



## ORIGINAL ARTICLE

**EDUCATIONAL INTERVENTIONS ON INITIAL HOSPITAL CARE TO  
POLYTRAUMATIZED  
INTERVENÇÕES EDUCATIVAS SOBRE ATENDIMENTO HOSPITALAR INICIAL AO  
POLITRAUMATIZADO**

**INTERVENCIONES EDUCATIVAS SOBRE ATENCIÓN HOSPITALARIA INICIAL AL POLITRAUMATIZADO**

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## ABSTRACT

**Objective:** to compare the effect of two methodologies of educational interventions, on the initial hospital attendance to polytrauma, on adherence to the activities and on the theoretical knowledge of Nursing professionals. **Method:** a quantitative, comparative and descriptive study with technicians and Nursing assistants who participated in theoretical-practical trainings developed from the following methodologies: collective training (CT) and training by work team (TWT). A questionnaire was applied to evaluate the theoretical knowledge of the professionals after each training, comparing the results. Statistically significant p-value <0.05 was considered statistically significant. **Results:** CT 27 (73%) professionals and TWT 32 (86.5%) participated. In the overall evaluation, the average score of professionals, when participating in the TWT (24.2), was statistically higher (p-value: 0.01) than that presented when participating in the CT (17,2). **Conclusion:** TWT allowed better adherence of professionals and promoted a more positive effect in relation to theoretical knowledge on the subject addressed. **Descriptors:** Inservice Training; Nursing Care; Multiple Trauma; Accidents, Traffic; Emergency Nursing.

## RESUMO

**Objetivo:** comparar o efeito de duas metodologias de intervenções educativas, sobre o atendimento hospitalar inicial ao politraumatizado, na adesão às atividades e no conhecimento teórico de profissionais de Enfermagem. **Método:** estudo quantitativo, comparativo e descritivo com técnicos e auxiliares de Enfermagem que participaram de treinamentos teórico-práticos desenvolvidos a partir das seguintes metodologias: treinamento coletivo (TC) e treinamento por equipe de trabalho (TET). Aplicou-se um questionário para avaliar o conhecimento teórico dos profissionais após cada treinamento, comparando-se os resultados. Considerou-se como estatisticamente significativo p-valor <0,05. **Resultados:** participaram do TC 27 (73%) profissionais e do TET 32 (86,5%). Na avaliação global, a média de acertos dos profissionais, ao participarem do TET (24,2), foi estatisticamente maior (p-valor: 0,01) que aquela apresentada quando da participação no TC (17,2). **Conclusão:** o TET possibilitou melhor adesão dos profissionais e promoveu efeito mais positivo em relação ao conhecimento teórico sobre a temática abordada. **Descritores:** Capacitação em Serviço; Cuidados de Enfermagem; Traumatismo Múltiplo; Acidentes de Trânsito; Enfermagem em Emergência.

## RESUMEN

**Objetivo:** comparar el efecto de dos metodologías de intervenciones educativas, sobre la atención hospitalaria inicial al politraumatizado, en la adhesión a las actividades y en el conocimiento teórico de profesionales de Enfermería. **Método:** estudio cuantitativo, comparativo y descriptivo con técnicos y auxiliares de Enfermería que participaron de entrenamientos teórico-prácticos, desarrollados a partir de las siguientes metodologías: entrenamiento colectivo (EC) y entrenamiento por equipo de trabajo (TET). Se aplicó un cuestionario para evaluar el conocimiento teórico de los profesionales después de cada entrenamiento, comparando los resultados. Se consideró como estadísticamente significativo p-valor <0,05. **Resultados:** participaron del EC 27 (73%) profesionales y del TET 32 (86,5%). En la evaluación global, el promedio de aciertos de los profesionales, al participar del TET (24,2), fue estadísticamente mayor (p-valor: 0,01) que aquella presentada cuando la participación en el TC (17,2). **Conclusión:** el TET permitió una mejor adhesión de los profesionales y, promovió un efecto más positivo en relación al conocimiento teórico sobre la temática abordada. **Descriptor:** Capacitación en Servicio; Atención de Enfermería; Traumatismo Múltiple; Accidentes de Tránsito; Enfermería de Urgencia.

