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HEALTH EDUCATION FOR TRANSIT IN A PEDIATRIC UNIT OF PUBLIC HOSPITAL[1]

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ABSTRACT
This is a quantitative, descriptive study aimed to verify the knowledge of children and adolescents from seven to 14 years of age, admitted to a university hospital in Paraná about safe behavior and traffic education, before and after educational practice. The subjects attended to meetings, where they were presented to a questionnaire for assessing their prior knowledge, participated in the educational practice, and answered the questionnaire to assess the knowledge gained was applied. A total of 41 children and adolescents participated, and the topics covered were transport in motorcycles, usage of the safety device, child's position in the vehicle according to the age, safety equipment for bicycle, attention for crossing streets and meaning of traffic light colors. The results indicate an increase in the level of knowledge after application of educational practice in almost all aspects, except for safety equipment for bicycle use. We conclude that health education for transit is an effective strategy to alert children and adolescents to safe behavior in traffic and that the period of hospitalization can be used for these guidelines, which were well accepted by the children and their families.

Keywords: Health Education. Health promotion. Traffic accidents.

INTRODUCTION

Children and young people, because they are in phase of development and growth, are more prone to injury or fatal complications, located in some parts of their body, when exposed to accidents. In addition to the social, economic and emotional costs, accidents in childhood are not only responsible for many deaths, but also by wounds, nonfatal injuries and sequelae that have great impact on family life and society.

In Brazil, the death rate from traffic accidents is 20 per 100,000 population, which higher rates than Sweden's, Japan's and Canada's, where it ranges from five to eight deaths for every 100,000 inhabitants[1]. These data show that traffic accidents stand out among the external causes of death in Brazil.

Mortality from accidents and violence are formed as the second leading cause of death for the general population and first in children and adolescents from five to 19 years[2]. Therefore, this can be considered an important public health problem, which requires knowledge of such magnitude, characteristics and impact on people's lives[3,4].

Children and adolescents, as humans who are growing and under development, need to explore and experience the environment around them and, in this way, grow normally and enhance their knowledge about the world. To pass through this stage of life without damage, being in good health is necessary for them[5].

Considering the premise discussed above, we understand that one of the aspects of building a healthy life is the safe behavior in traffic. One of the measures already institutionalized in this sense is the Resolution 277/08, which regulates the transport of children inside motor vehicles and provides traffic education activity in order to reduce the number of accidents and deaths caused by them[6].

Moreover, government can invest in the reorganization of traffic in urban areas, planning actions, thus interfering in the way cities are planned and built. In this sense, one of the instruments that can contribute to reducing the risk of traffic accidents is the education of the juvenile population. Health education is a social

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practice that contributes to the development of critical consciousness of people in relation to health problems and encourages the search for solutions and organization for individual and collective action. This practice breaks the paradigm of the static conception of education as being the transfer guidelines, knowledge and skills; it is based on the participation of people aimed at changing situations[7].

Thus, this study aimed to verify the knowledge of children and adolescents, seven to14 incomplete years, hospitalized in a public hospital of Paraná west area, on education and safe behavior in traffic before and after educational practice.

METHODOLOGY

This is a descriptive exploratory study, developed into the Pediatric Ward (GPA) of a public hospital in the city of Cascavel/PR. The unit contains 25 beds available to serve children and adolescents, aged from 29 days to 14 years incomplete. The department has one nurse for each shift.

The present study included children and adolescents aged seven to 14 incomplete years admitted to the unit, who agreed to participate and were accompanied by a family member or guardian. The following were used as exclusion criteria for participation in the study: illiterate; possessing pathologies that interfere in the learning process of educational practice; children or adolescents with a physical impairment that would prevented them from being transferred to the recreation room; and individuals who were affected by infectious diseases that would deprive them from social life.

To start the educational practice, first, there was a survey of patients in the age group studied that met the inclusion criteria mentioned above. After talking with the family or guardian, giving them all the information about the research, we approached the child or adolescent in order to captivate him to participate in educational practice. In cases where there was agreement to participate in research, the Informed Consent Term (IC) was signed by the family and / or guardian.

