Since 2002

COVID-19 Peritraumatic Distress Index Instrument – Translation and Validation of Bulgarian Version

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Abstract

BACKGROUND: COVID-19 peritraumatic distress index (CPDI) self-report questionnaire was designed to measure peritraumatic psychological distress in a pandemic emergency.

AIM: The aim of the study was the validation of Bulgarian COVID-19 peritraumatic distress index (CPDI) questionnaire and its application to measure psychological distress level in Bulgarian population.

METHODS: The study was conducted among 42 adults from February 2022 to March 2022. The average age of respondents participating in the validation of COVID-19 peritraumatic distress index (CPDI) questionnaire is 40.88 ± 13.309, women being predominant - 71.4% (n = 30), as well as individuals with higher education- 69% (n = 29). Following the preliminary instruction, all participants filled out the online Bulgarian version of the questionnaire anonymously 2 times within a period of 2 weeks. Data were analyzed using descriptive statistic, the Wilcoxon signed-rank test, Cronbach's alpha, and Corrected Item-Total Correlation.

RESULTS: The CPDI instrument was linguistically validated according to a standard procedure (8) and cross-culturally adapted (9) into Bulgarian in several stages. The overall Cronbach's alpha for the Peritraumatic Distress Index (CPDI) questionnaire is 0.940. Almost all corrected item-total correlations exceeded the accepted cut off of 0.30 indicating each item was related to the overall scale except for Q5 "I feel sympathetic to COVID-19 patients and their families."

CONCLUSION: The Bulgarian version of the questionnaire reveals good reliability and cross-cultural validity and can be applied widely for measuring the prevalence of psychological suffering and distress in the pandemic emergency.

Introduction

The coronavirus (COVID-19) outbreak is posing a serious public health threat worldwide, since it has imposed serious changes in people's professional and personal life. The introduced physical distancing for restricting the spread of the virus caused a serious increase in the stress level of society which lead to unreasonable anxiety and panic, sleep disturbances, irritability, depressed mood, fear from the unknown, intrusive thoughts and actions, stockpiling with food, household goods, and medications [1]. Measuring psychological suffering and distress in the "hot" phases of an event with characteristics of a natural catastrophe, such as the pandemic, in which we witness the dramatic consequences of the strong epidemic spread, is an important element for predicting and preventing the risk of developing post-traumatic stress disorder (PTSD) in later periods [2]. Peritraumatic distress is defined as the emotional and physiological distress experienced during and/or immediately after a traumatic event (COVID 19) and is associated with the development and severity of posttraumatic stress disorder (PTSD) and related psychological difficulties [3]. Gorman *et al.* and Megalakaki *et al.* claim that there is evidence that peritraumatic distress is an important predictor for PTSD [4], [5]. To measure peritraumatic distress in a pandemic emergency, an easy to administer, short and accurate instrument is required [2].

A self- report questionnaire COVID-19 peritraumatic distress index (CPDI) was designed from Qiu *et al.* in 2020 to survey peritraumatic psychological distress during the epidemic [6]. The questionnaire has 24-items whose content refers to anxiety, depression, specific phobias, cognitive change, avoidance and compulsive behavior, physical symptoms and loss of social functioning. Each item is rated on a 5-point

Likert scale ranging from 0 (never) to 4 (always). The possible score ranges from 0 to 100, with higher scores indicating higher COVID-19 peritraumatic distress. Chinese normative data reveal the following ranges for the total score: 0 - 27 indicates no distress, 28–51 mild to moderate distress, and 52–100 severe distress. The CPDI showed satisfactory reliability and content validity [6]. This questionnaire incorporated relevant diagnostic guidelines for specific phobias and stress disorders specified in the International Classification of Diseases, 11th Revision [7].

It has also been used in other countries to measure psychological distress in China, Iran Spain, Italy, Brazil, France, Germany, etc. [2], [6], [8], [9], [10], [11].

The grounds for choosing this instrument for evaluation are that CPDI is characterized as a rapid online compilation tool (10 min), easily understandable and appreciated by people.

