57 - RELATION BETWEEN INJURY SEVERITY AND THE USE OF PERSONAL PROTECTION EQUIPMENT ON TRAFFIC ACCIDENT VICTIMS IN THE CITY OF NATAL/RN

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INTRODUCTION

On a worldwide level, the increase in the number of vehicles has made life difficult in the large cities and contributed to a rising morbidity and mortality rates. Furthermore, the disrespect to traffic laws and a lack of vehicle maintenance and monitoring cause an ever increasing amount of traffic accidents (TA's), sound and atmospheric pollution and traffic jams. All of this has contributed to making drivers more aggressive and to a decrease in urban citizens' quality of life, consequently making people more vulnerable to TA's (SANTOS, RAIA JÚNIOR, 2006).

The victims, once affected by TA's, suffer trauma, resulting on severe injuries causing death or reversible or irreversible handicaps. Furthermore, the accidents are one of the main sources of lost potential years of life and temporary or permanent disabilities (RIBAS FILHO et al., 2002).

It is, however, important to stress that TA's are preventable in 100% of its occurrences, most of the time, result of imprudence and negligence by users, drivers, and pedestrians. Other factors that contribute to these events relate to laws and security regulations, precarious conservation of roads; to the long time usage time of the running vehicles and their inadequate maintenance as well as human mistakes, among others (SANTOS, RAIA JÚNIOR, 2006).

The analysis of risk factors reveals that some situational variables influence these events' occurrence: day of the week, time of the day and the presence of passengers. Studies show a significantly higher rate of accidents on weekends (DOHERTY, ANDREY, MCGREGOR, 1998).

Other studies suggest the presence of passengers constitutes a risk factor depending on the age and gender of the accompanying person (ARNETT, OFFER, FINE, 1997). The authors stress that young people drive in a riskier manner when passengers are their friends and in a more prudent manner when passengers are their parents.

Facing this context of gradual increase in the amount of TA's, their victims and resulting consequences, as well as the lack of specific works that report the reality of TA's in Natal we ask: who are these TA victims attended to in an emergency service in Natal/RN? What's the relation between the use of personal protective equipments (PPE) and the severity of injuries sustained by these victims? And what body areas are most affected, in relation to the type of public road user?

In order to answer our questions, we constructed an objective as follows: to characterize victims of TA's regarding gender, age group, use of PPE and its relation with the severity of injuries; to identify injuries by body areas, in relation to the type of public road user?

MATERIAL AND METHOD

The study was exploratory-descriptive, quantitative, with prospective data, performed on the Monsenhor Walfredo Gurgel (HMWG) hospital complex, in the months of November and December 2007 and January 2008. The determination of sample size considered a 4% margin of error. This calculation was made based on the hospital's monthly census, which amounted on 2006 to 7,190 victims, resulting on an estimated sample of 574 victims.

The participants were patients who were victims of TA's, aged 18 or older who accepted to take part in the study, admitted up to 72 hours after the event's occurrence, under the condition that they were previously evaluated by a doctor, and in case of coma/impossibility of verbal communication, that they had a present companion.

We have used a three-part instrument for data collection: first, with closed questions, related to the characterization of victims, containing social-demographic information; the second comprised of data related to TA's and the third with data on injury and trauma severity evaluation through the Glasgow Coma Scale (GCSI), Abbreviated Injury Scale (AIS) and Injury Severity Score (ISS).

We stress that we took all required legal steps to perform a research on human beings according to resolution 196/96 of Conselho Nacional de Saúde (BRASIL, 2000), which also includes the approval by Comutê de Ética em Pesquisa (CEP), under report 246/2007. After these steps, we pre-tested the instrument on 10% of the population.

Soon afterwards, we began collecting data according to previously set criteria. If verbal communication with the patient was impossible due to coma or any other situation, we tried to contact a companion who could legally answer on the patient's behalf, requesting permission to collect the victim's data. Given acquiescence, we requested that they would read and sign a term of free and clear consent (TCLE). For the conscious patients who had immobilized upper limbs or were illiterate, as well as for companions unable to sign the TCLE due to the same situation, we took fingerprints.

Following this sequence, we at first consulted the report filling the social-demographic characterization data as well as those related to the accident. Afterwards, we performed the interview filling in the information not present in the report as well as the cephalic-caudal physical exam. In this moment, we evaluated the level of consciousness through GCSI, the amount of injuries by body area through AIS and severity through ISS, recording the data and adding up the results in order to calculate the trauma's severity degree.

After collection, the data were categorized and processed electronically through Excel 2007 and Statistica 6.0 softwares, analyzed through descriptive statistics.

