

# Viet Nam's mandatory motorcycle helmet law and its impact on children

Aaron Pervin,<sup>a</sup> Jonathon Passmore,<sup>b</sup> Mirjam Sidik,<sup>a</sup> Tyler McKinley,<sup>a</sup> Nguyen Thi Hong Tu<sup>c</sup> & Nguyen Phuong Nam<sup>b</sup>

**Objective** To measure the use of motorcycle helmets in children and to determine the reasons why children wear helmets less often than adults.

**Methods** The frequency of helmet wearing among adults and children was ascertained by trained roadside observers, and randomized road user surveys were completed in four major centres in Viet Nam: Hanoi, Ho Chi Minh City, Can Tho and Da Nang. Survey data on key questions were cross tabulated, and  $\chi^2$  was calculated for significant differences between parents and non-parents (0.05).

**Findings** The frequency of helmet use in the four study locations ranged from 90–99% among adults, from 15–53% among children  $\leq 7$  years of age, and from 38–53% among children  $> 7$  but  $\leq 14$ . Of the parents surveyed, 67% said the fear of neck injury was the most important reason their children did not wear a helmet.

**Conclusion** Children wear motorcycle helmets much less often than adults. Legislation to penalize adults whose children do not wear motorcycle helmets has been proposed in Viet Nam. Furthermore, ongoing advocacy and social marketing efforts are being made to disseminate information about the safety benefits of helmets to combat erroneous public perceptions.

Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

## Introduction

Viet Nam has a high burden of road traffic injuries. In 2007 there were 12 800 deaths, or 15 deaths per 100 000 population, according to official statistics.<sup>1</sup> Other sources of data suggest that official figures may underestimate the actual number of deaths and injuries by more than 30% and 90%, respectively.<sup>2,3</sup>

As of August 2008, there were more than 26 million registered vehicles in Viet Nam, and 95% were motorized two-wheelers.<sup>4</sup> There are almost 9000 new motorcycles on the road each day. An estimated 60% of all road traffic fatalities occur among motorcycle drivers and passengers.<sup>3</sup>

Motorcycle helmets are a highly effective road safety intervention that reduces the frequency and severity of head injuries resulting from traffic crashes. According to a recent Cochrane review, helmet use reduces the risk of motorcycle injuries by 69% and motorcycle fatalities by 42%.<sup>5</sup>

In 2001, wearing a helmet became mandatory in Viet Nam for all motorcycle drivers and passengers on specific roadways, including national highways and other assigned routes.<sup>6–8</sup> Unfortunately, there was limited enforcement of this legislation, and hence its effectiveness was low. Under this law, helmet wearing was estimated at approximately 30% on average but fluctuated greatly by time of day and type of road.<sup>9</sup> Since helmet laws were first introduced, many stakeholders have tried to raise awareness and lobby for a law that will cover all drivers and passengers on all types of roads.

On 29 June 2007, the Vietnamese Government released Resolution 32, a decree that made it mandatory in Viet Nam for all motorcycle drivers and passengers to wear a helmet on all roads from 15 December 2007.<sup>10</sup> Although the new

helmet law made no specific exemptions for children, it was not fully consistent with existing legislation, since under the articles of Viet Nam's Ordinance for Administrative Sanctions, children aged  $< 14$  years cannot be given sanctions, including penalties for not wearing a helmet.<sup>11</sup> Children aged 14 to  $< 16$  years can be given a warning, and financial penalties apply for children aged 16–18 years but at half the rates for adults. Importantly, current legislation<sup>12</sup> does not provide for a road traffic infringement penalty against the adult responsible for the child, a measure that can be applied in countries such as Australia,<sup>13</sup> Cambodia<sup>14</sup> and Malaysia (Rajam Krishnan & Shaw Voon Wong, Universiti Putra Malaysia, personal communication, 2008). Due to these limitations, the use of a helmet in children is not enforced.