The aim of the study was the validation of Bulgarian COVID-19 Peritraumatic Distress Index (CPDI) questionnaire and its implementation to measure psychological distress level in Bulgarian population.

Materials and Methods

We performed the translation and validation of Bulgarian version of CPDI questionnaire as a part of an international project of Agence Universitaire de la Francophonie (AUF) to develop a standardized methodology for large-scale measurement of the prevalence of peritraumatic distress among university students in Bulgaria. The study was conducted among 42 adults from February 2022 to March 2022.

The CPDI includes 24 items measuring the prevalence of peritraumatic distress in a pandemic emergency (Table 1). Responses to each item are rated on a five-point Likert scale (from 0 = Never to 4 = Always). The CPDI instrument was linguistically validated according to a standard procedure and cross-culturally adapted into Bulgarian in several stages [12]. The authors provided us with the English version. Two independent translations of the CPDI questionnaire were performed - from English into Bulgarian and from Bulgarian into English (without access to the original version). The back-translation and the original document were compared, and no inconsistencies were found, as judged by a psychologist with professional experience on stress and trauma. Following the preliminary instruction all participants filled out twice the online Bulgarian version of the questionnaire anonymously within 2 weeks. During the second filling, the participants did not have access to the first copy filled in by them. Data were stored anonymously with an assigned number so that it was not possible to identify the participants. A separate analysis of the obtained results was performed for each stage.

Statistical analysis

Descriptive statistic parameters (mean, standard deviation SD, and percentages) and nonparametric tests were used. The Wilcoxon signed-rank test was applied to compare item scale scores obtained during the test and re-test. Internal consistency was estimated using Cronbach's alpha and corrected item-total correlation to test the scale homogeneity among Bulgarian population.

Results

The average age of the respondents participating in the validation of the instrument is 40.88 ± 13.309, women predominating - 71.4% (n = 30),

Table 1: Test-retest reliability of the Bulgarian translation of COVID-19 peritraumatic distress index questionnaire evaluated in 42 adults

Serial number	Question	n	Mean I	SD	Mean II	SD	Wilcoxon Test Z	p
Q1	Compared to usual, I feel more nervous and anxious	42	1.33	0.979	1.69	1.093	−1.580[b]	0.114
Q2	I feel insecure and bought a lot of masks, medications, sanitizers, gloves and/or other home supplies	42	1.17	1.146	1.19	1.194	−0.070[c]	0.944
Q3	I can't stop myself from imagining myself or my family being infected and feel terrified and anxious about it	42	0.88	1.041	1.17	1.124	−1.435[b]	0.151
Q4	I feel helpless no matter what I do	42	0.86	1.072	0.86	0.952	−0.111[c]	0.912
Q5	I feel sympathetic to COVID-19 patients and their families	42	3.12	1.041	2.81	1.194	−1.279[c]	0.201
Q6	I feel helpless and angry about people around me, governors, and media	42	1.83	1.146	2.24	1.226	−1.637[b]	0.102
Q7	I am losing faith in the people around me	42	1.00	1.082	1.48	1.065	−1.803[b]	0.071
Q8	I collect information about COVID-19 all day. Even if it's not necessary, I can't stop myself	42	0.43	0.831	0.69	1.000	−1.706[b]	0.088
Q9	I will believe the COVID-19 information from all sources without any evaluation	42	0.36	0.618	0.60	0.912	−1.151[b]	0.250
Q10	I would rather believe in negative news about COVID-19 and be skeptical about the good news	42	0.62	0.825	0.79	0.951	−0.964[b]	0.335
Q11	I am constantly sharing news about COVID-19 (mostly negative news)	42	0.31	0.680	0.76	0.932	−2.683[b]	0.007
Q12	I avoid watching COVID-19 news since I am too scared to do so	42	0.98	1.199	1.02	1.259	−0.171[b]	0.864
Q13	I am more irritable and have frequent conflicts with my family	42	0.83	0.961	1.17	1.010	−1.527[b]	0.127
Q14	I feel tired and sometimes even exhausted	42	1.57	1.172	1.69	1.137	−0.615[b]	0.538
Q15	When feelings anxious, my reactions are becoming sluggish	42	1.21	1.071	1.38	1.081	−0.794[b]	0.427
Q16	I find it hard to concentrate	42	1.36	1.078	1.40	1.127	−0.190[b]	0.850
Q17	I find it hard to make any decisions	42	0.86	0.899	1.07	1.022	−0.788[b]	0.431
Q18	During this COVID-19 period, I often feel dizzy or have back pain and chest distress	42	0.71	1.043	0.90	1.246	−0.773[b]	0.439
Q19	During this COVID-19 period, I often feel stomach pain, bloating, and other stomach discomforts	42	0.52	0.862	0.71	0.995	−0.729[b]	0.466
Q20	I feel uncomfortable when communicating with others	42	0.55	0.705	0.83	0.908	−1.860[b]	0.063
Q21	I talked with my family members very rarely	42	0.93	1.438	0.83	0.986	−0.401[c]	0.689
Q22	I have frequent awakening at night due to my dream about myself or my family being infected by COVID-19	42	0.38	0.909	0.55	0.968	−0.939[b]	0.348
Q23	I have changes in my eating habits	42	0.90	1.031	1.02	1.093	−0.679[b]	0.497
Q24	I have constipation or frequent urination	42	0.81	1.153	0.69	1.047	−0.577[c]	0.564