Data collection was conducted during from November to December 2010 and February 2011, three days per week (Monday, Wednesday and Friday), in the afternoon, through a questionnaire, before the educational practice to transit to review prior knowledge. The same instrument was presented after the educational practice. This assisted questionnaire was answered by children and/or adolescents who participated in educational practice, and those who had difficulty reading and/or writing received support from the researcher who developed the educational practice and collected data.

The questionnaire was developed using subjects related to traffic safety. We opted for short and objective questions that did not exceed the time scheduled for the realization of educational practice and also for better understanding of children and adolescents.

To assist in the educational practice for transit, an album containing safety in traffic related phrases and photographs of equipment such as helmet, gloves, knee, elbow protection and child safety seat was elaborated.

The development of educational practice followed a previously prepared script which consisted of a expository-dialogued presentation of the content prepared for development of this practice, with the aid of a flipchart containing illustration of traffic safety equipment. In addition, we used real examples of safety equipment that should be adopted by children in the car, when transported by motorbike or when riding a bike. Subsequently, we applied an educational software, tailored specifically for this activity, on the computers in the recreation room of the hospital Pediatric Ward. The educational software "Multidisciplinary Learning Game (JAM)" was developed by UNIOESTE Computer Science course team.

During the application of the instrument for data collection, subject's companion (parent and/or guardian) could stay if asked by the child, as long as it did not interfere with the educational practice and when to respond to the questionnaires.

For data analysis, the answers were entered into a database (Microsoft Excel 2000 Spreadsheet file) and these were grouped and counted by frequency and simple percentages.

The analysis was performed using the R Development Core Team (2011) software[8]. For

comparison, Pearson's linear correlation test was used. The level of significance was set at $p \leq 0.05$, considering a confidence interval of 95% for all tests.

The project followed the precepts of CONEP Resolutions #196 of 10/10/96 and #251 of 07/08/97 and was approved by the Standing Committee on Ethics in Research (CEP) of the State University of West Paraná under Statement 205 / 2010.

RESULTS AND DISCUSSION

41 children, aged seven to 14 years of age, admitted into Hospital's Pediatric Ward participated in this educational practice for the transit. According to the characterization of the individuals, 26 (63.4%) boys with an average age of 9 ± 1.6 years and 15 girls (36.6%) with an age of 9.8 ± 1.8 years attended educational practice. Still regarding age, prevailed 15 (36.6%) children between nine and ten years and was bimodal for children from seven to eight years and between 11 and 13 years[8].

A study in a public hospital in Fortaleza / CE demonstrated a predominance of male children and adolescents with traffic accident (73.35%)[9]. Therefore, the largest number of participants in educational practice with male children and adolescent can be explained by the fact that this population is predominant in hospital admissions due to traffic accidents.

Regarding educational level, 18 (43.9%) children were in 4th and 5th grade, 15 (36.6%) on the 2nd and 3rd grade and eight (19.5%) in the 6th and 7th grade, as shown in Table 1.

Table 1 - Distribution of children who participated in the educational practice according to schooling. Cascavel/PR, 2011

SCHOOL GRADE	N	%
2nd & 3rd grades	15	36,6
4th & 5th grades	18	43,9
6th & 7th grades	08	19,5

Source: Research database, 2011.

Regarding age and educational level, according to Article 76 of the New Brazilian Traffic Code, the traffic education should be promoted in pre-school, elementary and secondary education, through planning and coordinated actions between agencies and entities of the National Traffic System and Education, the states, the Federal District and the cities in their respective action areas.

Regarding the answers in questionnaire used to assess the prior and posterior knowledge to the educational practice of children about safe behavior in traffic, on the use of seat belts in the car and helmet on the bike, the 41 children said they should use them. At post-test, there was no change in the responses.

Although children in the study have responded that they must use the seat belt in the car, its use is only allowed when it suits the child – when the children are approximately ten years old. Before that, extra safety equipment that enable the use of the belt should be used, like the child safety seats[10].

The next question's subject was the transport of children under seven years on motorcycles. Nine (22%) children responded as expected and 18 (43.9%) responded that the minimum age is 12 years old. At post-test, 36 (87.8%) children answered the question as expected, two (4.9%) children responded "10 years old" and three (7.3%) answered "12".

