

Validation of the Chilean version of the “Workplace Violence in the Health Sector” questionnaire in the prehospital care setting

Validación de la versión chilena del cuestionario “Workplace Violence in the Health Sector” en la atención prehospitalaria

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Abstract

Introduction: Workplace violence is becoming increasingly frequent in the health sector. Therefore, valid and reliable instruments are required to measure this phenomenon.

Objective: To validate the factor structure of the Spanish version of the “Workplace Violence in the Health Sector” questionnaire in Chilean prehospital care workers.

Material and methods: Quantitative, multivariate study in which the main components of the Spanish version of the questionnaire were analyzed. After being reviewed by experts and conducting a pilot test, 6 questions were eliminated. The adapted version was administered to 74 health professionals (nurses-kinesiologists) and 148 paramedics working in prehospital care. Data were analyzed using descriptive statistics and inferential statistics (chi-square test). The SPSS v15 software was used to perform data analysis and the principal component analysis (PCA).

Results: The questionnaire had a high overall reliability ($\alpha=0.912$). According to the PCA, three factors were identified, namely, physical violence (eigenvalue: 8.3), verbal abuse (eigenvalue: 3.7) and mobbing or workplace harassment (eigenvalue: 3.6), which explain 86% of the variance.

Conclusions: The proposed instrument is valid for measuring workplace violence among health professionals working in prehospital care. Having a validated tool to quantify this phenomenon in the country is a significant contribution since it allows carrying out similar studies in other health areas and, based on the results, work on its prevention and the promotion of healthier work environments.

Keywords: Workplace Violence; Risk Assessment; Validation Studies; Prehospital Emergency Care; Nursing (MeSH).

Resumen

Introducción. La violencia laboral es cada día más frecuente en el sector de la salud. Por ello, se requieren instrumentos válidos y confiables para poder medir este fenómeno.

Objetivo. Validar la estructura factorial de la versión traducida al español del cuestionario “Workplace Violence in the Health Sector” en trabajadores de la atención prehospitalaria de Chile.

Material y métodos. Estudio cuantitativo-multivariado. Se realizó un análisis de componentes principales (ACP) de la versión traducida al español del cuestionario. Luego de ser revisada por expertos y de realizar una prueba piloto, se eliminaron 6 preguntas y la versión adaptada fue aplicada a 74 profesionales sanitarios (enfermeros-kinesiólogos) y 148 técnicos paramédicos que trabajaban en atención prehospitalaria. Para el análisis de los datos se aplicó estadística descriptiva y estadística inferencial (prueba χ^2). El programa SPSS v15 se utilizó para realizar el análisis de los datos y el ACP.

Resultados. El cuestionario tuvo una alta confiabilidad total ($\alpha=0.912$). De acuerdo con el ACP se evidenciaron tres factores —violencia física (valor propio: 8.3), abuso verbal (valor propio 3.7) y mobbing o acoso laboral (valor propio: de 3.6)— que explican el 86% de la varianza. Conclusiones. El instrumento propuesto es válido para medir la violencia laboral en personal de la salud que se desempeña en atención prehospitalaria. Además, contar con una herramienta validada que permita cuantificar este fenómeno en el país es un aporte significativo, pues es posible realizar estudios similares en otras áreas de la salud y, a partir de sus resultados, trabajar en su prevención y en la promoción de ambientes laborales más saludables.

Palabras clave: Violencia laboral; Riesgos laborales; Estudios de validación; Atención Prehospitalaria; Enfermería (DeCS).

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Introduction

According to the World Health Organization (WHO), violence is "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that results in, or has a high likelihood of resulting in, injury, death, psychological harm, maldevelopment, or deprivation."¹ Thousands of people die worldwide as a result of violent acts, but these events also cause physical, psychological, sexual and reproductive problems in the surviving victims. For this reason, it is essential to prevent violence in all environments, including the workplace.² In Chile, violence is the fourth leading cause of death,³ and it is one of the leading causes of death in the world,⁴ which is why this phenomenon is considered a public health concern.⁵