Challenges to the use of helmets exist not only in the area of legislation. Shortly after the helmet law was introduced, the media began to publish reports from local medical practitioners who questioned the use of helmets by children and to claim that simply wearing could cause injuries to the neck.<sup>15</sup> While many expert stakeholders in Viet Nam disputed these statements for lack of supporting evidence and because they went against the results of wide-ranging research on the effectiveness of helmets,<sup>16,17</sup> many parents grew afraid of making their children wear helmets.

High quality helmets are manufactured and available in Viet Nam for both adults and children. This research, conducted by the Asia Injury Prevention Foundation on behalf of the Viet Nam Helmet Wearing Coalition, confirms that limited use of helmets among children is a problem in the country and explores its contributing factors.

<sup>a</sup> Asia Injury Prevention Foundation, 12B Ngoc Khanh, Ba Dinh District, Hanoi, Viet Nam.

<sup>b</sup> World Health Organization, 63 Tran Hung Dao, Hanoi, Viet Nam.

<sup>c</sup> Ministry of Health, Hanoi, Viet Nam.

Correspondence to Jonathon Passmore (e-mail: passmorej@wpro.who.int).

(Submitted: 19 November 2008 – Revised version received: 19 November 2008 – Accepted: 27 February 2009)

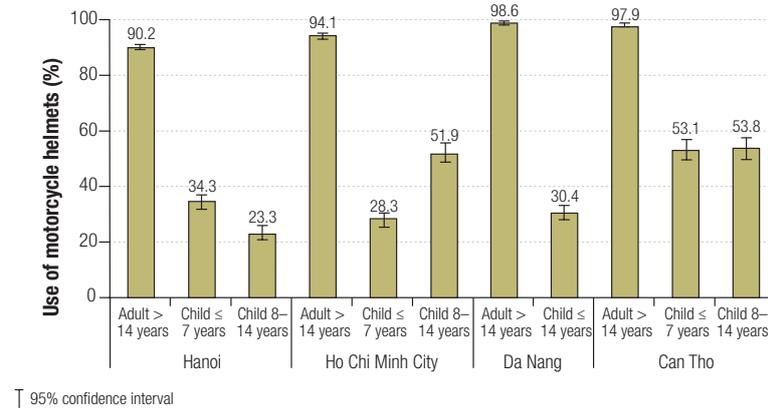
## Methods

Roadside and random population surveys were conducted in four major cities in Viet Nam. Three teams of 10 trained students who worked on weekends in the month of April 2008 surveyed a total of 4189 respondents in four cities (953 in Hanoi, 904 in Ho Chi Minh City, 994 in Can Tho and 1338 in Da Nang). Surveyors attempted to interview 1000 random respondents with equal distribution between genders and three age groups – 18–24 years, 25–40 years, and  $\geq 41$  years – but surveys were accepted from anyone willing to complete them.

Questions included information on demographics, knowledge about correct use of helmets, and opinions on child helmet use. Approximately 44% of respondents had children (range: 36–54%). For purposes of the survey, age groups were defined as follows: infants,  $< 6$  months; toddlers,  $\geq 6$  months but  $< 2$  years; children,  $\geq 2$  but  $\leq 14$  years.

In each city, one urban and one suburban intersection were selected at random and observed by a team of six trained observers from 08:30 to 09:30, and from 20:00 to 21:00 on one weekday and one weekend day. Addition-

Fig. 1. Observed proportion of adults and children wearing motorcycle helmets in four cities in Viet Nam, 2008



┆ 95% confidence interval

ally, a random intersection within 100 yards of a school was observed on one weekday between 15:30 and 16:30. Suburban observations in Can Tho and Da Nang were recorded by video and subsequently analysed.

A total of 18 734 roadside observations were made in the above time periods (5920 in Hanoi, 5407 in HCMC, 3644 in Can Tho and 3763 in Da Nang). Observers estimated the age of children and noted the use of helmets

among people in three age groups:  $\leq 7$ , 8–14 and  $\geq 15$  years.