It is important to stress that Article 244 of the Brazilian Traffic Code[11] states that transporting a seven-year-old child (or younger) in a motorcycle is a high penalty, punishable by fine and suspension of driving rights.

The study demonstrated that in the previous questionnaire nine children responded that the minimum age for riding on the back of the motorcycle is lower than the allowed. This result can be related to the idea that children and adolescents participating in the study believe that children can be transported by this type of vehicle. After educational practice, 36 children answered the question as expected, demonstrating that it was effective.

As for the safety device to be used by the child when being transported by vehicle, predominant answer was "use of seat belts" with 38 (92.7%) responses; one (2.4%) children responded "use of seatbelts and child safety (*backless booster*) seat", and two (4.9%) use the seat belt and child safety seat. At post-test, 39 (95.1%) children responded using only a seatbelt, one (2.4%) children responded using the seat belt and a backless booster seat and one (2.4%) uses safety belt and child seat. In this

respect, there was demonstration of prior knowledge on the subject with no significant change after the educational practice.

Regarding the position of the child in the vehicle, relating to children's age, 38 (92.7%) responded that children under ten years old should sit in the rear seat of the vehicle. This same response in the post-test was given by 41 (100%) children.

Children and adolescents under ten should be transported with the Child Safety Seat suitable for their age and car seatbelt. Children under one year should be carried in a baby carrier in the back seat, in the center position, with the child on his back to the driver. Children aged one to four years (10 to 18kg) shall be placed in child safety seat in the back seat facing forward in the car. Children aged four to 12 years (18 to 35 kg) should use booster seats with backrest in the rear seat that allow them to use the vehicle seatbelt properly. Children and adolescents over 35 kg can only use the three-point safety belt, but those that do not fit properly should use the backless booster seat[12].

Education is one of the strategies used to promote the child safety seats and their proper use. This strategy has reflected good results when developing systematic, comprehensive and sustained educational practices[12].

As for safety equipment to be used for cycling, no child responded as expected in the previous evaluation. After the educational practice, 27 (65.9%) children responded in accordance with the instructions received.

Article 105 of the Brazilian Traffic Code[11] states that the helmet is not compulsory for cyclists, however, a study shows it can reduce the cases of cranial injuries by 60%[13]. Another precaution to be taken by cyclist is to use knee and elbow pads, besides the mandatory equipment (mirror, bell and 'cat's eye' reflectors)[14].

In this sense, the educational approach to traffic, targeting the use of protective equipment, not only when transported by car or motorcycle, but also when using a bike should be a practice sought by health and education professionals in different spaces: in health clinics, schools, hospitals, educational centers, and others.

To cross the street, 21 (51.2%) children responded as expected, mentioning the care of looking both ways before crossing, crossing only at the crosswalk and crossing only when the light is red for vehicles. At post-test, these precautions were mentioned by 30 (73.2%) children.

Still regarding their pedestrian behavior, 39 (95.1%) children responded that walk on the sidewalk is safer than walk in the street, and 41 (100%) responded that "safe place to play is only in places like parks, patios and squares", with no change in the responses to the previous questionnaire.

Pedestrian traffic accidents are a mark into the age group of three to 12 years[13]. According with this finding, a study conducted in the city of Fortaleza, Ceará, analyzed deaths from traffic accidents involving children and adolescents. This revealed that, of 45 deaths, 64.4% were pedestrian victims[9].

A similar study was conducted in public schools in New Haven, Connecticut, U.S. The authors implemented a program called WalkSafe for pedestrian education with children in public schools in the city. They concluded that the knowledge about pedestrian safety increased after the educational practice[15].