Aggressive behavior in the workplace involves actions, behaviors and incidents indicating an intention to assault, threaten, humiliate or injure another person while they carry their professional activity or as a direct consequence thereof.⁶ This behavior is usually evident through physical and psychological violence; with the former, force is used directly against the other person⁷⁻⁹ and the latter implies repeated, threatening and sustained actions that affect the social, spiritual and mental development of the victim through verbal abuse, mobbing and racial harassment.¹⁰⁻¹⁴ Physical violence also includes sexual harassment, understood as "any unwanted, unreciprocated and unwelcome behavior of a sexual nature that is offensive to the person involved, and causes that person to be threatened, humiliated or embarrassed."¹⁵

For years, health systems were alien to violent acts; however, the situation has changed drastically, and the health sector has been increasingly affected by this phenomenon.¹⁶⁻¹⁹ Emergency and psychiatric units are the intra-hospital areas where the greatest number of violent events occurs,²⁰⁻²³ and the nursing staff is the most affected.²⁴⁻²⁶

Violence in healthcare centers produces a series of harmful effects on the health of workers²⁷⁻²⁹ that may alter the work organization³⁰⁻³² and the provision of health services to users of the system.

In Chile, the Emergency Medical Care System (SAMU by its acronym in Spanish) was created at the end of the twentieth century with the aim of providing emergency health care outside hospitals and facilitate the treatment of patients;³³ nonetheless, few studies have looked into the risks that workers in this system face during prehospital care.^{17,34-36} Violence is one of the psychosocial risks to which workers in health systems are most exposed, and SAMU is not alien to this situation because of the environmental conditions in which care is provided.

According to the interactive model of violence at work by Chappell and Di Martino, on which the present study is based, violence is a multifactorial phenomenon in which variables from the aggressor, the victim and the work environment where violent actions take place interact.^{6,37} In this sense, it is essential to have valid and reliable instruments that allow measuring violence in the workplace in healthcare workers with the least possible bias.

In 2003, WHO, the International Labour Organization, the International Council of Nurses and Public Services International designed the "Workplace Violence in the

Health Sector" questionnaire¹⁵ to obtain information on the level of violence at the work site experienced by health workers in several countries.

Worldwide, this questionnaire¹⁵ has been used to conduct various research works.^{8,9,12,19,20,38,39} However, it has been barely considered in Chile, so the objective of this study was to validate the factor structure of its Spanish version in prehospital care workers in Chile by means of a factor analysis.

Materials and methods

A quantitative-multivariate study was carried out to validate the Spanish version of the "Workplace Violence in the Health Sector" questionnaire,¹⁵ with the authorization of WHO. In this instrument, most responses are presented as nominal and ordinal variables, the latter evaluated by means of Likert scales. The following is the structure of the questionnaire:

- A. Personal and workplace data.
- B. Physical workplace violence.
- C. Psychological workplace violence (emotional abuse).
 - C.I. Verbal abuse.
 - C.II. *Bullying/mobbing*.
 - C.III. Sexual harassment.
 - C.IV. Racial harassment.
- D. Health sector employer.
- E. Opinions on workplace violence.

For the validation of the questionnaire, a first Spanish translation of the original English version was made. This version was translated from Spanish into English by a second translator through back translation. Finally, a native speaker combined and reviewed the original questionnaire with the latest version translated into English to check its accuracy. The Spanish version was submitted for validation by experts (physicians specializing in workplace violence and a psychologist specializing in occupational health) to evaluate its content. It was determined that the instrument could be applied to the target population, after which a pilot test was carried out.

The pilot test was performed in June 2012 with 40 health workers, including health professionals (nurses-kinesiotherapists) and paramedical technicians working in the SAMU of a Chilean region different from the three regions where the adapted version of the questionnaire was finally administered. This process improved the wording of questions related to prehospital care and established that questions PD11, PD13, VA4, BM4, SH4, and RH4 were repetitive and very similar to each other (which led to confusion), so it was decided to eliminate them. Similarly, the average range of response time for the adapted questionnaire was estimated to be 30 to 45 minutes.