Cross tabulations were made to compare the survey responses given by parents and non-parents.  $\chi^2$  was calculated using Stata 9.2 (Statacorp LP, College Station, TX, United States of America). The significance level was set at 0.05.

## Results

### Roadside observations

Adults and children differed substantially in their use of helmets. On average, the greatest use among adults was seen in Da Nang (99%), followed by Can Tho (98%), Ho Chi Minh City (94%) and Hanoi (90%).

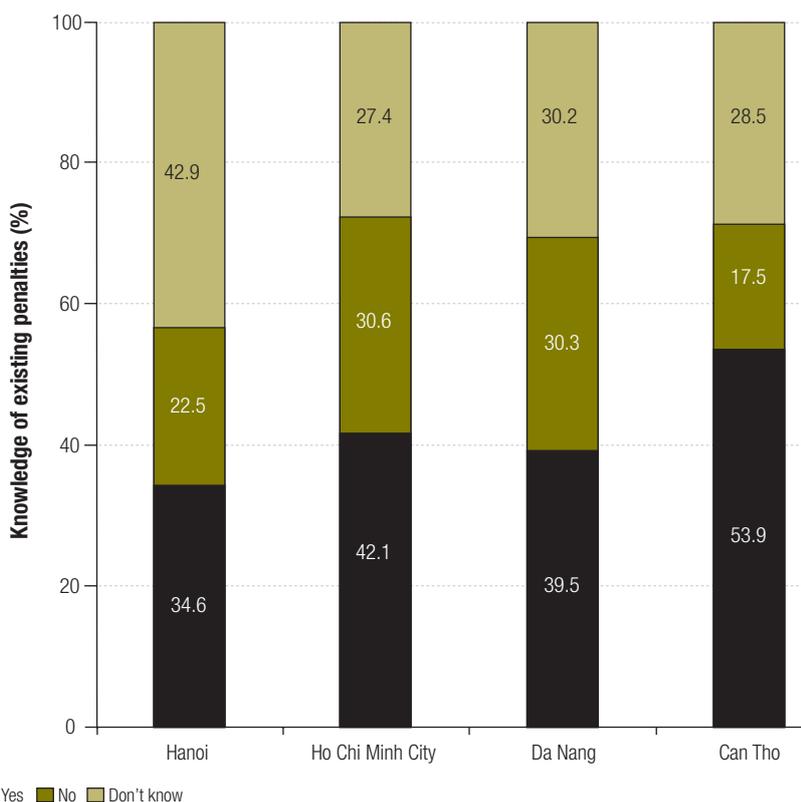
The use of helmets among children  $\leq 7$  and 8–14 years of age was 34% and 23%, respectively, in Hanoi; 28% and 52%, respectively, in Ho Chi Minh City, and 53% and 54%, respectively, in Can Tho. In Da Nang, observations were made only for children who looked  $\leq 14$  years of age (30%) (Fig. 1).

### Road user surveys

Respondents were questioned on their knowledge of the penalties applied under the helmet law. An average of 42% (range: 35–54%) indicated that penalties did apply to the motorcycle driver when children are not wearing helmets. A further 32% (range: 27–43%) did not know (Fig. 2).

Respondents were also asked if they believed helmets were safe for children of different ages. Affirmative responses increased with the child's age and ranged from 21–40% for infants, 36–52% for toddlers and 77–85% for children.

Fig. 2. Survey results on knowledge about the existence of penalties for parents of children < 14 years of age who fail to wear a motorcycle helmet, Viet Nam, 2008



When asked whether children should wear helmets, participants responded in a similar manner to the previous question. Their affirmative responses ranged from 13–23% for infants, 16–29% for toddlers and 53–67% for children (Table 1). Significant differences exist between survey locations.

Respondents who confirmed that their children should not wear helmets were asked to explain the main reason for their opinion, and the majority replied that helmets increased the risk of neck injury in children of all age groups (Fig. 3). A negative response was given most frequently for infants (67%) and decreased across the other age groups.

