

Accuracy of information on child restraint orientation in Japanese websites Short title: Information on child restraint orientation

著者	Nakahara Shinji, Nakajima Yukari, Sakamoto Tetsuya
journal or publication title	Pediatrics International
volume	60
number	10
page range	966-968
year	2018-10-06
権利	This is the peer reviewed version of the following article: Nakahara S., Nakajima Y. and Sakamoto T. (2019), Child restraint orientation: Accuracy of information on Japanese websites. Pediatrics International, 60 (10) : 966 968, which has been published in final form at https://doi.org/10.1111/ped.13692 . This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions.
URL	http://hdl.handle.net/10466/16195

doi: 10.1111/ped.13692

Accuracy of information on child restraint orientation in Japanese websites

Short title: Information on child restraint orientation

Shinji NAKAHARA,^{1)*} MD, PhD, MS; Yukari NAKAJIMA, RN, MS;²⁾ Tetsuya SAKAMOTO, MD, PhD³⁾

- 1) Department of Emergency Medicine, Teikyo University School of Medicine, Tokyo, Japan
- 2) School of Nursing, Osaka Prefecture University, Osaka, Japan

*Corresponding author:

Shinji NAKAHARA

Department of Emergency Medicine, Teikyo University School of Medicine, Tokyo, Japan

Tel: +81-3-3964-1211; Fax: +81-5375-0854

Email: snakahara-ky@umin.net

Conflict of interest: None declared

Funding support: This work was supported by JSPS KAKENHI (Grant No. 25463499)

Funder role: the funder had no role in the design and conduct of the study; data collection and analysis; interpretation of the results; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Author contribution:

Study concept and design: all authors

Data acquisition and analysis: SN

Interpretation: all authors

Manuscript preparation: SN

Critical revision of the manuscript: all authors

Obtained funding: YN

Abstract

Background

Child restraints provide maximum protection when used appropriately. However, seat orientation (rear- or forward-facing) according to child development is often misunderstood, and the information provided can be inaccurate. This study examined the accuracy of information in Japanese on seat orientation found on the Internet.

Methods

We searched websites in Japanese on Google regarding information on recommended seat orientation for young children and examined the first 50 sites based upon the search rankings for the criteria on when to allow children to ride in forward-facing seats.

Results

None of the examined websites included information that was consistent with the recommendation of the Japan Pediatric Society (i.e., age must be at least one year old and weight, at least 10 kg). The most common mistake was that weight alone could determine timing.

Conclusions

More vigorous efforts are needed to disseminate evidence-based information about seat orientation to protect child passengers.

Keywords: child restraint, orientation, website information

Introduction

Child restraints significantly reduce the risk of injury and death for young children in motor vehicle crashes. However, increased child restraint use in Japan after restraint use became compulsory among children under the age of six in 2000 did not yield an easily discernible reduction of mortalities and morbidities.[1,2] The apparent lack of effectiveness might have come from inappropriate restraint use.

Child restraints provide maximum protection only when appropriately used. The appropriate use includes the selection of age-appropriate restraint, secure fixation in the vehicle, correct seat positioning, and orientation (rear- or forward-facing).[3–7] Determining the seat orientation according to child development (age and body size) is complicated and often misunderstood whereas some other processes are straightforward (e.g., safe seating position is always in the rear seats). Parental misunderstanding often allows children to ride in forward-facing seats at inappropriately early ages based only upon the reliance of allowable weight limits of the restraints (e.g., direct transition to a forward-facing seat after having overgrown a rear-facing only seat).

The Japanese guidelines for child passenger safety recommend that infants ride in rear-facing seats until they are at least one year old and weigh 10 kg. These guidelines were developed by the Japan Pediatric Society in 2008 based on the United States guidelines by the American Academy of Pediatrics in 2002.[3,4] Presently, however, the revised American guidelines published in 2011 recommend that children should ride in rear-facing seats until they are at least two years of age or until they have outgrown the rear-facing seat.[5,6] Similarly, the National Highway Traffic Safety Administration of the United States recommends that children under

the age of four should ride in rear-facing seats for as long as possible.[7] These recommendations are made on the basis of young children's premature physical development, including incomplete vertebral ossification, loose ligaments, and insufficient muscle strength, all of which lead to increased risk of spinal and head injuries in a vehicle crash when seated forward-facing.[5]

