

Posttraumatic stress in Nepalese and Spanish children: A comparative study

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Frequent and repeated exposure to potentially traumatic events in Nepal is the starting point for the associated symptomatology evaluation in Nepalese children, especially among those in care. Reviewing the prevalence of Posttraumatic Stress Disorder (PTSD) in the tutelage condition, and establishing comparisons with Spain as an occidental population, would allow delimiting family and socio-cultural implications in child and youth trauma, assessing the sensitization convenience for diagnostic criteria in this age range. With a sample of 88 participants between 11 and 14 years old, we used the Child Posttraumatic Symptom Scale (CPSS), employing both DSM-5 general criteria and childhood adapted alternative criteria. Our results showed higher PTSD prevalence in the Nepalese general population (46.7%) compared with the sample of children in care (11.1%), being significantly reduced in Spanish minors (6.1%), following DSM-5 general criteria. When using alternative criteria, we observed an increase in prevalence rates, reaching 73.3%, 22.2% and 14.3%, respectively. These data enabled us to consider the protection factors at the assessed orphanage compared to the Nepalese general population family environment, and appreciate the socio-cultural variables between countries, supporting at each comparison the alternative criteria highest sensitivity in children and adolescent PTSD diagnosis.

Keywords: PTSD, childhood and adolescence, Nepal, DSM-5, alternative criteria.

Estrés postraumático en menores nepalíes y españoles: Un estudio comparativo. La exposición a eventos potencialmente traumáticos en Nepal constituye el punto de partida en la evaluación de la sintomatología asociada entre los menores nepalíes, especialmente aquellos en situación de orfandad. Conocer la prevalencia del Trastorno de Estrés Postraumático (TEPT) en función de la tutela, y establecer comparaciones con población occidental como la española, permitiría delimitar las implicaciones intrafamiliares y socioculturales en el trauma infantojuvenil, valorando a su vez la conveniencia de sensibilizar los criterios diagnósticos. Con una muestra de 88 participantes con edades entre los 11 y los 14 años empleamos la *Child Posttraumatic Symptom Scale* (CPSS), aplicando tanto criterios DSM-5 generales como criterios alternativos adaptados a la infancia. Los resultados mostraron una mayor prevalencia de TEPT en población general nepalí (46.7%) con respecto a la muestra de tutelados (11.1%), reduciéndose significativamente en el grupo de menores españoles (6.1%), según criterios DSM-5 generales. Al utilizar criterios alternativos, observamos un aumento en la prevalencia, alcanzando el 73.3%, 22.2% y 14.3% respectivamente. Estos datos permitieron valorar los factores de protección en el orfanato frente al entorno intrafamiliar del grupo control, así como apreciar las variables socioculturales en ambos países, apoyando la mayor sensibilidad de criterios alternativos en el diagnóstico de TEPT infantojuvenil.

Palabras clave: TEPT, infancia y adolescencia, Nepal, DSM-5, criterios alternativos.

Posttraumatic Stress Disorder (PTSD) aims to describe and include the main symptom clusters resulting from a frightening and overwhelming experience that exceeds the individual's capacity to respond and react adaptively. Although this theoretical effort has allowed us to develop our knowledge in this field, attention has been traditionally toward adult symptomatology. However, due to this lack of growth at other age ranges, in recent years we have observed attempts to further research in childhood and adolescence, partly owing to the difficulties in clinical diagnosis within this population, and also to the importance of intervention access for these minors.

Despite this rising interest, the use of adult criteria by the main reference manuals (DSM-5, 2013; ICD-11, 2018) still constitutes a significant challenge for real symptomatology performance among minors, especially in potentially traumatic situations exceeding singular or limited events. Various authors have proposed alternative criteria to improve diagnostic sensitivity, adapting the amount and nature of PTSD symptoms to infancy. We specifically settled on Scheeringa et al. research, which points to a new subtype focused on children under six, currently included in DSM-5 for this age-group. Nonetheless, minors in the 6-18 age range are still diagnosed using adult criteria, meaning under-diagnosis and lack of intervention. At this point, we began to consider the suitability of alternative criteria (Scheeringa, Zeanah, Drell and Larrieu, 2003) for children and adolescents over six years old, due to its better adjustment to real symptomatology presentation in these minors.