Parents' perceptions were also compared to those of non-parents with regard to the use of helmets among children. Parents consistently displayed a less educated view than non-parents in connection with the use of helmets by children aged < 14 years. In Ho Chi Minh City, parents were 10% less likely to believe that children should wear helmets than non-parents ( $P < 0.05$ ). The data substantiated perceptions regarding the use of helmets by toddlers. In Hanoi parents were 12% less likely to believe that toddlers should wear helmets than non-parents ( $P < 0.05$ ), while in Can Tho parents and non-parents had similar perceptions surrounding the use of helmets in toddlers ( $P = 0.715$ ).

## Discussion

The new helmet legislation in Viet Nam has resulted in a substantial increase in the use of helmets, but only among adults; the wearing of helmets among children has remained low. Substantial differences between adults and children in the wearing of helmets were observed in the study.

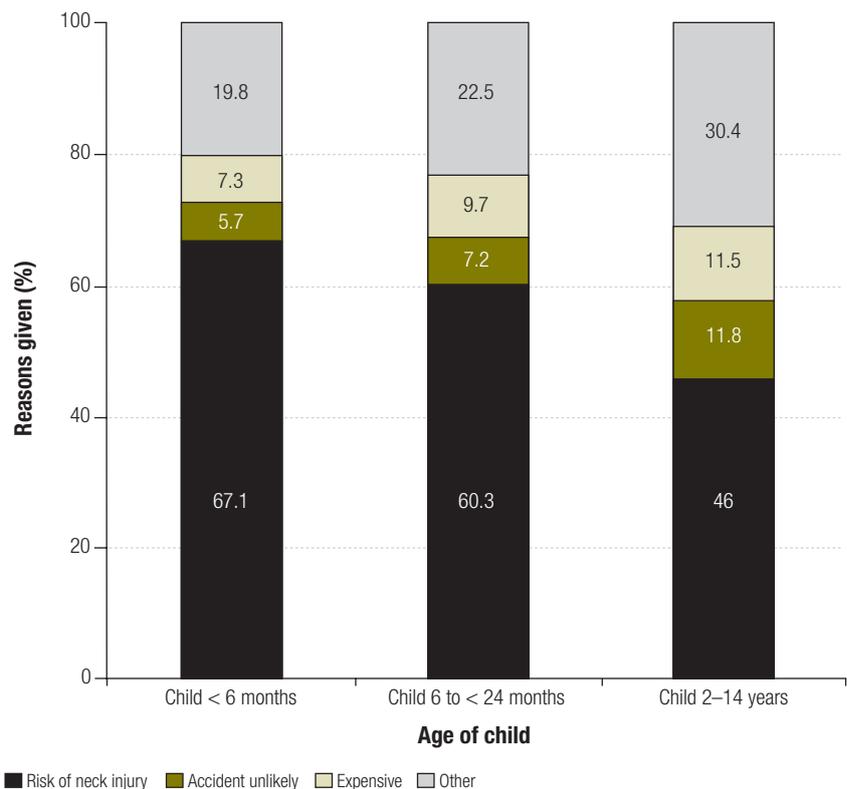
Importantly, the observed use of helmets in children did not reflect the attitudes and opinions expressed by parents during interviews. An average of 82% of the parents surveyed agreed that helmets were safe for children 2–14 years of age, and 61% agreed that children in this age bracket should wear them when travelling on a motorcycle. However, only an estimated 38% of children actually wore helmets, according to roadside observations. One of the limitations of self-reported feedback is the potential for socially desirable responses that do not reflect actual behaviour.