RESULTS AND DISCUSSION

Among 605 TA victims, 501 (82.8%) were male and 104 (17.2% female. According to Andrade e Mello Jorge (2000), the predominance of male gender is strongly characteristic of this type of event, signaling once more the fact of men's greater exposure, as well as this group's more aggressive behavior in traffic.

Regarding age group, the study reveals 229 (37.9%) individuals were aged between 19 and 24, followed by the group aged 25 to 31 with 159 (26.3%) and the group aged between 32 and 38, 86 (14.2%), totaling 78.4% young individuals aged between 18 and 38. Based on this data, we notice that, since the victims are so young, in their most productive age, family income can be compromised

in some cases. This often does happen, since many of these individuals ceases working temporarily or permanently, due to consequences of their injuries, lowering quality of life for both the patient and his family and contributing to a diminishment on future workforce (RIBAS FILHE et al., 2002; OLIVEIRA, SOUSA, 2003).

TABLE 1 - Distribution of traffic accident victims according to the use of personal protection equipment (PPE) and the Glasgow Coma Scale (GCSI). HMWG NATAL/RN, 2008.

GSCI	Use of PPE			
	YES		NO	
	N	%	N	%
3 I-I 8	3	0,9	22	7,8
9 I-I 12	5	1,6	26	9,2
13 I-I 15	315	97,5	234	82,9
Total	**323**	**100,0**	**282**	**100,0**

On an analysis of Table 1, we observe that from the total of 605 individuals, 323 (53.4%) used PPE, with the helmet being used 229 times (49.4%) and the seatbelt 24 (4.0%) while 282 did not use PPE. Among these, 22 (7.8%) presented GSCI scores between 3 and 8, being considered severe, and 26 (9.2%) between 9 and 12 (moderate). By comparison, among the 323 who used PPE, only 3 (0.9%) had GSCI scores between 3 and 8 (severe) and 5 (1.6%) between 9 and 12 (moderate). From these results we understand the importance of PPEs in order to minimize injury severity, especially the helmet for motorcycle drivers and the seatbelt for automobile drivers and passengers.

According to the Brazilian traffic law, article #65, the use of seatbelt for driver and passengers on all roads in the national territory is mandatory, except for situations ruled by CONTRAN (BRASIL, 1997). Regarding the helmet, resolution #203 from September 2006 makes this equipment mandatory for drivers and passengers of motorcycles and similar vehicles for circulation on public roads (BRASIL, 2006).

TABLE 2 - Distribution of traffic accident victims according to type of public Road user and injuries by body region. HMWG NATAL/RN, 2007.

Type of public road user	Lesões por Regiões Corpóreas													
	Head/Neck		Face		Torso		Abdomen/ Pelvic Contents		Limbs/ Pelvic Waist		Outer Surface		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Pedestrian (V01-V09)	58	10,0	2	3,9	1	4,5	6	19,4	33	8,9	42	7,1	142	8,6
Autom. passenger (V49.1 and V49.5)	46	7,9	9	17,6	5	22,7	4	12,9	16	4,3	32	5,4	112	6,8
Motorc.passenger (V29.1 and V29.5)	94	16,2	8	15,7	3	13,6	4	12,9	78	21,0	91	15,4	278	16,9
Bicyclist (V10 –V19)	23	4,0	5	9,8	0	0,0	1	3,2	11	3,0	21	3,6	61	3,7
Automobile driver (V40-V49)	30	5,2	0	0,0	9	40,9	6	19,4	14	3,8	19	3,2	78	4,7
Motorcycle driver (V20-V29)	311	53,6	26	51,0	4	18,2	10	32,3	213	57,4	375	63,6	939	57,1
Other (V30-V39; V50-V87)	18	3,1	1	2,0	0	0,0	0	0,0	6	1,6	10	1,7	35	2,1
Total	580	100,0	51	100,0	22	100,0	31	100,0	371	100,0	590	100,0	1645	100,0

Table 2 shows us a total of 1645 anatomic injuries were sustained by the 605 analyzed TA victims, generating an average of 2.7 injuries per victim. From this total, 590 (35.9%) were sustained in the outer surface area, in practically all types of victim. The motorcycle driver was the type of victim who suffered the most injuries, 939 (57.1%), in practically all body segments. According to Oliveira and Sousa (2003), trauma which affects the head is one of the greatest causes of morbidity and mortality across the world.

CONCLUSION

Among 605 identified victims of TAs, 82.8% were male and 17.2% female; 37.9% were aged 18 to 24, followed by the group aged 25 to 31 with 26.3% and the group aged 32 to 38 (14.2%), totaling 78.4% of young individuals aged 18 to 38.