The reliability of the instrument following the pilot test was assessed by means of an internal consistency analysis with Cronbach's Alpha, obtaining a value of $\alpha=0.912$ for the total instrument. Moreover, reliability was $\alpha=0.895$, $\alpha=0.864$, $\alpha=0.910$ and $\alpha=0.910$ for the sections and subsections physical violence, verbal abuse, *bullying/mobbing*, and sexual harassment, respectively.

The final version of the questionnaire was administered to 74 health professionals and 148 paramedical technicians working in SAMUs in three regions of

southern Chile at the end of 2012 and early 2013. Samples from health professionals and paramedical technicians were obtained by applying proportional allocation to the populations of these workers in each region. Data analysis was carried out using the statistical software SPSS v15, as well as descriptive and inferential statistics by means of the Chi-square test.

For the multivariate analysis of the questionnaire, a principal component analysis (PCA) was performed using the following items:

- i. Physical violence aggression:* This variable was presented as nominal with yes or no responses. Its results were synthesized in frequency and percentage distribution tables. Responses were categorized hierarchically, taking into account that violence exercised by patients is given less importance than violence exerted by superiors. The response categories were 0: no answer; 1: patient, relatives and public; and 2: boss and/or colleagues.
- ii. Response to violent incident:* The questionnaire has a number of possible responses by the victim regarding the violent incident, which are provided in nominal form with yes or no answers. Their results are summarized in frequency and percentage distribution tables. Responses are categorized ordinally from the simplest to the most complex. Response categories were 0: did nothing, 1: asked the person to stop, 2: told friends or colleagues, 3: reported the incident to a senior or requested help from a union or association, and 4: filed a lawsuit.
- iii. Responses to stressful experiences of violence:* This variable is presented as a Likert scale to determine how the violent event affects the victim. It assesses four possible ways of responding to the aggression—avoiding the incident (e.g. images of the event); avoiding thinking or talking about the episode; being attentive or vigilant; and feeling that everything that is done at work requires more effort than usual (since the incident is reported but the routine remains the same)—with scores from 0 to 4: 0: not affected, 1: somewhat affected, 2: moderately affected, 3: very affected, and 4: extremely affected. The results are presented in frequency and percentage distribution tables for each sub-item. In addition, the variable was recoded in multivariate statistical analysis with the following values: 0: not at all, 1: a little, 2: moderate and 3: very much.

The multivariate analysis of workers' responses to the adapted version of the questionnaire was performed in stages:

- i. Generation of the correlation matrix between variables or items in the scale:* A matrix was designed to analyze the correlation pattern between the variables (Pearson correlation coefficient or Pearson's r) and also to perform a series of statistical tests that indicate whether it is possible to carry out the inferential analysis with the information available through the Kaiser-Meyer-Olkin (KMO) suitability test, in which a value of ≥ 0.6 is advisable, and the Bartlett sphericity test, which tests the null hypothesis that variables are not correlated. A significance level of $< 5\%$ was accepted as valid.

- ii. Factor extraction:* Factor analysis is a statistical technique used to explore whether observed variables can be explained in terms of a much smaller number of variables known as factors. There are several methods to extract the initial factors from the correlation matrix, with the PCA method being most used. The statistical test generates as many factors as variables have been included for the calculation and first yields the factor that explains the greater amount of variance in the correlation matrix and so on. Only factors that have a value > 1 should be incorporated, and each extracted factor will form a certain component.

- iii. Calculation of communalities:* The percentage of variance in which a variable is jointly explained by all components or factors and can be interpreted as the reliability of the indicator was assessed.

- iv. Determination of the number of factors:* The KMO test was used for this study.

- v. Factor rotation:* This stage facilitated the interpretation of the factors, as the sum of the eigenvalues was not affected by the rotation, even though it altered the eigenvalues themselves and the percentage of explained variance. The method used was Varimax, which provided a rotated component matrix that indicated the correlation between each variable and its corresponding factor with values between -1 and 1 .

- vi. Assessment of the statistical adjustment method:* In order to know the quality of the result obtained in the translated version of the questionnaire, the initial Pearson's correlation matrix generated based on the initial variables was compared with the matrix generated with the latent variables. Finally, the resulting factors were interpreted and given a name considering the original variables.