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## INTRODUCTION

In the accounting of deaths due to external causes, land transport accidents (LTA) have an important contribution share.<sup>1-2</sup> Nevertheless, the high LTA rates have implications that go beyond the epidemiological context and have negative consequences that extrapolate the field of health, therefore, causes considerable economic-financial expenditure to managers and institutions, reduces the quantity of the economically active population and compromises the quality of life of those who survive.<sup>3-5</sup>

When recognizing the magnitude of the problem, the World Health Organization (WHO) together with the regional commissions of the United Nations (UN) have stated in Resolution 64/255 that the period 2011-2020 is the Decade of Action for Traffic Safety and proposed, as a global goal, the reduction of five million deaths per LTA during the period mentioned, and in order to achieve this, goal, five pillars of interventions were suggested, within which there are different proposals of activities that must develop from the level local level.<sup>6</sup>

In this direction, it is important to point out that the fifth pillar of intervention, specifically, suggests the implementation of actions aimed at improving care in the post-accident victims, both in the prehospital, and in the hospital context.<sup>7</sup> It is worth pointing out also, that when they suffer LTA, many individuals present multiple traumas, which justifies the designation of polytrauma patients, as well as the need for specific and multiprofessional care.

Thus, it is understood that Nursing and health professionals must present knowledge, skills and attitudes essential to promote the maintenance of the life of the public in question and restore the health conditions of individuals as early as possible.<sup>8</sup> In this sense, several technologies help the Nursing team in the offer of intra-hospital assistance to the polytraumatized in a systematic way, providing for patient safety in all cases.<sup>9</sup>

In spite of this, reasons such as overcrowding, non-compliance (or non-compliance) with internal protocols, lack of financial, human and material resources, among others, corroborate that the management of quality of care presents a constant challenge to managers. Nursing of emergency units and hospital emergency.<sup>10-11</sup> Thus, it is inferred that the process of developing systems for standardization and qualification of emergency Nursing care must

go through the permanent education of professionals.<sup>12</sup>

Even if their need and importance are recognized, factors such as high labor demand, low human resources in Nursing, or even demotivation of the team, corroborate that professionals do not participate in educational actions carried out in the work space.<sup>13</sup> For there to be more adherence of professionals, as well as retention of the knowledge transmitted, it is necessary that the nurses continuously seek to improve the methodologies applied in the organization and development of the actions of permanent education.

In view of the above, and following the suggestions of activities proposed by the UN for the Decade of Action for Traffic Safety, this study was developed based on the following question: which methodology of educational interventions, on initial hospital treatment to polytraumatized, promotes more positive results in the Nursing team, regarding the adherence to the activities and the theoretical knowledge of the professionals? It is hypothesized that activities developed through team training, that is, in the place, shift and working hours of each team, with a more restricted number of participants, present better effects both in the professionals' adherence to the activities, and in their theoretical knowledge on the subject.

## OBJECTIVE

- To compare the effect of two methodologies of educational interventions, on initial hospital attendance to polytrauma, on adherence to activities and on the theoretical knowledge of Nursing professionals.

## METHOD

A quantitative, comparative, descriptive, and approach study conducted between 2015 and 2016 in a public university hospital located in the South of Brazil, which has 195 beds and is a regional reference (for 25 municipalities) in high complexity care for victims of trauma.

The participants were technicians and Nursing assistants, who develop their work activities at the hospital's Emergency Room and perform more than 1,700 urgently and emergency care on a monthly basis, at least, half of which is directed, to polytrauma patients who are involved in some kind of ATT. It is also worth noting that the PS of the institution has 43 Nursing professionals with intermediate level (between technicians and auxiliaries), which are distributed in five work

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teams according to work shift (morning, afternoon and three night teams).