As for the relation between the use of PPE and injury severity we observed 53.4% of the victims used PPE, with the helmet being used on 49.4% of the cases and the seatbelt on 4.0%, while 282 victims did not use PPE. From this population, 7.8% of the victims presented GCSI scores between 3 and 8 (severe) and 9.2%, between 9 and 12 (moderate). By comparison, among those who used PPE, only 0.9% had GCSI scores between 3 and 8 (severe) and 1.6% between 9 and 12 (moderate).

As for injuries related to body region and public road user, we identified a total of 1645 anatomic injuries were sustained by the 605 analyzed TA victims, generating an average of 2.7 injuries per victim. From this total, 35.9% happened on the outer surface, the region most affected by injuries, and 35.3% on the head/neck area, on practically all types of victim. The driver was the type of victim who sustained the most injuries, 5.71%, on practically all body segments.

We conclude it's necessary to recognize the importance of the adoption of regulation measures for the use of PPE, the adoption of adequate behavior towards traffic, as well as a monitoring policy towards the following of rules related to traffic.

KEYWORDS: Accidents, Traffic; Protective Devices; Trauma Severity Indices.

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RELATION BETWEEN INJURY SEVERITY AND THE USE OF PERSONAL PROTECTION EQUIPMENT ON TRAFFIC ACCIDENT VICTIMS IN THE CITY OF NATAL/RN

ABSTRACT

Exploratory descriptive study, quantitative with prospective data performed on Monsenhor Walfredo Gurgel hospital complex, in Natal/RN, aiming to characterize the victims involved on traffic accidents according to sex, age group, use of personal protection equipment and its relation with the severity of injuries; to identify the injuries by body region according to the type of public road user. The population consisted of 605 traffic accident victims and the data was collected between November and December 2007 and January 2008. The results show us that 82.8% of victims were male, 37.9% subjects were between 18 and 24 years, and the relationship between the use of PPE and severity of injuries, it was observed that 53.4% victims used PPE, and the helmet was used in 49.4% of cases. This population, 7.8% of the victims had values for ECGl between 3 and 8 points (bass) and 9.2%, between 9 and 12 (moderate). When compared to those who have used PPE, only 0.9% had values for ECGl between 3 and 8 (severe). As for physical injuries by region according to the user of public roads, identified that a total of 1645 anatomical lesions, 35.9% occurred on the external surface, which is the region most affected by injuries, and 35.3% in the region head / neck. The driver of the motorcycle was kind of victim who suffered more injuries, 57.1% in virtually all segments tangible. The results show us that it's necessary to recognize the importance of the adoption of regulation measures for the use of PPE, the adoption of adequate behavior towards traffic, as well as a monitoring policy towards the following of rules related to traffic. KEYWORDS: Accidents, Traffic; Protective Devices; Trauma Severity Indices.

RELATION ENTRE LA GRAVITÉ DES LÉSIONS ET L'UTILISATION D'ÉQUIPEMENTS DE PROTECTION INDIVIDUELLE PAR LES VICTIMES D'ACCIDENTS DE LA CIRCULATION DANS LA VILLE DE NATAL/RN

RÉSUMÉ

Étude exploratoire descriptive, quantitative, aux données prospectives, menée au sein du Centre Hospitalier Monsenhor Walfredo Gurgel de Natal/RN, ayant pour but de caractériser les victimes impliquées dans les accidents de la circulation (AC) quant à leur sexe, âge, utilisation d'équipements de protection individuelle (EPI) et la relation avec la gravité des lésions; identifier les lésions par régions du corps selon le type d'utilisateur de la voie publique. La population compta 605 victimes d'AC et les données furent recueillies entre novembre 2007 et janvier 2008. Les résultats nous montrent que 82,8% des victimes étaient de sexe masculin, 37,9% des sujets avaient entre 18 et 24 ans, et la relation entre l'usage du EPI et de la gravité des blessures, il a été observé que 53,4% EPI utilisés victimes, et le casque a été utilisé dans 49,4% des cas. Cette population, 7,8% des victimes avaient des valeurs pour ECGl entre 3 et 8 points (basse) et de 9,2%, entre 9 et 12 (modéré). Si on les compare à ceux qui ont utilisé les offices de propriété intellectuelle, seulement 0,9% avaient des valeurs pour ECGl entre 3 et 8 (grave). Comme pour les blessures physiques par région, conformément à l'utilisateur de la voie publique, a identifié un total de 1645 lésions anatomiques, 35,9% ont eu lieu sur la surface extérieure, qui est la région la plus touchée par les blessures, et de 35,3% dans la région tête / cou. Le conducteur de la motocyclette a été victime de la nature qui ont subi des blessures plus, 57,1% dans presque tous les segments corporels. Les résultats montrent le besoin d'adopter des mesures visant la diminution de ces accidents, par le biais d'attitudes convenables au moment de conduire, ainsi que d'une politique de fiscalisation du respect du code routier.