SD: Standard deviation, b. Based on negative ranks, c. Based on positive ranks, significance p<0.05

as well as individuals with higher education 69.0% (n = 29). The results from the Wilcoxon signed-rank test of the test-retest showed that there is no statistically significant difference in the answers of the respondents during the second filling in of the questionnaire within a period of 2 weeks. The only exception is the statement "I am constantly sharing news about COVID-19 (mostly negative news)" which can be explained by the force majeure which occurred during the 2-week period, namely, the war between Ukraine and Russia. It switched the focus in the news and the bad news related to the COVID-19 pandemic were replaced by the bad news for the military actions in the two countries and the refugee wave.

The overall Cronbach's alpha for the CPDI questionnaire is 0.940. Almost all corrected item-total correlations exceeded the accepted cutoff of 0.30 indicating each item was related to the overall scale except for Q5 (Table 2) [13]. Despite that, if this question was removed from the instrument, Cronbach's Alpha value would increase insignificantly and would not exert serious influence on its validity.

Table 2: Corrected item-total correlation, item mean, and standard deviation for the Bulgarian version of the COVID-19 Peritraumatic Distress Index

Question number	Mean	SD	Corrected item-total correlation	Cronbach's alpha if item deleted
Q1	1.33	0.979	0.676	0.937
Q2	1.17	1.146	0.568	0.939
Q3	0.88	1.041	0.794	0.935
Q4	0.86	1.072	0.808	0.935
Q5	3.12	1.041	0.186	0.944
Q6	1.83	1.146	0.699	0.937
Q7	1.00	1.082	0.655	0.937
Q8	0.43	0.831	0.626	0.938
Q9	0.36	0.618	0.417	0.940
Q10	0.62	0.825	0.758	0.937
Q11	0.31	0.680	0.704	0.938
Q12	0.98	1.199	0.497	0.940
Q13	0.83	0.961	0.674	0.937
Q14	1.57	1.172	0.750	0.936
Q15	1.21	1.071	0.784	0.935
Q16	1.36	1.078	0.766	0.936
Q17	0.86	0.899	0.694	0.937
Q18	0.71	1.043	0.624	0.938
Q19	0.52	0.862	0.493	0.940
Q20	0.55	0.705	0.545	0.939
Q21	0.93	1.438	0.426	0.942
Q22	0.38	0.909	0.595	0.938
Q23	0.90	1.031	0.592	0.938
Q24	0.81	1.153	0.604	0.938

SD: Standard deviation.

Table 3 presents the respondents' answer distribution in frequency of occurrence of the studied statements. Most people have not changed their moods, sensations, and fears as a result of the pandemic. Despite that, a considerable share of respondents - 73.8% (n = 31) sympathize with COVID-19 patients and their families. Approximately 29% (n = 12) feel helpless and angry at the people around them, governors and the media, 26.2% (n = 11) often or always feeling tired or even exhausted. More than one fifth of the surveyed have stopped talking to members of their family (21.4%; n = 9), and 16.7% (n = 7) find it more and more difficult to concentrate.