PTSD prevalence data showed different results depending on the nature of the sample, as well as the diagnostic criteria employed. DSM-5 points to 5.3% for American adults, being lower (0.5-1%) for European, African, Latin and most Asian countries, perhaps due to the culturally unadapted diagnostic criteria. Giaconia et al. (1995) previously found a prevalence of 6% among teenagers, and other authors also focused on this age range (Kessler, Sonnega, Bromet, Hughes and Nelson, 1995) showed 10%. On the other hand, the British National Survey of Mental Health reported a PTSD diagnosis in 0.4% among minors between 11 and 15 years old (Meltzer, Gatward, Goodman and Ford, 2000). Other studies analysed prevalence when responding to a particular traumatic experience (La Greca and Prinstein, 2002) finding data between 30% and 50% for young adults, and 5% to 10% among minors following a natural disaster.

Orphanhood in Nepal

Reiterated and generalised exposure to trauma questions the psychological state of children and adolescents involved in adverse conditions, aggravated in some developing countries by domestic violence, social inequality, natural disasters or extreme poverty.

Nepal, southern Asia, forms part of this disturbing context, still recovering from a severe earthquake in 2015, with almost 9000 fatalities, and a civil war by Maoist rebels that lasted ten years (1996-2006) which had a great impact on the Nepalese population and that still shows multiple consequences to this day. We also find a high prevalence of orphanhood, described by international organizations like UNICEF as a psychosocial hazard for the minors involved. Other authors also describe illness-related complications within an institutionalised

context, describing how HIV infected children in Nepal benefit from more psychological and medical care in a family context compared to an orphanage (Acharya et al, 2013).

Previous research: PTSD in Nepal

To understand how PTSD works among Nepalese children we turned to Kohrt et al. bibliography, it being the most extensive and complete in this field of study. Some research has analysed how PTSD performs in Nepalese children, generally finding that risk groups such as child soldiers, overexposed to potentially traumatic events, show more prevalence of this disorder. For instance, Kohrt et al. (2008) found 55.3% versus 20% in the *never-recruited* sample. Another study registered PTSD prevalence in children previously involved in the war compared to the general population, showing a difference of 16.2% versus 5.9% respectively (Kohrt et al, 2016). These data may suggest that the present research could find similar differences between our risk group (children in care) and the general population in Nepal. More recently, a scoping review found PTSD symptoms between 10.7% and 51% of children population in Nepal, after being exposed to the earthquake (Chaulagain, Kunwar, Watts, Guerrero, and Skokauskas, 2019).

Research aims and hypothesis

Given the accumulated presence of risk factors within the Nepalese population, this project proposes an *in situ* study, to discover how the tutelage condition versus familiar context could affect Nepalese children and adolescents, as well as examining PTSD prevalence differences with developed countries such as Spain. Using the Child PTSD Symptom Scale (CPSS; Foa et al., 2001) we aimed to improve our knowledge of posttraumatic symptomatology in both countries, enabling us either to compare this prevalence regarding the tutelage condition, and observing potential differences in the diagnosis process depending on the use of DSM-5 general criteria and those established for prime infancy (PTSD under the age of six; Scheeringa et al., 2003). Our research hypotheses propose three main ideas:

1. Nepalese children in care would present higher PTSD prevalence compared to the general population within the same country, due to their traumatic background.
2. The general population in Nepal would show higher PTSD prevalence than the Spanish one, attending to the global context in each country.
3. Statistically significant differences in PTSD prevalence would be found depending on the diagnostic criteria employed, also supporting the highest sensitivity of alternative

METHODS

This research constitutes an empirical comparative non-experimental study, displaying a transversal associative methodology following both natural groups design (tutelage condition within Nepal) and cross-cultural design (Spain versus Nepal).

Participants

Study sample ($N= 88$) was recruited in Murcia (Spain) and Kathmandu (Nepal). In the latter, different groups were selected to distinguish them from the general population (living in a family context) and children in care. Common inclusion criterion was chronological age between 11 and 14 years old. In Nepal we also established the educational level, between 4th and 8th grade (Nepalese system) and Nepalese origin as inclusion criteria. Furthermore, we controlled that natural groups (children in care versus family caregivers) were properly separated. Gender and age distribution among the full sample is shown in table 1.