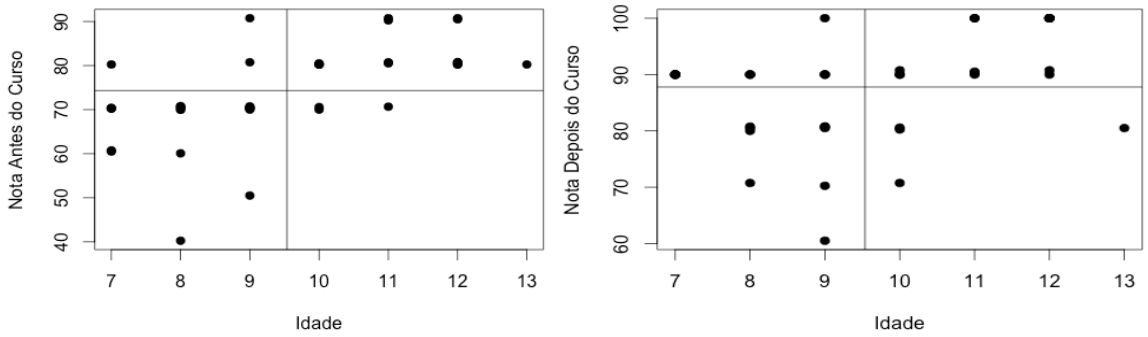
As strategies for education, the guidance on the actions to prevent accidents as pedestrians and also to enable them to move through the streets more safely, the following measures should be taken: crossing the street at the crosswalk, looking to both sides before crossing the street, respecting the traffic signs and pay attention to the parked cars. All these precautions, questioned during educational practice, were answered correctly, in the previous knowledge questionnaire and also in the post practice one.

Another issue was held on the colors of the traffic light and what do each color means: 35 (85.4%) children related the correct answers. After the educational practice, 40 (97.8%) children answered correctly according to the instructions given.

The average scores before the educational practice were 74.3 ± 10.5, and after the educational practice the average increased to 87.8 ± 9.2, showing that there was an increase of knowledge[8].

Considering an alternative hypothesis that the linear correlation is not 0 (H1), i.e., there is

correlation between the variables, the coefficient of Pearson correlation for age before educational practice with the score obtained by the students resulted in 0.604 with P-value less than 0.001 (significant for H1); and for the age regarding the notes after the educational practice, Pearson's coefficient resulted in 0.330 with P-value of 0.035 (significant for H1), as shown in Figure 1[8].



Picture 1 - Dispersion diagrams on the association of age and educational practice notes before (left) and after (right) practice. Paraná, 2011.Source: Research database, 2011.

We used the Spearman test for correlation between age and average scores before and after the educational practice, noting that children in the lowest age group (7 | - 9 years) had a lower average in the assessment of prior knowledge than for other age groups, but had the largest increase in score for the subsequent evaluation educational practice, as shown in Table 2.

Table 2 - Distribution of children according to age and average grade before and after the traffic educational practice. Cascavel/PR 2011

AGE	BEFORE	AFTER	P-VALUE
7 |- 9	66,5 ± 9,6	86,3 ± 6,3	< 0,0001
9 |- 11	73,7 ± 9,0	83,0 ± 10,2	< 0,0004
11|-| 13	82,8 ± 6,0	94,8 ± 6,4	< 0,0002

Source: Research database, 2011.

We observed that the average knowledge of children and adolescents participating in the study increased significantly (from 74.3 to 87.8). The data demonstrate that the educational practice of safe behavior in traffic is an important method for preventing accidents.

Looking at the diagram, it is possible to see that there is a direct positive linear correlation between the variables age and grade obtained by the students before educational practice, as well as a similar direct positive linear correlation for the same variables after the practice. It is possible to infer that the older the students are, the higher the grades score, both before and after the educational practice. We believe that this factor is due to the knowledge that the child already has about the subject, through the media, school and his own experiences.

Corroborating data from this research, a study conducted in São Paulo small cities, which aimed to evaluate the academic performance of 434 students, from 5th to 8th grade, enrolled in public school, showed a progression in improving their understanding when passing the school years[16].

Furthermore, by correlating the age group with the average score on the pretest and posttest, the average is lower among children with the youngest age group (7 | -9 years) with an average of 66.5 compared to other age groups. However, this age group had the highest score from pretest to posttest (66.5 to 86.3). This finding corroborates the study conducted in the city of Miame-Dade County. After applying an educational program for pedestrians, the authors concluded, after review, that children enrolled in kindergarten and first grade had the lowest average score in pretest, and the highest score from pretest to posttest[17]. Thus, in both studies, it is possible to infer that the younger children acquired greater knowledge compared with the older.