Table 1. Affirmative responses to questions about child helmet use given by respondents with children in different age groups in four cities in Viet Nam, 2008

Questions asked by age group	Are child-sized helmets safe? (%)	Should children wear helmets? (%)
<b>&lt; 6 months</b>		
Hanoi	29.5*	17.8*
Ho Chi Minh City	21.2*	13.3*
Da Nang	40.4	23.4
Can Tho	34.5*	13.8*
<b>6 months to 2 years</b>		
Hanoi	51	25.8
Ho Chi Minh City	35.5*	19.5*
Da Nang	51.8	28.9
Can Tho	45.4*	15.5*
<b>2–14 years</b>		
Hanoi	85.1	65.1
Ho Chi Minh City	77.3*	52.6*
Da Nang	82.5	60.1*
Can Tho	82.1	66.6

\*  $P < 0.05$ .

Fig. 3. Survey results on parents' reasons for not making their children wear a motorcycle helmet, Viet Nam, 2008



The fact that the majority of parents did not know if they were subject to penalty or believed that they were if their children were not wearing helmets suggests that their belief in the risk of neck injury overrode their fear of penalty and law enforcement in

contributing to the low rate of helmet use among children. This highlights the importance of continuing efforts to dispel the myth of neck injuries in future campaigns. The effect of the myth on helmet use in children was further corroborated when parents and non-

parents were compared. Parents were more likely than non-parents to believe that children and toddlers should not wear helmets.

Many international organizations, including the Asia Injury Prevention Foundation, the United Nations Children's Fund (UNICEF) and WHO, are currently supporting the Government of Viet Nam in its efforts to promote the use of helmets among children through various mechanisms, including advocacy, social marketing and support for capacity-building to enhance road safety.

As part of a collaborative approach, a legislative working group has been formed with representatives from various agencies of the Government of Viet Nam, with the support of WHO. The particular objective of this group is to introduce a legislative mechanism that will allow penalties to be applied to any parent or adult carrying a child on a motorcycle without a helmet.

The widespread circulation of the myth that wearing a helmet carries a

risk of neck injury and the acceptance of this myth by many parents points to the fact that stakeholders were unable to effectively counter these rumours. WHO, the Asia Injury Prevention Foundation and UNICEF have subsequently increased advocacy for child helmet use through the media and through training workshops for senior officials and national legislators.<sup>18,19</sup> The most recent campaign of the Viet Nam Helmet Wearing Coalition has focused on the importance of having children wear helmets.

The current study is limited by the lack of hospital data on fatalities and head injuries in children. Hospital data, disaggregated by age, has only been available since May 2008, so the early impact of the helmet law on helmet use among children cannot yet be assessed. As data from studies become available, they will provide a powerful advocacy tool in support of legislative changes surrounding child helmet use. Such data are strongly anticipated to dispel

the unfounded myth of the risk of neck injury in children who wear helmets.

## Conclusion

Despite some remaining challenges, the implementation of the mandatory helmet law has been a milestone in Viet Nam's history of road safety policy. Many lessons can be learned from the experiences to date, not only for closing legal loopholes still present in Viet Nam, but also for regional low- and middle-income countries where motorcycles represent a frequent mode of transport for both adults and children.

The implementation of Viet Nam's helmet law should be further evaluated over time and its effectiveness, particularly for children, assessed on an ongoing basis as loopholes are gradually closed. ■

**Funding:** The survey was funded by the Vietnam Helmet Wearing Coalition.

**Competing interests:** None declared.

## Résumé

### Loi vietnamienne sur le port obligatoire du casque pour les motocyclistes et impact sur les enfants

**Objectif** Mesurer la fréquence d'utilisation du casque de motocycliste chez les enfants et déterminer les raisons pour lesquelles les enfants portent moins souvent un casque que les adultes.

**Méthodes** La fréquence de port du casque chez les adultes et les enfants a été déterminée par des observateurs formés et placés sur le bord des routes et des enquêtes randomisées sur les usagers de la route ont été effectuées dans quatre grands centres urbains du Viet Nam : Hanoi, Ho Chi Minh Ville, Can Tho et Da Nang. On a construit une table de contingence avec les réponses aux principales questions et on a calculé le  $\chi^2$  pour rechercher des différences significatives entre les personnes ayant des enfants de moins de 14 ans et celles n'en ayant pas (0,05).

