Helmet use by drivers and passengers of motorcycles in Pamplona (Spain), 1992

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Abstract. In 1992, a new Traffic Rules Code was enacted in Spain. This Code included a helmet law that came into force in I September 1992. Since then, helmet use has been compulsory for motorcycles in urban areas. Previously, helmet use had been obligatory only for motorcycles on highways. An observational prevalence survey of helmet use was performed in Pamplona (a city of 183,539 inhabitants in the north of Spain) to evaluate driver and passenger compliance with the helmet law. The helmet utilization by motorcycle drivers and their passengers was recorded three months before and after the helmet law took effect. Helmet use increased from 19.7% in the first period to 94,8% in the second period. After the law had taken effect, helmet use was higher among drivers, 97.5%, than among passengers, 77.5%. Passengers used helmets more frequently when the driver was also using helmets. The prevalence ratio of helmet use in those passengers whose driver used a helmet versus those who didn't was 9.91 (95% CI = 1.52, 64.83). Health education and law enforcement efforts should be targeted at drivers to prevent them from giving rides to passengers without helmets.

Keywords: Accidents, Helmet utilization, Motorcycles, Motorcycles legislation , jurisprudence, Helmet, Traffic legislation , law enforcement.

INTRODUCTION

Motorcycles are involved in 10.53 and 8.89% of traffic accidents in Spain [I]. The introduction of helmet laws is a proven intervention for reducing traffic injury and death [2, 3] and medical costs [4]. In those places where helmet laws were removed, fatalities increased [5, 6]. A reenactment of these laws was followed by a decrease in fatalities and head injuries [7]. In 1992, a new Traffic Rules Code was enacted in Spain. This Code included a helmet law that came into force on 1 September 1992. Since then, helmet use has been compulsory for motorcycles in urban areas. Previously, helmet use had been obligatory only for motorcycles on highways.

The police stop drivers and passengers who violate the law and are subject to fines, and the driver cannot drive the motorcycle if he doesn't use a helmet. If the driver uses a helmet but not the passenger, the driver gets a fine and may continue but has to leave the passenger. An observational prevalence survey of helmet use in Pamplona (Spain) was performed to evaluate driver and passenger compliance with the helmet law. The population studied is composed of drivers, passengers, and motorcycles. There are 4,440 motorcycles with more than 50 cc of cylinder capacity registered in Pamplona. The number of motorcycles with a cylinder capacity lower than 50 cc is unknown because registration is not compulsory for these motorcycles. The number of persons holding a license to drive a bike is unknown in Pamplona, the capital of Navarre because there is only aggregated data from the Comunidad

Foral de Navarra (521,268 inhabitants). The number of existing driving licenses for motorcycles is 23,306, but this figure probably does not represent the actual number of drivers because when one person with a driving license for a bike gets a driving license for a car, he keeps the driving license.

Helmet use was observed at twelve sites (inter- sections with traffic lights) in Pamplona (a city of 183,539 inhabitants in the north of Spain). Sites were chosen randomly from 72 eligible inter- sections in Pamplona. The helmet utilization by motorcycle drivers and their passengers was recorded by observers on the third Monday of every month from June to November (i.e., three months before and three after the helmet law took effect). One observer was assigned to every site for two hours daily, from 4.30 p.m. to 6.30 p.m. Observers were rotated among sites, and no deviation from the observation site was tolerated. Observers were trained to use a standard data collection sheet. To avoid typing error data, we used double data entry, where data were introduced twice in a computer by two independent persons. The two files obtained were compared using the validate program of the EPI INFO [8] software package developed by the Centers for Disease Control. Univariate and bivariate statistics were done using the program mentioned above.

Helmet use increased from 19.7% (95% CI = 17.4%, 22.0%) in the first period to 94,8% (95% CI= 93.6%, 96.0%) in the second period. Before the law was enforced, there were no differences in the prevalence of helmet use among drivers, 20: l % and 17.2% in passengers (Table 1). After the law was enforced, the prevalence of use moved from 93.6% in the first month to 95.0% and 95.8% in the second and third month, respectively, although this increase was not statistically significant ($p > 0.05$). Helmet usage by drivers was similar in the period after the adaptation of the legislation: 97.6% in September, 97.5% in October, and 97.5% in November ($p > 0.05$). The prevalence of helmet use by passengers increased from 71.2% in the first month after the adoption of legislation to 80.73% in the second month and 82.61% in the third month; nevertheless, these differences were not statistically significant ($p > 0.05$). The sudden increase in helmet use after the law was carved into farce is similar to that of Texas [9]. After the law took effect, helmet use was higher among drivers.