FINAL CONSIDERATIONS

Educational health practices should be part of the routine of health professionals, particularly nurses who, when developing prevention, health promotion and recovery activities should include, among educational practices, the safe behavior in traffic theme.

By identifying the knowledge that children have about safe behavior in traffic, it is possible to establish discussions and actions that can modify not only statistic data, but behaviors and points of view, and educational practices can be developed.

We presume that the development of educational practices in the hospital was positive, since the hospitalized children and adolescents have idle time, a period in which health professionals, especially nurses, can use to perform health education activities, including traffic safety, as the external causes have major impact on child morbidity and mortality.

We observed that the experienced reality indicates a small number of nurses working in pediatric wings, which may be a factor to hinder and even prevent the implementation of health education actions in this precious space, with a population receptive to receive this knowledge.

It is estimated that the initiative proposed in this study can be replicated not only in hospitals but also in schools and in Basic Health Centers with children, teens, parents and / or guardians.

EDUCAÇÃO EM SAÚDE PARA O TRÂNSITO EM UMA UNIDADE PEDIÁTRICA DE HOSPITAL PÚBLICO

RESUMO

Trata-se de um estudo quantitativo, descritivo e exploratório que objetivou verificar o conhecimento de crianças e adolescentes, de sete a 14 anos incompletos, internados em um Hospital Universitário do Paraná acerca do comportamento seguro e educação para o trânsito, antes e após prática educativa. Foram realizados encontros nos quais foi aplicado um questionário assistido para avaliação do conhecimento prévio, realizada prática educativa, seguida de aplicação do questionário para avaliação do conhecimento adquirido. Participaram 41 crianças e adolescentes, e os tópicos abordados foram o transporte em motocicletas, uso do dispositivo de segurança, posição da criança no veículo, de acordo com a idade, equipamentos de segurança para a bicicleta, cuidados para atravessar a rua e significado das cores do semáforo. Os resultados indicam que houve elevação no nível de conhecimento após a aplicação da prática educativa em quase todos os aspectos, com exceção dos equipamentos de segurança para uso de bicicleta. Conclui-se que a educação em saúde para o trânsito é uma estratégia efetiva para sensibilizar as crianças e adolescentes ao comportamento seguro no trânsito e que o período de hospitalização pode ser utilizado para estas orientações, que foram bem aceitas pelas crianças e suas famílias.

Palavras-chave: Educação em saúde. Promoção da saúde. Acidentes de trânsito.

EDUCACIÓN EN LA SALUD PARA EL TRÁNSITO EN UNA UNIDAD PEDIÁTRICA DEL HOSPITAL PÚBLICO

RESUMEN

Se trata de un estudio cuantitativo, descriptivo y exploratorio con el objetivo de verificar el conocimiento de niños y adolescentes, de siete a 14 años no cumplidos, internados en un Hospital Universitario de Paraná sobre el comportamiento seguro y la educación para el tránsito antes y después de la práctica educativa. Se realizaron reuniones en las que se administró un cuestionario asistido para la evaluación del conocimiento previo y después de realizar la práctica educativa se aplicó un cuestionario para la evaluación del conocimiento adquirido. Participaron 41 niños y adolescentes, los asuntos tratados fueron: el transporte en motocicletas, la utilización del equipo de seguridad, posición del niño en el vehículo de acuerdo con su edad, equipos de seguridad para la bicicleta, cuidados al cruzar la calle y, significado de los colores del semáforo. Los resultados indican que hubo un aumento en el nivel de conocimiento después de la realización de la práctica educativa en casi todos los aspectos, con excepción de los equipos de seguridad para la utilización de la bicicleta. Se concluye que la educación en la salud para el tránsito es una estrategia efectiva para sensibilizar a los niños y adolescentes para un comportamiento seguro, además el periodo de hospitalización puede ser utilizado para hacer estas orientaciones, que fueron muy bien recibidas por los niños y sus familias.

Palabras clave: Educación en salud. Promoción de la salud. Accidentes de tránsito.

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