The study took into account the ethical principles for medical research involving human subjects established by the Declaration of Helsinki⁴⁰ and the provisions on health research of the Pan American Health Organization.^{41,42} Likewise, the Ethics Committee of the Araucanía Sur Health Service approved this research through unnumbered minutes of October 22, 2012, as well as the Scientific Ethics Committee of the Concepción Health Service through unnumbered minutes of August 6, 2012, and the Committee of the Faculty of Medicine of the Universidad de Concepción through unnumbered minutes of December 21, 2011. In addition, participants signed an informed consent prior to the administration of the questionnaires.

Results

The average age was 33.6 years in the group of professionals and 36.6 years in the group of technicians; in both groups males predominated (55.40% and 68.90%) and the majority of participants had work experience between 1 and 10 years (66.21% and 57.43%). Table 1 summarizes the bio-socio-demographic and work characteristics of the study participants, as well as the variables related to violence in the workplace analyzed. In turn, Table 2 summarizes the perception of violence in the workplace and their corresponding reports.

Table 1. Bio-socio-demographic and work characteristics and history of violence of medical professionals and paramedical technicians of the Emergency Medical Care System.

Characteristics		Healthcare professionals (n=74)		Paramedical technicians (n=148)	
		Frequency	%	Frequency	%
Sex	Female	33	44.59%	45	30.40%
	Male	41	55.40%	102	68.91%
	No response	0	0	1	0.67%
Age	Average	33.6		36.6	
	Standard deviation	9.864		7.171	
Marital status	Single	38	51.35%	64	43.24%
	Married	22	29.72%	54	36.480%
	Domestic partnership	8	10.81%	14	9.45%
	Widowed	0	0.00%	2	1.35%
	Divorced/Separated	6	8.1%	13	8.78%
	No response	0	0	1	0.67%
Years of work experience	1 to 5 years	24	32.43%	48	32.43%
	6 to 10 years	25	33.78%	37	25.00%
	11 to 20 years	20	27.02%	36	24.32%
	More than 20 years	5	6.75%	26	17.56%
	No response	0	0.00	1	0.67%
Shift work	Yes	74	100%	145	97.97%
Number of co-workers	1 a 5	34	45.94%	73	49.32%
	6 a 15	27	36.48%	56	37.83%
	More than 15	13	17.56%	18	12.16%
	No response	0	0.00	1	0.67%
Concern for violence in the workplace	Not concerned	12	16.21%	24	16.21%
	Concerned	9	12.16%	27	18.24%
	Very concerned	15	20.27%	53	35.81%
	No response	38	51.35%	44	29.72%
Existence of procedures for reporting violence in the workplace	Yes	36	48.64%	78	52.70%
Knowledge of whistleblower procedures *	Yes	30	83.33%	57	73%
Suffered childhood abuse	Yes	10	13.51%	32	21.62%
Type of child abuse †	Physical	2	20.00%	15	46.87%
	Psychological	1	10.00%	6	18.75%
	Physical and psychological	3	30.00%	11	34.37%
	Physical and sexual	2	20.00%	0	0.0%
	All of the above	2	20.00%	0	0.0%
Abused during adulthood	Yes	26	35.13%	39	26.35%
Type of abuse suffered in adulthood ‡	Physical	1	3.84%	5	12.82%
	Psychological	21	80.76%	30	76.92%
	Physical and psychological	4	15.40%	4	10.25%

* The percentages of this variable were obtained from the sample that indicated if there were procedures for reporting violence in the workplace.

† The percentages of this variable were obtained from the sample that indicated if the individual had been abused during childhood.

‡ The percentages of this variable were obtained from the sample that indicated if the individual has been abused during adulthood.

Source: Own elaboration.

Table 2. Perception of violence and violent incident reporting.

Variable	Healthcare professionals (n=74)		Paramedical technicians (n=148)	
	Frequency	%	Frequency	%
Physical violence perception	21	28.37%	37	25.00%
Incident of physical violence reported	6	28.57%	10	27.02%
Verbal abuse perception	38	51.35%	77	52.02%
Verbal abuse incident reported	5	13.15%	2	2.59%
Mobbing perception	10	13.51%	26	17.56%
Mobbing incident reported	1	10.00%	2	7.69%
Sexual harassment perception	2	2.70%	4	2.70%
Sexual harassment incident reported	0	0.00%	0	0.00%
Racial harassment perception	2	2.70%	1	0.67%
Racial harassment incident reported	1	50.00%	0	0.00%

Source: Own elaboration.