The eligibility and selection criteria to participate in the research were: being part of the Nursing team working in the PS; participate in, at least, one of the methodologies of educational intervention; the questionnaire applied. Thus, individuals who did not have an employment relationship with the institution (such as technical trainees, academics and / or Nursing residents) were excluded, as well as those who, during the period of educational development, were on vacation, leave and / or on leave of absence from work.

The educational actions were carried out through training and were part of a project linked to the Program of Development of the University Agent of the institution to which the authors of this study belong. Thus, all professionals participated in both methodologies of educational interventions, except for those who did not fit the inclusion criteria and those who did not adhere to the activities.

The project was conducted in two stages, with different methodologies. In the first stage, a collective training (CT) was promoted as a methodology for the organization and development of educational interventions. Thus, the CT occurred in a classroom located in the institution's educational building (attached to the hospital), was conducted by all the supervising nurses working in the hospital's PS for two non-consecutive days in the month of October 2015, and lasting for one hour each day.

In the second the organization of training by work team (TWT) was the methodology used to develop the educational interventions. The TWT was performed one year after the CT, in the participants' own work unit and by the respective Nursing supervisors of each team (the same ones who performed the CT). In addition, it is noteworthy that TWT occurred in five moments - one for each work team, according to the professionals' work shift (morning, afternoon and three night teams) - and each moment had a duration of thirty minutes.

In both ct and TwT, educational interventions were performed by replicating theoretical-practical trainings, exposing the content in an expository and dialogued manner, and using the same resources (realistic simulation doll, audiovisual equipment, posters and folders).

Therefore, the educational interventions differed with respect to the organizational

methodology, and in the CT the training ran together with all the professionals of the HP. In TWT, the trainings were developed with each work team separately, that is, each professional participated with their respective team and, no longer together with all the Nursing professionals of the PS, as occurred in TC.

The activities were carried out following a script previously established by the instructors, based on the ATLS (Advanced Trauma Life Support) 14 protocol and the ATCN (Advanced Trauma Care for Nurses®) 15 manual and related aspects to the initial hospital service to polytraumatized, with content aimed at the health care of both adult and pediatric patients.

The data were collected at the end of training, applying a structured questionnaire and constituted by two parts, with the first part returning to the characterization. In the second part of the instrument there were 15 questions on initial hospital care for polytrauma patients (Table 1), according to what was addressed in the educational interventions, in order to identify the theoretical knowledge of the professionals.

The questions were presented in the form of clinical cases, with multiple choice answers and a single correct alternative in each case. When completing the questionnaire, the professionals did not use any reference material and the same instrument was applied in the CT and TWT. However, in order for this not to be perceived by the participants, the positions of the clinical cases presented in the second stage educational actions (TWT) were altered.

Clinical Case (C)	Subject
C1	Follow-up sequence of advanced life support in trauma
C2	Airway protection
C3	Venous access in the pediatric patient
C4	Immobilization of the pregnant woman victim of an accident by land transport
C5	Glasgow Coma Scale
C6	Stabilization of the pelvis of the elderly with trauma in lower limbs
C7	Clinical signs suggestive of cranial base trauma
C8	Neurological evaluation of polytraumatized adult patients
C9	Nursing care for traumatic brain injury victims
C10	Identification of signs and symptoms of hypovolemic shock
C11	Materials and methods for fracture immobilization
C12	Nursing care for polytraumatized patients with hypovolemic shock
C13	Signs of impairment of the airways
C14	Nursing care for prevention of hypothermia in the polytraumatized patient
C15	Nursing care for the victim of a fire

Figure 1. Subjects covered in clinical cases. Cascavel (PR), Brazil, 2016.

The variables of the first part were subjected to descriptive statistical analysis, and the categorical data are presented by the absolute and relative frequencies and the continuous data, by the median and amplitude, since the distribution of these was not normal.