**Résultats** La fréquence de port du casque sur les quatre sites

étudiés variait de 90 à 99 % chez les adultes, de 15 à 53 % chez les enfants de 7 ans et moins et de 38 à 53 % chez les enfants dont l'âge se situait entre 7 et 14 ans (inclus). Parmi les parents interrogés, 67 % ont indiqué que la crainte d'un traumatisme à la nuque était la principale raison motivant l'absence de casque chez leur enfant.

**Conclusion** Les enfants portent bien moins souvent un casque de motocycliste que les adultes. Une législation pénalisant les adultes dont les enfants ne portent pas de casque de motocycliste a été proposée au Viet Nam. En outre, des efforts de sensibilisation et de marketing social sont en cours pour diffuser des informations sur les bénéfices pour la santé des casques de motocycliste et dissiper les idées erronées parmi le public.

## Resumen

### La ley vietnamita de obligatoriedad del uso del casco y su impacto en los niños

**Objetivo** Determinar la frecuencia del uso del casco de motocicleta por los niños y averiguar los motivos por los que lo usan menos que los adultos.

**Métodos** La frecuencia del uso del casco por los adultos y los niños fue determinada por observadores entrenados situados en las carreteras. También se realizaron encuestas aleatorizadas entre los usuarios de las vías de tránsito en cuatro grandes ciudades de Vietnam: Hanoi, Ciudad Ho Chi Minh, Can Tho y Da Nang. Los datos de las encuestas sobre cuestiones clave se introdujeron en tablas de contingencia, calculándose la  $\chi^2$  para detectar diferencias significativas entre padres y no padres (0,05).

**Resultados** La frecuencia del uso del casco en los cuatro lugares

estudiados osciló entre el 90 y el 99% en los adultos, el 15 y el 53% en los niños  $\leq 7$  años, y el 38 y el 53% en los niños  $> 7$  pero  $\leq 14$  años. Entre los padres encuestados, el 67% dijo que el temor a las lesiones cervicales era el motivo más importante para que sus hijos no usaran el casco.

**Conclusión** La frecuencia del uso del casco es mucho menor en los niños que en los adultos. En Viet Nam se ha propuesto una ley para penalizar a los adultos cuyos hijos no utilicen caso de motocicleta. Además, con el fin de combatir percepciones erróneas del público, se están realizando actividades de promoción y de marketing social para difundir información sobre los beneficios del uso del casco.

## ملخص

## القانون الجديد للإجبار على ارتداء الخوذات للدراجات النارية وأثره على الأطفال في فيت نام

الهدف: قياس مدى ارتداء الخوذات عند استعمال الدراجات النارية بين الأطفال والتعرف على أسباب ارتدائهم لها أقل مما عند البالغين.  
الطريقة: حدد الباحثون معدل تكرار ارتداء البالغين والأطفال للخوذة، وذلك عن طريق ملاحظين مدرسين يقفون على جانبي الطريق مع استكمال مسوحات عشوائية قام بها مستخدمو الطريق في أربعة مراكز في فيت نام؛ وهي هانوي ومدينة هوشي منه وكان ثو، ودانانغ. ووصفت معطيات المسح حول الأسئلة الرئيسية في جداول متصالبة وحسب في مربع للتفاوت الذي يُعتمد به إحصائياً بين الآباء وغير الآباء (0.05).  
الموجودات: تراوح تكرار استخدام الخوذات في المواضع الأربعة محل

الدراسة بين 90-99% لدى البالغين من 15 إلى 53% لدى الأطفال دون السابعة من العمر وبين 38 و53% لدى الأطفال فوق سن السابعة ودون سن الرابعة عشرة. ومن بين الآباء الذين شملهم المسح قال 67% منهم أن الخوف من إصابة العنق هو أهم سبب لعدم ارتداء أطفالهم للخوذات.  
الاستنتاج: يرتدي الأطفال خوذة لركوب الدراجات النارية أقل بكثير مما يرتدي البالغون. وقد اقترح في فيت نام سن تشريعات تعاقب البالغين الذين لا يرتدي أطفالهم الخوذات، وبالإضافة إلى ذلك تتواصل جهود الدعوة والتسويق الاجتماعي لنشر المعلومات حول فوائد الخوذات في ضمان السلامة، وذلك للتصدي للمفاهيم الخاطئة بين عامة الناس.