97.5o/o (95% CI = 93.5%, 96.1o/o) than among passengers 77.5% (95% CI== 71.2%, 93.7%) (Table 2).

The prevalence ratio [PR] of helmet use in drivers versus passengers was 1.26 (95% CI = 1.16, 1.37). Passengers used helmets more frequently when the driver was also using helmets. The prevalence ratio of helmet use in those passengers whose driver used a helmet versus those who didn't was 9.91 (95% CI

= 1.52, 64.83).

These findings have severe] limitations: the short study period, only three months, and the restriction of observation to rush hours. Nevertheless, the prevalence of helmet use before the law is similar to that found in the Navarre Health Survey of 1990-91 [l O], where 20% of people who usually drive motorcycles in urban areas stated that they used helmets. The higher prevalence of helmet use in motorcycle drivers after law enforcement can be explained by the double punishment, acceptable and towing of the bike, of those who drive a motorcycle without a helmet. We hypothesize that the towing of the bike acts more as a deterrence to driving without a helmet than the fine. This data suggests that helmet utilization is lower among passengers than drivers in Pamplona. Drivers' use of helmets seems to influence passengers' use. There are two possible explanations: some drivers who usually transport passengers may bring an extra helmet and ask the passenger to use it. Another explanation is that those drivers who do not care to use helmets probably do not exert any influence on drivers. As the behavior of the passenger does not impact the drivers, either in their driver's license, the drivers are not encouraged to force the passenger to use

helmet.

Therefore, health education and law enforcement efforts should be targeted at drivers to prevent them from giving rides to passengers without helmets. In the last two years, the Spanish Government has launched several advertising campaigns to avoid traffic accidents and to promote seat belt use. The following campaigns should target helmet use by drivers and passengers. The legislation should be changed, and the driver could get a fine or have her motorcycle towed away if the passenger is not wearing a helmet. Otherwise, the driver is not encouraged to influence passenger helmet use. Other ways of increasing helmet use may be to make them more accessible. This could be done by making helmets more available, affordable, acceptable, and accommodating. This study confirms the results of other studies done previously elsewhere that legislative measures are helpful in these matters to encourage taking a protective behavior that is highly effective.

BIBLIOGRAPHY

1. Gestal Otero O. Acidentes. In: Piedrola Gil G (ed), Medicina Preventiva y Salud Publica, 9th ed. Barcelona: Salvat. 1992.
2. National Committee for lnjury Prevention and Control (USA). Injury Prevention: Meeting the Challenge. New York: Oxford University Press, 1989.
3. Sosin DM, Sacjs JJ, Holmgree P. Head injury associated death from motorcycle crashes: Relationship to helmet-use laws. JAMA 1990; 264: 2395-2399.
4. McSwain NE, Belles. Motorcycle helmets medical costs and the Iaw. J Trauma 1990; 30: 1189-1199.
5. Watson GS, Zador PL, Wilks A. The repeal of helmet use laws and increased motorcyclist mortality in the United States, 1975-1978. Am J Public Health 1980; 70: 579-592.
6. McSwain NE, Willey J. The impact of re-enactment of the motorcycle law in Louisiana. Proc Am Assoc Automotive Med 1985: 425-466.
7. Muelleman RL, Mlinek EJ, Collìcott PE. Motorcycle crash injuries and costs: Effect of a reenacted com- prehensive helmet use law. Ann Emerg Med 1992; 21: 266-272.
8. Dean JA, Burton AH, Dicker RC. Epi info, Version 5: a word processing database, and statistics program for

epidemiology on microcomputers. Stone Moun- tain, Georgia: USD Incorporated, 1990.

9. Lund AK, Williams AF, Womack KN. Motorcycle helmet use in Texas. Public Health Rep 1991; 106: 576-578.

10. Servicio de Planificaci6n del Gobiemo de Navarra. Como estamos de Salud? Pamplona: Gobierno de Navarra, 1993.

TABLE 1 Helmet use before and after the helmet law caMe into force

	Before		After	
	N	%	N	%
Drivers	992	20,1	1090	97,5
Passenger	157	17,2	173	77,5
Total	1149	19,7	1263	94,8

Table 2. Helmet use in Pamplona by motorcycle drivers and passengers after the helmet law carne into force

	N	% use	PR	(95% CI)
Passenger	173	77,5	1	
Drivers	1090	97,5	1,26	(1,16-1,37)
Passengers with drivers not using helmet	12	8,3	1	
Passengers with drivers using helmet	161	82,6	9,91	(1,52-64,89,