As for the evaluation of the effectiveness of each strategy of organization of educational actions in the theoretical knowledge of the participants, initially, the number of professionals who matched each clinical case was calculated, comparing, by the chi-square test, the proportions of participants with correct answers on CT and TWT.

In the sequence, the total number of cases with correct answers was determined and the general average of participants' answers was evaluated comparatively. After checking the assumptions of normality (applying the Shapiro-Wilk test) and homoscedasticity (by Test F), it was decided to perform the comparison between means by the non-parametric Mann-Whitney-U test.

By completing the Microsoft Excel® spreadsheet tab, version 2010, the data was exported to the statistical package R16 for the analysis. Comparative evaluations with a p-value score of less than 0.05 were considered to present significant differences.

All stages of the study were developed respecting the ethical and legal considerations in force in Brazil, specially recommended by the National Health Council through Resolution 466/2012, and the project of this research was submitted to the Ethics

Committee of the institution to which the researchers are bound, which issued an opinion favorable to its execution under the number of the Certificate of Presentation for Ethical Assessment - CAAE 46184315.3.0000.0107.

## RESULTS

Of the 43 technicians and Nursing assistants working in the PS of the university hospital, six (14%) met the exclusion criteria. Among the other 37 professionals, 27 (73%) participated in the CT, and 10 (27%) did not adhere to it. TWT had 32 professionals (86.5%), five (13.5%) (one in each shift) did not join the training, because they could not stop the assistance they were providing. In the inferential statistical analysis, no significant difference (p-value: 0.51) was observed between CT and TET adherence.

Regarding the theoretical knowledge of the professionals, it was verified that, of the 15 clinical cases applied in four (26.7%), the proportion of professionals who indicated the correct answers was significantly higher when they participated in the TWT ( $p < 0.05$ ), as can be seen in table 1.

Table1. Distribution of the frequency of professionals who answered each clinical case. Cascavel (PR), Brazil, 2016.

Clinical case	TC (N = 27) n (%)	TET (N = 32) n (%)	p-value*
C1	26 (96.3)	32 (100.0)	0.79
C2	26 (96.3)	31 (96.9)	0.96
C3	26 (96.3)	24 (75.0)	0.10
C4	19 (70.4)	25 (78.1)	0.52
C5	9 (33.3)	11 (34.4)	0.90
C6	21 (77.8)	30 (93.8)	0.22
C7	24 (88.9)	29 (90.6)	0.90
C8	6 (22.2)	21 (65.6)	<0.001
C9	13 (48.1)	27 (84.4)	0.001
C10	16 (59.3)	25 (78.1)	0.11
C11	5 (18.5)	11 (34.4)	0.02
C12	18 (66.7)	21 (65.6)	0.92
C13	1 (3.7)	21 (65.6)	<0.001
C14	25 (92.6)	25 (78.1)	0.26
C14	23 (85.2)	30 (93.8)	0.55

\* Chi-square test for k proportions. TC: Collective Training; TET: Team Training.

In the overall evaluation, the average score of the professionals who performed the TWT (24.2) was statistically higher than that

presented when participating in the CT (17.2), as shown in figure 2.

