participants showed non-significant discrepancies between time 1 (T1) and time 2 (T2). Test-retest reliability was measured through correlation coefficients, repeated measure t-test and Intra-class Correlation Coefficient (ICC). A two-way random effect model and absolute agreement were followed to compute ICC. ICC values $> .75$ regarded as excellent agreement, values ranging from .60 to .74 regarded as good agreement, .40 to .59 ranges showed moderate agreement and less than .40 showed poor agreement.²¹ In our study, the results of ICC at test-retest reliability for all dimensions showed significant results ($> .05$, $> .01$, $> .001$) except for the physical health and quarantine domain. Home-life, social activities, economics, and infection history subscales showed excellent agreement ($> .75$), work, emotional health & wellbeing, physical health problems indicated good agreement (.60 to .74) while two subscales—education & training and positive change showed moderate agreement (.40 to .59) with overall scale.

Convergent and divergent validities of EPII were assessed through the flourishing scale, two subscales of DASS-21 (depression, anxiety), and WHO Brief QoL. All the subscales of EPII (except social activities and positive change) were negatively correlated with flourishing, WHO QoL subscales and had a positive association with depression and anxiety scales; while social activities and positive change were positively associated with Flourishing Scale and WHOQoL and negative relationship was found with depression and anxiety. During lockdown, most people did their jobs from home, which was not an ideal condition for working and suggested

that a healthy working environment is a significant predictor of psychological health and work-related quality of life. Literature also revealed that work from home had a significant negative impact on psychological and environmental well-being of individuals during COVID-19.²² Due to the closure of markets, offices and all other work-related sites, people faced deteriorated economic conditions which ultimately declined their quality of life.²³

Apart from the negative consequences of COVID-19, there are lots of positive changes that were also observed during this pandemic. Due to complete lockdown, people had plenty of time to spend with their families without bothering their work-related responsibilities; this quality time enhances their well-being by helping them to build strong interpersonal relations.²⁴ Furthermore, Pakistan had collectivistic cultural norms where social adaptations towards any problem play a major role in adapting positive coping strategies among the population, which help them to experience a better quality of life. Our findings are in compliance with a previous study conducted in China during covid-19, which showed that social adaptation helps individuals to nurture and bring a strong sense of control over problems.²⁵ These results provided evidence for establishing convergent and discriminant validities respectively for the Urdu translated version of EPII.

Findings from Logistic Regression analysis revealed that males were more affected by economic conditions and infection history during COVID-19. Pakistan is a male dominant society and male members of the family were considered caregivers for the rest of the family in terms of feeding and to fulfill all other life necessities; that is why they were at more risk of getting infections by going outside for work and experiencing more stress related to economic conditions. In Pakistan, males have the freedom to spend more time outside the home with friends, but during the lockdown, staying home creates stress for them. A study conducted in Pakistan by Imran et al. also revealed that men were more affected by infection history during COVID-19. Our findings showed that people living in rural areas experienced better health and well-being during the Coronavirus pandemic; because in rural areas people experienced healthy environmental conditions, extended family system, harmony and social support which contributed to better quality of life and well-being among people residing in rural areas. Imran et al. supported our findings related to the area of residence.

CONCLUSION

The present study provides evidence for psychometric evaluation of the Epidemic Pandemic Impact Inventory Urdu version (EPII-U). This inventory was validated in Urdu to assess the positive and negative impacts of COVID-19 on the Pakistani population. EPII proved to be a valid and reliable tool to assess the impacts of the pandemic on the population across several domains.



Apart from the significant findings of the current study, a few limitations were also observed. One limitation of the study was geographical, as the most of the data were collected from two cities (Lahore & Faisalabad) due to convenience sampling. Another flaw of this study was the unbalanced gender-based sample; a more balanced gender-based sample would have yielded more accurate results. In addition, our sample size is small in the future large sample size should be used for generalizability. In our study, we did not compute CFA future researchers should consider this limitation.

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