Table 1. Sociodemographic distribution

		Children in care Nepal		General population Nepal		General population Spain	
		<i>N</i>	Prevalence %	<i>N</i>	Prevalence %	<i>N</i>	Prevalence %
Gender	Women	5	55.6%	14	46.7%	19	38.8%
	Men	4	44.4%	16	53.3%	30	61.2%
	Total	9	100%	30	100%	49	100%
Age	11	4	44.4%	10	33.3%	15	30.6%
	12			5	16.7%	11	22.4%
	13	2	22.2%	12	40.0%	15	30.6%
	14	3	33.3%	3	10.0%	8	16.3%
	Total	9	100%	30	100%	49	100%

The general Nepalese population sample was collected at the local school in Phutung, Kathmandu, with informed consent provided by the principal and vice-principal, with a total of 30 randomly selected minors who participated voluntarily. In addition, all children in care in the chosen orphanage, from the same district in Nepal, were included in this study, except one child who did not meet age criteria, where consent was provided by the social worker in charge ($N= 9$). The general population sample in Spain was recruited from the Paediatric Psychology Unit at the Clinical Hospital “Virgen de la Arrixaca”, meeting the same inclusion criteria ($N= 49$).

Protective factors at chosen orphanage

Further descriptions of the selected orphanage conditions are considered necessary, due to their large influence on minors' performance. Unlike general information collected from care centres or orphanages in developing countries such as Nepal, which includes negligence, stimulation deprivation or even physical maltreatment, the global context offered by this particular institution involves both the basic and psychosocial needs of the ten boys and girls living together. The house resources fully cover food, hygiene and school-related issues, bearing in mind the general conditions in Nepal. Moreover, on a daily basis, the social worker in charge usually contemplates other significant needs such as participation in sports or social groups, leisure or cultural activities. Revising data from international organizations such as UNICEF, we find several differences in our case, with a mix of positive factors within this orphanage: a low and stable number of children, the same caregivers over the years who behave more as family members than as workers, basic needs covered (some children living with their families in Nepal can struggle to obtain daily nourishment) and psychosocial needs taken into account.

Screening instrument

To evaluate posttraumatic stress symptomatology among our full sample we used

the Child PTSD Symptom Scale (CPSS; Foa et al., 2001) in its original English version for Nepalese children, and the Spanish version in Spain. This instrument is designed for children and adolescents aged between 8 and 18 years old, with a specific background of trauma and which requires finding a certain event to be described and timed. It includes 24 items, with a four point Likert-type scale focussing on frequency of appearance, corresponding to DSM-5 criteria for PTSD diagnosis. Thus we find four subscales matching the four symptom groups: Intrusive thoughts (items 1-5), Avoidance (items 6-7), Affective or cognitive alteration (items 8-12) and Arousal (items 13-17). These symptoms have to cause functional impairment in at least one area, with the last 7 items related to different personal contexts where this symptomatology can be present or not, with a dichotomous answer (items 18-24). This scale has adequate psychometric properties, reaching a .89 coefficient at Cronbach Alpha at the original validation (Foa et al., 2001), and similar results found in further research such as that by Nixon et al. (2013) with a .90 coefficient.

Procedure

Fieldwork was conducted partly in Kathmandu, Nepal, and partly in Murcia, Spain, with screening performed in quiet and predisposed areas, and fully addressed by trained psychologists. All participants were informed about the study's purposes and their legal tutors accepted voluntary conditions and data usage. It was not possible to blind investigators due to the small workgroup available. This research was developed with support and approval from the University of Murcia.

Statistical analysis

For statistical analysis of our data we employed the 19th version of the IBM SPSS Statistics software. We calculated frequency distributions in order to observe the PTSD prevalence in our three subsamples (Nepalese children in care, general population in Nepal and general population in Spain). Through contingency tables we observed the variables association, which allowed hypothesis contrast by Chi-square Test (χ^2). Due to some limitations in our sample size, Fisher's Exact Test was estimated to reveal the significance level of the aforementioned association. Some results also led us to calculate the Phi Coefficient in order to evaluate whether our nominal variables follow a lineal direction and also assess their magnitude.