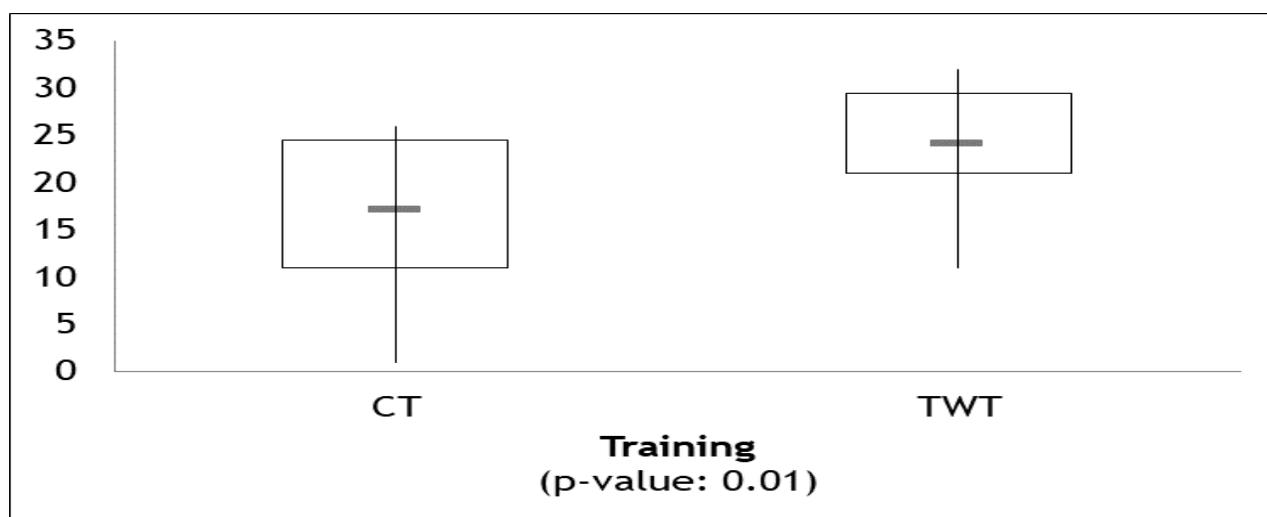


Figure 2. Box-plot of the total hits, according to the training. Cascavel (PR), Brazil, 2016.

CT: Collective Training; TWT: Team Work Training.

## DISCUSSION

When analyzing the results of this study with respect to its initial objective, which was to compare the adherence of the professionals to the training according to the applied organization methodology, it was verified that, even in the face of statistical indifference (p-value: 0.51), the data show that the strategy of carrying out the educational interventions with TWT resulted in a greater adherence among the participants than at the time of CT (n = 32, 86.5% and 27%, 73% respectively).

In concluding a review of the literature, a researcher at the Nursing Department of the Federal University of Maranhão, ratified that developing a participatory planning, in which all the team contributes with fruitful suggestions and presents its demands, can also favor the adhesion of the professionals to the educational actions proposed by the Nursing management.<sup>12</sup>

In addition, it should be noted that among the professional competencies of nurses who work in emergencies, they are able to listen, to be flexible, to present reliability / credibility to the staff and to develop negotiating potential.<sup>17</sup>

Thus, it is inferred that the practice of such skills, coupled with participatory planning, may have some influence on the adherence of professionals to the activities organized in the TWT (each nurse developed her competence in communication and dialogue and, within the team's work schedule, the technicians and Nursing assistants verified the best moment for the educational interventions to be developed).

In addition, it is necessary to reaffirm that each team had the opportunity to participate in activities conducted exclusively by their respective supervisors, who are the nurses with whom they already have a considerable degree of affinity and commitment to work together for a long time and by which

technicians and auxiliaries have respect and trust.

Following the provisions, when evaluating the effect of each strategy of organization of educational activities, on the theoretical knowledge of the professionals on the subject, it was verified, both by the number of participants who matched the clinical cases (Table 1), and by the global average of (Figure 1), that TWT presented more positive results.

However, the time elapsed between the CT and the TWT (one year) corroborates that it is not possible to make judgments with too much delight on these results, since it was not identified, for example, if the professionals participated in another training on the subject after the TC and before TET. Likewise, the time of professional performance (especially in emergency and emergency services) may also present as a confounding variable when evaluating the study and its results.

Another aspect that can have influence is the time of professional practice itself. With an additional year of work experience (when TWT is performed), it is expected that the technicians and Nursing assistants of the PS have the clinical reasoning and critical thinking about the initial hospital care to the more developed polytrauma patient, especially, if it is considered that the hospital in which they work is a reference in the care of patients with such care needs.