Health professionals and paramedical technicians acknowledge the existence of whistleblower procedures to report violence in the workplace and state that they know how to use them; however, most assaulted workers do not report incidents.

It should be noted that a considerable number of participants reported having perceived some kind of violence during their professional practice. Verbal abuse is the most frequent (51.35% of professionals and 52.02% of technicians), followed by physical violence (28.37% of professionals and 25% of technicians), mobbing (13.51% of professionals and 17.56% of technicians), sexual harassment (2.70% of professionals and 2.70% of technicians), and racial harassment (2.70% of professionals and 0.67% of technicians), which coincides with previous studies.^{11,43} In addition, 18.91% of par-

ticipants were abused during childhood and 29.27% suffer from abuse in adulthood, which is significant for the perception of violence in the workplace.

KMO test result was 0.907 and Bartlett's sphericity test was significant with a p -value < 0.001 , indicating that the variables are correlated and are not an identity matrix.

Table 3 describes the matrix of factors and shows that only three of them had an eigenvalue > 1 , with physical violence, verbal abuse and *mobbing* being the ones that were retained and explained 86% of the variance. The first component had an eigenvalue of 8.3 and an explained variance of 45.9%. The second component had an eigenvalue of 3.7 and an explained variance of 20.8%. Finally, the third component had an eigenvalue of 3.6 and an explained variance of 19.7%.

Table 3. Total variance explained by the factors extracted in the main component analysis.

Initial eigenvalues			
Variables	Eigenvalue	% of explained variance	cumulative %
CP1	8.3	45.9	45.9
CP2	3.7	20.8	66.6
CP3	3.6	19.7	86.4
CP4	0.4		
CP5	0.4		
CP6	0.3		
CP7	0.3		
CP8	0.2		
CP9	0.2		
CP10	0.1		
CP11	0.1		
CP12	0.1		
CP13	0.1		
CP14	0.1		
CP15	0.1		
CP16	0.1		
CP17	0.0		
CP18	0.0		

Source: Own elaboration.

Table 4 shows the rotated component matrix through Varimax rotation. Component 1 relates mainly to variables associated with *mobbing*, component 2 to variables that explain physical violence, and component 3 to verbal abuse variables, thus giving rise

to latent variables associated with *mobbing*, physical violence, and verbal abuse, respectively. Since communalities are >0.698 , there is a high contribution to the explanation of the variance of the variables under study.

Table 4. Rotated component matrix and communalities.

Variables	Component 1	Component 2	Component 3	Communalities
Physical violence aggression		0.93		0.914
Incident response		0.86		0.742
Discomfort when remembering the incident		0.93		0.917
Discomfort when thinking or talking about the event		0.93		0.913
Discomfort for being attentive or vigilant		0.94		0.913
Discomfort for feeling that everything done at work requires greater effort than usual *		0.92		0.900
Verbal abuse aggression			0.83	0.698
Incident response			0.84	0.747
Discomfort when remembering the incident			0.91	0.867
Discomfort when thinking or talking about the event			0.88	0.842
Discomfort for being attentive or vigilant			0.89	0.832
Discomfort for feeling that everything done at work requires greater effort than usual *			0.90	0.859
Mobbing aggression	0.93			0.890
Incident response	0.90			0.852
Discomfort when remembering the incident	0.94			0.932
Discomfort when thinking or talking about the event	0.94			0.919
Discomfort for being attentive or vigilant	0.92			0.890
Discomfort for feeling that everything done at work requires greater effort than usual *	0.94			0.919

* This perception occurs because, although the incident is reported, the routine remains the same.
Source: Own elaboration.

Discussion

Violence is a multifactorial phenomenon in which several variables determine whether or not an individual perceives an incident as violent.³⁷ In this sense, quantifying and measuring the perception of violence is a great challenge and, therefore, valid and reliable instruments are needed to do so in different settings, including the workplace.