## References

1. *Report on activities to ensure traffic order and safety* [in Vietnamese]. Hanoi: National Traffic Safety Committee; 2007.
2. *Report on the mid term review of the Vietnam road safety master plan project*. Hanoi: Japan International Cooperation Agency; 2008.
3. Le L, Pham C, Linnan M, Dung VD, Phuong NL, Hanh HL, et al. Vietnam profile on traffic related injury: facts and figures from recent studies and their implication for road traffic injury policy. In: *Road traffic injury and health equity conference, Cambridge, MA, 10-12 April 2002*.
4. *Monthly report for August 2008 on transport injuries* [in Vietnamese]. Hanoi: National Traffic Safety Committee; 2008.
5. Liu B, Ivers R, Norton R, Blows S, Lo SK. *Helmets for preventing injury in motorcycle riders*. Chichester: John Wiley & Sons; 2008.
6. *Guiding the compulsory wearing of helmets* [circular no. 312/2000/TT-BGTVT]. Hanoi: Ministry of Transport; 2000.
7. *Guiding the compulsory wearing of helmets* [circular no. 08/2001/TT-BGTVT]. Hanoi: 2001.
8. *Guiding the compulsory wearing of helmets* [circular number 01/2003/TT-BGTVT]. Hanoi: MT; 2003.
9. Hung DV, Stevenson MR, Ivers RQ. Prevalence of helmet use among motorcycle riders in Vietnam. *Inj Prev* 2006;12:409-13. PMID:17170192 doi:10.1136/ip.2006.012724
10. *Resolution on a number of urgent countermeasures to curb traffic safety and alleviate traffic congestion* [Resolution number 32/2007/NQ-CP]. Hanoi: Government of Socialist Republic of Viet Nam; 2007.
11. *Ordinance on handling of administrative violations* [decree no: 44/2002/PL-UBTVQH10 dated 2 July]. Hanoi: National People's Assembly of Socialist Republic of Viet Nam; 2002.
12. *Regulating the sanctioning of administrative violations in road traffic domain* [decree no. 146/2007/ND-CP]. Hanoi: Government of Socialist Republic of Viet Nam; 2007.
13. *Australian road rules*. Melbourne, Vic.: National Transport Commission; 1999.
14. *Law on land traffic*. Phnom Penh: Government of Cambodia; 2007.
15. Mother weighs dangerous options. *Vietnam News*. 31 January 2008. Available from: <http://english.vietnamnet.vn/social/2008/01/766868/> [accessed on 2 March 2009].
16. Goslar PW, Crawford NR, Petersen SR, Wilson JR, Harrington T. Helmet use and associated spinal fractures in motorcycle crash victims. *J Trauma* 2008;64:190-6. PMID:18188120 doi:10.1097/TA.0b013e3180f62e2ec
17. *Highway safety: motorcycle helmet laws save lives and reduce costs to society*. Washington, DC: United States General Accounting Office; 1991.
18. *UN: children should wear helmets* [press release]. Hanoi: United Nations Country Team in Viet Nam; 25 February 2008. Available from: [http://www.un.org.vn/index.php?option=com\\_content&task=view&id=379&Itemid=187](http://www.un.org.vn/index.php?option=com_content&task=view&id=379&Itemid=187) [accessed on 18 March 2009].
19. Olivé JM, Morch J. Vietnamese children should wear helmets when sitting on motorbikes [in Vietnamese]. *Bulletin for Elected Representatives on Issues of Children*; 2008.