RESULTS

Frequency distributions: PTSD prevalence for each condition

When analysing our first data we observed large differences between subsamples and so after adapting diagnostic criteria to *under-6-years-old* (alternative criteria). Children in care at the orphanage showed a PTSD prevalence of 11.1% when employing adult criteria (normal DSM-5 criteria as indicated by age) and 22.2% if alternative criteria proposed by Sheeringa et al. was chosen. These results were 46.7% for the Nepalese general population with DSM-5 criteria, and reached 73.3% with alternative criteria. In Spain, we observed lower figures that settled to 6.1% and 14.3% respectively, as shown in table 2.

Table 2. PTSD prevalence by country and diagnostic criteria

	DSM-5 criteria		Alternative criteria	
	N	Prevalence %	N	Prevalence %
General population Spain	3	6.1%	7	14.3%
General population Nepal	14	46.7%	22	73.3%
Children in care Nepal	1	11.1%	2	22.2%

Chi-square Test: hypothesis contrast

These analyses allow evaluating whether observed distribution relates to expected distribution, accepting or rejecting our research hypothesis. The Chi-square test showed no significant association ($\chi^2(1, N= 39)= 3.698; p= .054$) between the tutelage condition (children in care versus the general population in Nepal) and PTSD prevalence when using DSM-5 criteria. However, this result could be influenced by the small sample size, therefore we used the Fisher’s exact test to calculate, which allows us to analyse even with this limitation, but not showing enough significance level ($p= .115$) to accept our first hypothesis (Table 3).

Table 3. Chi-square test for analysing PTSD in Nepal by DSM-5 diagnostic criteria

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	3.698	1	.054		
Continuity Correction	2.348	1	.125		
Likelihood Ratio	4.235	1	.040		
Fisher’s Exact Test				.115	.058
Linear-by-linear Association	3.603	1	.058		
N of Valid Cases	39				

On the other hand, when analysing prevalence by alternative criteria, the Chi-square test showed a significant association between these variables ($\chi^2(1, N= 39) = 7.641; p = .006$), being supported by Fisher’s exact test ($p= .015$) (Table 4).The significant association showed moderate magnitude and an inverse direction within variables according to Phi coefficient ($r\phi = -.443; p = .006$) in table 5.

Table 4. Chi-square test for analysing PTSD in Nepal by alternative diagnostic criteria

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	7.641	1	.006		
Continuity Correction	5.634	1	.018		
Likelihood Ratio	7.640	1	.006		
Fisher’s Exact Test				.015	.009
Linear-by-linear Association	7.445	1	.006		
N of Valid Cases	39				

Table 5. Phi Coefficient analysis for PTSD in Nepal by alternative diagnostic criteria

	Value	Aprox. Sig.
Nominal by	Phi	-.443
	Cramer’s V	.443
N of Valid Cases	39	

As for comparison among countries, the Chi-square test pointed to a very high association between factors ($\chi^2(1, N=79) = 18.112; p = .000$) employing DSM-5 criteria (Table 6), as well as that shown by Phi coefficient ($r\phi= .479; p = .000$), which also proved a direct relationship between country of origin and PTSD prevalence (Table 7).

Table 6. Chi-square test for analysing PTSD by country of origin with DSM-5 diagnostic criteria

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	18.112	1	.000		
Continuity Correction	15.791	1	.010		
Likelihood Ratio	18.252	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-linear Association	17.883	1	.000		
N of Valid Cases	79				

Table 7. Phi Coefficient analysis for PTSD by country of origin with DSM-5 diagnostic criteria

	Value	Aprox. Sig.
Nominal by	Phi	.479
	Cramer's V	.479
N of Valid Cases	79	

These data reached higher significance levels with alternative criteria, either with Chi-square analysis ($\chi^2(1, N=79) = 27.924; p = .000$) in table 8, or Phi coefficient ($\varphi = .595; p = .000$) (Table 9).