Disseminating accurate information is crucial to facilitate appropriate child restraint use, especially to address the misunderstanding about seat orientation. Seat orientation requires complex and detailed information whereas seat positioning requires a simple message (i.e., avoid front seats), and secure fixation requires skills rather than information. However, the accuracy of information in the mass media, to which people often refer, is questionable. Our previous study on the information in magazines indicated that inaccuracies were particularly notable regarding the timing of when children were allowed to begin riding in forward-facing seats.[8]

Despite such inaccuracies, no study has examined the accuracy of information on the Internet. To fill this literature gap, this study examined the web information in Japanese, focusing on the recommendations for the timing of when to change the seat orientation for young children.

Methods

We searched websites on Google using the following search formula in Japanese on April 1, 2017: child restraint AND (direction OR forward facing OR rear facing) AND (age OR timing). Table 1 indicates the precise Japanese version of the search formula. The Google search algorithm covered 95% of the search engine share in Japan in the fiscal year 2016 (April 2016 to March 2017); Google itself covered 70.5% and Yahoo! Japan, which uses the same algorithm,

24.3%.[9] We examined the first 50 sites in the search rankings for information on recommended seat orientation for young children, assuming that people usually obtain information from the top 10 sites in the first page, sometimes see the subsequent pages, but very rarely see the lower ranking sites. Of the 50 sites that were examined, we excluded two duplications, four sites indicating information on seat orientation in front seats, and one site without information on seat orientation.

The first author consistently reviewed the selected websites, and extracted and categorized the following information: aims of the websites and criteria (indicators and timing) on when to allow children to ride in forward-facing seats. This process was repeated to revise the extraction and categorization until there was no revision needed. We determined whether the information was compatible with the Japanese guidelines (both age and body weight criteria must be met).

Results

Of the 43 sites examined, 23 were information sharing sites (19 curation sites, 3 question and answer sites, and Wikipedia); eight sites of child restraint manufacturers; five online shops, four individuals' sites; and one each for government, newspaper, and car manufacturer sites (Table 2). Compared with age, body weight was indicated in 20 sites as the major criterion in determining the timing of when to allow children to ride in forward-facing seats: four of the sites mentioned that age is a rough guide and that body weight must be used. Age was indicated as the major criterion in 10 sites; however, five of them noted children could ride in forward-facing seats at 10-months-old. Developmental stage (e.g., being able to sit) was specified as a criterion in four sites, and specific criteria were not mentioned in nine sites. Additionally, four sites recommended keeping children in rear-facing seats as long as possible. None of the 43 sites mentioned that both body weight and age criteria must be met.

Discussion

We found that wrong information on the timing of when to allow young children to ride in forward-facing seats (e.g., based on weight alone or incorrect early timing) is prevailing in Japanese websites appearing high in the Google search rankings. Such incorrect information on these websites, which are frequently visited by people, could misguide parents.

The most common mistake is that weight alone can determine timing. However, children under one year old, even if weighing more than 10 kg, are lacking complete vertebral ossification, ligament tightness, and muscle strength, placing them at high risk of injuries. Rear-facing child restraints reduce the risk of head and spinal injuries by supporting the children's whole body and preventing the independent movement of the head.[5] Thus, children must continue to ride in rear-facing seats as long as possible until they have outgrown the rear-facing seat.

The American guidelines were revised based on studies in Sweden and the United States. Children in Sweden remain seated rear-facing until they are four years of age and restrained children have significantly lower risk of severe injuries than do unrestrained children.[10] A study in the US showed a benefit of rear-facing to children aged 12-23 months in the reduction of the risk of serious injuries compared with forward-facing seats.[11] Although reanalysis of the same data did not confirm the results of the above-mentioned US study, there still is sufficient evidence to support the recommendations.[12]

The widespread misunderstanding might have resulted from a confusion between seat selection and orientation. Seat selection is based on child body size, specifically body weight, with age being used as a rough guide; this is because the structural strength of the seat determines

tolerable weight range. Most child restraints used for forward-facing seating are designed to carry children weighing 9 kg and over. This fact could have been misperceived to mean that a weight of 9 kg is an indicator as to when to change seat orientation.