MOTS-CLÉS: Accidents de la Circulation; Équipements de Protection; Index de Gravité du Trauma.

LA RELACION ENTRE LA GRAVEDAD DE LAS LESIONES Y LA UTILIZACION DE EQUIPAMIENTOS DE PROTECCION INDIVIDUAL EM VICTIMAS DE ACCIDENTES DE TRANSITO EM LA CIUDAD DE NATAL/RN

RESUMEN

Estúdio exploratório, descriptivo, datos prospectivos realizados en el Complejo Hospitalar Monseñor Walfredo Gurgel, de Natal/RN, caracterizando a las víctimas envueltas en los ATS. Cuanto al sexo, edad, uso de equipamientos de protección individual (EPI) y su relación con la gravedad de las lesiones, identificando las lesiones por regiones corporales según el tipo de usuario de vía pública. La población fue de 605 víctimas de ATS y los datos fueron colectados entre noviembre y diciembre de 2007 y enero de 2008. Resultados nos muestran que el 82,8% de las víctimas eran varones, 37,9% de los sujetos tenían entre 18 y 24 años, y la relación entre el uso de EPI y la gravedad de las lesiones, se observó que 53,4% víctimas del programa ampliado de inmunización utilizado, y el casco se utilizó en el 49,4% de los casos. Esta población, el 7,8% de las víctimas habían ECGl valores de entre 3 y 8 puntos (bajo) y 9,2%, entre 9 y 12 (moderado). En comparación con aquellos que han utilizado las oficinas de propiedad intelectual, sólo el 0,9% tenía valores de ECGl entre 3 y 8 (grave). En cuanto a lesiones físicas por región de acuerdo con el usuario de la vía pública, determinó que un total de 1.645 lesiones anatómicas, 35,9% se produjo en la superficie externa, que es la región más afectada por las lesiones, y 35,3% en la región cabeza / cuello. El conductor de la motocicleta fue víctima de la especie que más sufrieron lesiones, 57,1% en prácticamente todos los segmentos corporales. Los resultados nos muestran que es necesaria la adopción de medidas que miren la disminución de esos eventos, por medio de la adopción de comportamientos adecuados junto al tránsito, bien como de una política de Fiscalización cuanto al cumplimiento de las normas que reglamentan el tránsito.

PALABRAS CLAVE: Accidentes de Tránsito, Equipos de Seguridad, Índices de Gravedad del Trauma.

A RELAÇÃO ENTRE A GRAVIDADE DAS LESÕES E A UTILIZAÇÃO DE EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL EM VÍTIMAS DE ACIDENTES DE TRÂNSITO NA CIDADE DE NATAL/RN

RESUMO

Estudo exploratório descritivo, quantitativo com dados prospectivos realizado no Complexo Hospitalar Monsenhor Walfredo Gurgel, Natal/RN, com o objetivo de caracterizar as vítimas envolvidas nos AT's quanto ao sexo, faixa etária, uso de equipamentos de proteção individual (EPI) e sua relação com a gravidade das lesões; identificar as lesões por regiões corpóreas segundo o tipo de usuário de via pública. A população foi de 605 vítimas de acidentes de trânsito e os dados foram coletados entre novembro e dezembro de 2007 e janeiro de 2008. Os resultados nos mostram que 82,8% das vítimas eram do sexo masculino; 37,9% indivíduos tinham entre 18 e 24 anos; quanto à relação entre o uso de EPI e a gravidade das lesões sofridas, observou-se que 53,4% das vítimas utilizaram EPI, tendo o capacete sido utilizado em 49,4% dos casos. Desta população, 7,8% das vítimas apresentaram valores para a ECGl entre 3 e 8 pontos (grave) e 9,2%, entre 9 e 12 (moderado). Quando comparados àqueles que utilizaram EPI, apenas 0,9% tiveram valores para a ECGl entre 3 e 8 (grave). Quanto às lesões por regiões corpóreas segundo o usuário de via pública, identificou-se que de um total de 1645 lesões anatômicas, 35,9% aconteceram na superfície externa, sendo esta a região mais atingida pelas lesões, e 35,3% na região da cabeça/pescoço. O condutor de motocicleta foi o tipo de vítima que mais sofreu lesões, 57,1%, em praticamente todos os segmentos corpóreos. Concluímos que é necessária a adoção de medidas que visem a diminuição desses eventos, por meio da adoção de comportamentos adequados junto ao trânsito, bem como de uma política de fiscalização quanto ao cumprimento das normas que regulamentam o trânsito.

PALAVRAS-CHAVE: Acidentes de Trânsito; Equipamentos de Proteção; Índices de Gravidade do Trauma.