Table 8. Chi-square test for analysing PTSD by country of origin with alternative diagnostic criteria

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	27.924	1	.000		
Continuity Correction	25.441	1	.010		
Likelihood Ratio	28.881	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-linear Association	27.571	1	.000		
N of Valid Cases	79				

Table 9. Phi Coefficient analysis for PTSD by country of origin with alternative diagnostic criteria

	Value	Aprox. Sig.
Nominal by	Phi	.595
	Cramer's V	.595
N of Valid Cases	79	

Qualitative analysis: traumatic event description

As previously mentioned, the scale used also has a qualitative item about the traumatic event, offering a brief description of its nature. Due to the relevant information within this question, we decided to analyse its content and establish prevalence on the type of experience described by minors. As shown in Table 10, the most common answers were physical injury and the 2015 earthquake.

Table 10. Frequency of traumatic event selection at the CPSS scale

CPSS chosen event	General population Nepal		Children in care Nepal	
	N	%	N	%
Incident with an animal	3	10%	-	-
Physical injury	9	30%	1	11.11%
2015 earthquake	9	30%	1	11.11%
Terror	2	6.66%	-	-
Nightmare	1	3.33%	-	-
Death of a parent	1	3.33%	1	11.11%
Drowning	1	3.33%	-	-
Witness of an accident	2	6.66%	-	-
Loss of a family member	1	3.33%	1	11.11%
Physical violence	1	3.33%	3	33.33%
No identified event	-	-	2	22.22%

DISCUSSION AND CONCLUSIONS

We conclude with the positive effect of the protection factors at the chosen orphanage, directly influencing the psychological well-being and resilient development of the minors involved, compared with children and adolescents from the same school in a family context, due to the potential psychosocial risk. On the other hand, we can conclude with statistical support that the country of origin may provide a buffer to development of PTSD symptomatology, understanding that the occidental socio-cultural environment such as Spain is generally less exposed to trauma. Finally, our research upholds the adaptation of diagnostic criteria for minors even over six years old, considering sensitive criteria as more suitable than adult perspective that would permit a larger awareness about PTSD symptomatology within this population, and therefore proper psychosocial intervention.

Considering our aim of clarifying the PTSD symptomatology of Nepalese minors with diverse tutelage conditions and potential differences with a Spanish sample, evaluating parallel diagnostic criteria, we observed our results in order to accept or reject our research hypothesis.

We first questioned whether Nepalese children in care would present more posttraumatic stress symptoms due to their background, compared with other minors from the same district in Kathmandu from a family context. In this regard, we found inverse direction to our hypothesis, showing higher prevalence rates in the general Nepalese population, and being statistically significant when using alternative criteria. These results contrast with previous research conducted with other risk groups in Nepal, more specifically with child soldiers. Kohrt et al. (2008) who showed a PTSD prevalence of 55.3% in their risk sample, compared with 20% for the general population, and found similar results in a subsequent study (Kohrt et al., 2016) with 16.2% and 5.9% respectively. Even if children in care and child soldiers cannot be fully compared, we still proposed the same direction due to the trauma context implicit in both risk samples. On the other hand, our results match with the prevalence showed by Chaulagain et al. (2019) that pointed to 10.7%-51% among Nepalese children, although these data should be carefully analyzed due to its variability.

Secondly, we aimed to compare the general population from Nepal and Spain, in order to analyse if the socio-cultural context may have an influence and to what extent, over PTSD symptomatology. As expected, we found higher prevalence of this disorder among Nepalese children, 46.7% versus 6.1% in Spain when using DSM-5 criteria, and 73.3% versus 14.3% respectively when choosing the alternative criteria approach. This quantitative difference proved to be statistically associated with the country of origin, presenting a very significant dependency on the expected direction. Other authors found similar PTSD prevalence within the occidental population, compared to our Spanish sample. Giaconia et al. (1995) showed 6% prevalence among adolescents, and Kessler et al. (1995) also pointed to 10% at this age range.

Regarding our latest research hypothesis, we supported findings by authors adapting PTSD diagnostic criteria for infancy and adolescence, due to the adult criteria's lack of sensitivity for this age group. Our results showed important differences in prevalence data,

observing how these criteria, even if designed for minors under the age of six, are more sensitive for late infancy and adolescence than the traditional adult approach.

We found some limitations in our research, mainly regarding the small sample size when evaluating children in care, and the debatable representativeness of our results, due to the characteristic nature of the chosen orphanage compared to other care institutions in developing countries. Future perspectives should point to the choice of a fully randomized design, with larger samples and a systematic data record that could allow analysis of further aspects of trauma background in each sample.

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