AS visible on Table 4, only 7.1% (n = 3) of respondents have high distress as a result of the COVID-19 pandemic, however more than ¼ have

Table 3: Response of the study population to the COVID-19 Peritraumatic Distress Index questionnaire

Question number	Never, n (%)	Occasionally, n (%)	Sometimes, n (%)	Often, n (%)	Always, n (%)
Q1	11 (26.2)	10 (23.8)	17 (40.5)	4 (9.5)	0
Q2	16 (38.1)	10 (23.8)	10 (23.8)	5 (11.9)	1 (2.4)
Q3	19 (45.2)	14 (33.3)	5 (11.9)	3 (7.1)	1 (2.4)
Q4	22 (52.4)	8 (19.0)	9 (21.4)	2 (4.8)	1 (2.4)
Q5	1 (2.4)	2 (4.8)	8 (19.0)	11 (26.2)	20 (47.6)
Q6	8 (19.0)	5 (11.9)	17 (40.5)	10 (23.8)	2 (4.8)
Q7	17 (40.5)	13 (31.0)	9 (21.4)	1 (2.4)	2 (4.8)
Q8	31 (73.8)	6 (14.3)	3 (7.1)	2 (4.8)	0
Q9	30 (71.4)	9 (21.4)	3 (7.1)	0	0
Q10	24 (57.1)	11 (26.2)	6 (14.3)	1 (2.4)	0
Q11	33 (78.6)	6 (14.3)	2 (4.8)	1 (2.4)	0
Q12	22 (52.4)	6 (14.3)	8 (19.0)	5 (11.9)	1 (2.4)
Q13	20 (47.6)	12 (28.6)	7 (16.7)	3 (7.1)	0
Q14	10 (23.8)	10 (23.8)	11 (26.2)	10 (23.8)	1 (2.4)
Q15	14 (33.3)	11 (26.2)	11 (26.2)	6 (14.3)	0
Q16	12 (28.6)	10 (23.8)	13 (31.0)	7 (16.7)	0
Q17	18 (42.9)	14 (33.3)	8 (19.0)	2 (4.8)	0
Q18	26 (61.9)	6 (14.3)	6 (14.3)	4 (9.5)	0
Q19	29 (69.0)	5 (11.9)	7 (16.7)	1 (2.4)	0
Q20	24 (57.1)	13 (31.0)	5 (11.9)	0	0
Q21	27 (64.3)	4 (9.5)	2 (4.8)	5 (11.9)	4 (9.5)
Q22	34 (81.0)	3 (7.1)	3 (7.1)	1 (2.4)	1 (2.4)
Q23	21 (50.0)	7 (16.7)	11 (26.2)	3 (7.1)	0
Q24	25 (59.5)	6 (14.3)	6 (14.3)	4 (9.5)	1 (2.4)

developed an average level of distress for a period of 2 years.

The non-parametric analysis did not find a statistically significant difference in the distress levels with regard to sex (p = 0.301), education (p = 0.501), and age of the respondents (p = 0.433).

Table 4: Distribution of COVID-19 Peritraumatic Distress Index groups

Level of distress	n (%)
Normal distress	28 (66.7)
Average level	11 (26.2)
High distress	3 (7.1)
Total	42 (100.0)

Discussion

The CPDI has been used in several countries, keeping in mind that the predictors of distress during the COVID-19 pandemic may vary across different cultures [9]. CPDI content has been validated by psychiatrists from the Shanghai Mental Health Center considering its Cronbach's alpha 0.95 (p < 0.001) [6]. A group of expert panels which included psychiatrists, clinical psychologists, physicians, specialists' pharmacists, clinicians, and public health experts translated and culturally validated into their national language. The results across 13 countries in the study from Marzo *et al.,* the Cronbach's alpha value is ranging from 0.824 in Vietnam to 0.925 in Malaysia. This indicated that the questionnaire has a good to excellent internal consistency across all countries [14]. The Cronbach's α. of Nepali version of the CPDI found to be 0.896 [7].