Disseminating information is important for appropriate child restraint use, which consists of several complicated processes. Websites created by the government and car or child restraint manufacturers must contain correct and reliable information on when children can start safely riding in forward-facing seats rather than when the seats can tolerate children's weight. Moreover, setting up an accurate curation site that appears high in search results should be encouraged.

Conclusions

This study revealed that information in the websites was frequently inaccurate on the timing of when to allow young children to ride in forward-facing seats. More vigorous efforts are needed to disseminate evidence-based information about seat orientation to protect child passengers.

References

- [1] Desapriya EB, Iwase N, Pike I, Brussoni M, Papsdorf M. Child motor vehicle occupant and pedestrian casualties before and after enactment of child restraint seats legislation in Japan. *Inj Control Saf Promot.* 2004;11:225-30.
- [2] Nakahara S, Ichikawa M, Nakajima Y. Effects of increasing child restraint use in reducing occupant injuries among children aged 0-5 years in Japan. *Traffic Inj Prev.* 2015;16:55-61.
- [3] Committee on Injury and Poison Prevention; American Academy of Pediatrics. Selecting and using the most appropriate car safety seats for growing children: guidelines for

- counseling parents. *Pediatrics*. 2002;109:550–3.
- [4] Eto T, Takayama J, Yamanaka T. Teigen: kurumadeno anzen na idoni tsuite kodomono baai. *Nihon Shonika Gakkai Zasshi*. 2008;112:1024-1036.(in Japanese)
- [5] Durbin DR; Committee on Injury, Violence, and Poison Prevention. Technical report— Child passenger safety. *Pediatrics*. 2011;127:e1050-66.
- [6] Committee on Injury, Violence, and Poison Prevention., Durbin DR. Policy statement— Child passenger safety. *Pediatrics*. 2011;127:788-93.
- [7] National Highway Traffic Safety Administration. Car seats and booster seats. [cited on 2015 June 27] Available at: <https://www.nhtsa.gov/equipment/car-seats-and-booster-seats>
- [8] Nakahara S, Ichikawa M, Wakai S. Magazine information on safety belt use for pregnant women and young children. *Accid Anal Prev*. 2007;39(2):356-363.
- [9] StatCounter. [cited on 2018 May 11] Available at: <http://gs.statcounter.com/>
- [10] Jakobsson L, Isaksson-Hellman I, Lundell B. Safety for the growing child: experiences from Swedish accident data. In: *Proceedings of the 19th International Technical Conference on the Enhanced Safety of Vehicles*. National Highway Traffic Safety Administration, Washinton, DC., 2005; 6–9.
- [11] Henary B, Sherwood CP, Crandall JR, et al. Car safety seats for children: rear facing for best protection. *Inj Prev*. 2007;13:398-402.
- [12] McMurry TL, Arbogast KB, Sherwood CP, et al. Rear-facing versus forward-facing child restraints: an updated assessment. *Inj Prev*. 2018;24:55-9.

Table 1 Search formula in Japanese

English formula	Japanese formula
child restraint AND (direction OR forward facing OR rear facing) AND (age OR timing)	チャイルドシート AND (向き OR 前向き OR 後ろ向き) AND (何歳 OR いつ)

Table 2 Website classification and criteria on when to allow riding forward-facing among young children

	Criteria on when to allow forward-facing							
	Body weight			Age			Physical developmental stage	Criteria not mentioned clearly
	9 kg–10 kg	13 kg	Timing not indicated	10 months	1 year	2 years or later		
Site classification								
Information sharing	9	1	1	2	3	–	3	4 (1)
Child restraint manufacturers	6	–	–	1	–	–	–	1 (1)
Online shops	1	–	–	2	–	–	1	1
Individuals	–	1	–	–	–	1 (1)	–	2 (1)
Car manufacturer	–	–	–	–	–	1	–	–
Government	–	–	–	–	–	–	–	1
News paper	1	–	–	–	–	–	–	–
Total	17	2	1	5	3	2	4	9

The number in the brackets indicates the sites that recommended keeping children rear-facing as long as possible.