The "Workplace Violence in the Health Sector" questionnaire¹⁵ was designed to obtain information on workplace violence in health systems and based on the results, prevent violent events in this setting; consequently, it

has been used in various research.^{8,12,19,20,25} The reliability of this instrument makes it a useful tool for exploring violence in the health sector. Furthermore, the high level of reliability ($\alpha=0.912$) found in the present study confirms its effectiveness in measuring this phenomenon, which is consistent with other studies that also used this questionnaire.^{7,8,12}

PCA is a multivariate technique used to detect and study structural correlations between variables to reduce their number. While it is true that most of the variables contained in the questionnaire are nominal, the analysis of the ordinal variables generated three main factors that refer to the three most reported types of violence:

verbal abuse, physical violence and *mobbing*, which is similar to other studies conducted in hospital emergency units, psychiatric hospitals, primary health care centers, etc., in different countries.^{7,38,44,45} It is worth noting that in the present study values close to 1 were obtained in the communalities of each item, which would explain the high internal consistency of the instrument.

During the literature search conducted to develop this research, no further validation studies of this questionnaire were found, except for Bordignon *et al.*,⁴⁶ who created a questionnaire in 2015 to assess the face validity of workplace violence suffered or experienced by Brazilian nurses based on the "Workplace Violence in the Health Sector," and La Torre *et al.*,⁷ who validated the Italian version of this same instrument in 2017 in 55 medical doctors, nurses, and nursing trainees.

However, unlike the research by La Torre *et al.*,⁷ in the present study, it was not possible to include the components of sexual and racial harassment due to the low number of workers who reported them. In spite of this, it is worth mentioning that racial harassment in the workplace is on the rise in Chile, that is, situations where workers are humiliated because of their beliefs, ethnicity, or color.⁴⁷

Among the findings, it is noteworthy that, even though institutions have protocols to report acts of abuse and workers are aware of them, most do not follow them and, unfortunately, only a few report these types of situations, which is consistent with the findings of international studies.^{8,9,45,48}

Not reporting workplace violence favors the increase of violence and makes the phenomenon invisible,^{8,10,17,18,29,35,36} which in turn has consequences on the health of workers, such as burnout syndrome, stress, post-traumatic stress, etc.,^{13,14,20} and translates into job dissatisfaction, reduced productivity, increased absenteeism, desertion, and work overload in other workers of the same area to maintain the proper functioning of the system.^{16,30,39}

SAMU workers are highly qualified and specialized in providing prehospital care, making them a valuable human resource that is difficult to replace. In this sense, working environments free from violence should be promoted to guarantee their well-being and thus enable them to provide good health care to the general population.

Although various studies have attempted to validate instruments for measuring workplace violence,^{49,50} the questionnaire used in this research is unique in that it is intended to be administered to healthcare workers, allows measuring five types of violence in its various forms, and gives workers the freedom to express, from their point of view, possible ways to avoid violence in the workplace. For this reason, the "Workplace Violence in the Health Sector" questionnaire¹⁵ is considered a good instrument for measuring violence in health services, especially in the prehospital care sector, as supported by the statistical results of the factor analysis.

Conclusions

The three factors identified through the PCA (physical violence, verbal abuse, and *mobbing*) explain a large percentage of workplace violence to which health workers in prehospital care settings are exposed. It is therefore concluded that the proposed version of the "Workplace

Violence in the Health Sector" questionnaire is a valid and reliable instrument for measuring this phenomenon in health professionals working in prehospital care in Chile since it allows to demonstrate the prevalence of aggressive acts at the workplace.

Likewise, having an instrument to quantify workplace violence in the country is a significant contribution, as it allows carrying out similar studies in other health areas and, based on the results, work to prevent this phenomenon and promote healthier working environments.

In summary, research on occupational health is crucial to make visible the acts of violence that can occur in health workers and thus generate strategies to prevent violent acts in this population and promote working environments that allow for better quality health care.

Conflicts of interest

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To the workers in pre-hospital care services in Chile.

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