The Italian version of the questionnaire also demonstrated a high degree of reliability and construct validity. The internal consistency is high (Cronbach's α = 0.916), the content validity is satisfactory, and

the items cover issues of peritraumatic distress adequately [2]. The Croatian and the Indian version CPDI showed the same internal-consistency of Cronbach's α = 0.92 [15], [16]. The Cronbach's alpha for the French version of the CPDI was 0.87 [5] The Cronbach's alpha of 0.875 for the Bengali version of questionnaire indicated that it has an excellent internal consistency [17]. The Russian-language version of the questionnaire has high reliability-consistency (Cronbach's α - 0.87) [18].

In our study, almost all corrected item-total correlations exceeded the accepted cutoff of 0.30 indicating each item was related to the overall scale except for Q5. Despite that fact, if the question was removed from the instrument, Cronbach's Alpha score would increase insignificantly and would not exert serious impact on its validity. The Spanish CPDI total score Cronbach's alpha is 0.88 after deleting item number 5 due to its low factor loading. In line with our study, in the Spanish forward-backward translation procedure no significant inconsistencies were found between the back-translation and the original document [9].

Cronbach's alpha score for our study and for a greater part of the cited studies is ranging from 0.824 to 0.95, which is indicative of CPDI as a valid tool to measure stress during COVID-19 among any population [2].

The effects of social isolation or being forced to stay at home with an increase in the hours spent face-to-face with families with high amounts of conflict, the reduced availability of specialist support could have detrimental consequences on well-being in this subgroup of people, with possible exacerbation of symptoms and suffering [19].

A recent rapid review on behaviors and mental health outcomes in pandemics and general populations indicates that among the outcomes investigated in the past, anxiety, and worry can have a significant impact on the daily life and work [20], [21]. The prevalence and severity of anxiety and worry, feeling of panic, depression, and emotional disturbance, was initially high, decreasing over time [20], [21].

We found that approximately 25% of participants in our study have developed an average level of distress for a period of 2 years. In the Italian survey, there are differences between females and males in the percentages of distress, both mild/moderate (24.61% vs. 14.60%) and severe (6.81% vs. 2.19%), and in the percentages above the IES-R cutoff (19.9% vs. 4.38%) [2]. The women in China are much more vulnerable to stress and more likely to develop posttraumatic stress disorder [6].

Female respondents in Bangladesh have shown significantly higher CPDI than their male counterparts [17]. Age-related differences were found in a Canadian and Spanish studies, with significantly lower mean scores for stress, anxiety, and depression in older than in younger adults [22], [23].

In contrast to the cited studies, we did not find a statistically significant difference in the distress levels with regard to sex (p = 0.301), education (p = 0.501), and age (p = 0.433) among our participants. Probable reasons for this fact could be the lifting of the strict measures, the return to a normal way of life at the time of the study and the lower number of respondents.

The published studies for the COVID-19 peritraumatic distress index questionnaire show very good results regarding the degree of complexity of questions, the internal consistency and reliability. This gives the opportunity for its theoretical interpretation and practical application.

The present study showed that the Bulgarian version of COVID-19 peritraumatic distress index has a good internal consistency and test-retest reliability which are similar to the published results of the original version [6].

Conclusion

The COVID-19 peritraumatic distress index questionnaire is a very suitable method for individual estimation of the posttraumatic stress levels in different age groups. It can find wide application for research purposes in peritraumatic distress reactions which refer to behaviors, emotions, thoughts and symptoms associated with stress during or immediately after the traumatic event. The Bulgarian version of the questionnaire shows good reliability and cross-cultural validity and can be applied for the wide measurement of the prevalence of peritraumatic distress in a pandemic emergency/measure psychological suffering and distress in the pandemic emergency.

Limitation of the study

The sample in this survey is not nationally representative, as our focus was validation of the CPDI questionnaire for future studies among the Bulgarian population.

Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki. The Ethical Committee Board of Research of the Medical university of Plovdiv approved the study № 2/02.03.2022.

Informed Consent

Statement: Informed consent was obtained from all subjects involved in the study.

Acknowledgments

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