Despite the existence of variables with potential bias and the limitations of this study, only in C3, C12 and C13, whose cases addressed issues related to venous access in the pediatric patient, Nursing care to polytrauma in hypovolemic shock, and Nursing care for Hypothermia prevention in the polytraumatized patient, respectively, it was found that CT was more effective in the theoretical knowledge of Nursing technicians and auxiliaries, considering that there was a greater proportional number of professionals who responded correctly to these cases (Table 1).

Particularly in situations where emergency Nursing care involves the pediatric public among trauma victims, the team requires not only emotional control, family and patient support, but also specific knowledge to develop equally specific techniques and care, so that professionals always seek to maintain efficiency and effectiveness in service.<sup>18</sup>

Another aspect that should be considered, when in-hospital emergency care for the polytraumatized patient is related to the knowledge about how to initiate proper care.<sup>10</sup> This research identified that the professionals present good knowledge about

the initial care as recommended by ATLS<sup>14</sup> and by the ATCN.<sup>15</sup>

Knowing the profile of the assisted clientele proves to be fundamental, since from this it is possible to direct care and, thus, improve the outcomes of care. In a study carried out in a Clinical Hospital of the University of São Paulo, which involved a retrospective analysis of the medical records of polytraumatized patients, it was found that LTA represented more than 60% of the cases treated. In this hospital, head trauma was the most frequent trauma (79.3% of cases).<sup>19</sup>

In the region where this research was carried out, there were no publications that present the profile of polytraumatized patients, however, in a study of the spatial and environmental type, it was verified that the region presents a high LTA index in which frontal and / or lateral collisions occur, which contribute strongly to the occurrence of cranioencephalic trauma.<sup>3</sup> With this, it is reasonable to infer that TBI is also among the most prevalent traumatic lesions in the region.

As shown in Table 1, it was because of the participation in the TWT that there was a greater proportion of participants with correct answers in the clinical case related to the neurological evaluation of the polytraumatized adult patient (C8). In Switzerland, researchers identified that polytrauma patients with TBI had a statistically higher percentage of death compared to those in whom no such trauma was observed. Thus, in order to identify the possible consequences of TBI, knowing how to perform a neurological evaluation with the utmost accuracy is essential.<sup>20</sup>

In the context of this discussion, it is necessary to remember that in 80% of the situations, a greater proportion of participants were found who adjusted the clinical cases after the educational interventions were developed through the TWT. Of the 12 cases that fit the described situation, in four the difference was significant ( $<0.05$ ) and, in two of these four cases, the statistical level of the difference was even more significant ( $<0.001$ ) (Table 1). Moreover, Figure 1 reinforces the understanding that, to develop educational interventions from TWT, the activities had more positive impacts on the theoretical knowledge of Nursing technicians and auxiliaries.

Other studies confirm that, in fact, developing educational activities about polytraumatized patient care can have positive effects on the theoretical knowledge of Nursing personnel.<sup>10-11, 21-22</sup>

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Nonetheless, scientific literature (especially national) that evaluates different methodologies of educational activities in the knowledge of Nursing technicians and assistants, on the central theme presented in this study, is expressively incipient.

Given that three years to the end of the period that has been announced by the WHO and the United Nations as the Decade of Action for Traffic Safety, it is suggested that further investigations be carried out both to confirm (or not) the results found here, as well as to present to the scientific community and society in general the efforts being made by local, national and / or international institutions regarding the promotion of actions that can improve the outcomes of patients affected by LTA, when it can not be avoided this type of occurrence.

Finally, it should be noted that in addition to those already mentioned in the text, this study has as limitation the fact that it reports data from a single center, with participants from a single hospital unit, and with a n that may be considered reasonable, not robust.

## CONCLUSION

The development of this study made it possible to compare the effect of two methodologies of educational interventions, developed together with the technical and auxiliary Nursing professionals who work in the PS of a university hospital. Thus, based on the research data, it is possible to conclude that there was better adherence of the professionals to the educational interventions developed from the TET, which also promoted a more positive effect in relation to the theoretical knowledge of the professionals on the subject matter.

## FUNDING

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