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# Child restraint seat use behavior and attitude among Japanese mothers

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**Abstract**

*Objectives:* The purpose of the study was to assess associations between child restraint seat use and attitudes among Japanese mothers.
*Materials and methods:* Mothers whose children were under 6 years of age were recruited through 11 kindergartens located in Kanagawa prefecture, Japan. Questions were developed based on the Health Belief Model and the Theory of Reasoned Action. Past use and future intentions to use, perceived risk of injury, knowledge of safety, attitudes toward use, subjective norms, and safety values related to safety seats were asked.
*Results:* A total of 552 complete questionnaires was obtained. Of 500 car owning households, 54.2% used child restraint seats inconsistently on short drives, and 36.4% did so on long drives. Three variables were associated with inconsistent use on short drives: frequent child resistance to sitting in a restraint seat; mothers' feeling hassled by child restraint seat use; and, mothers' agreement with the lack of need to use a restraint seat when another adult is in a car. Two variables were associated with inconsistent use on long drives: lower subjective norm of husband and frequent child resistance.
*Conclusions:* In-car environmental modification and parent education need to be considered to increase child restraint seat use among Japanese households.


*Keywords:* Child restraint seat; Child occupant safety; Health Belief Model; Theory of Reasoned Action; Japan

## 1. Background

Child restraint seat use has not yet become universal among Japanese 6 years after law enactment that requires private motor vehicle drivers to use child restraint seats for child occupants younger than 6 years of age. Observational studies reported that the use rate increased to 39.9% in 2000 from 15.1% in 1999; however, reached on the plateau of around 50% (Japan Automobile Federation (JAF), 2006). While the child restraint seat ownership rate was 89.3%, consistent use was 59.8% of the seat owners, according to a self-report web survey (General Insurance Association of Japan (GIA), 2003). Driving for short errands (48.1%), because of another adult on a car to take care of child (44.4%), and if child did not want to sit in a seat (38.0%) were the main reasons of non-use reported by inconsistent users (GIA, 2003).

Increasing child restraint seat use is one of the urgent public health issues in Japan. Annual public traffic safety campaigns implemented by governmental agencies and municipalities have placed emphasis on advertising child restraint seat use (The Cabinet Office of Japan, 2001–2006). The campaigns lack educational components designed to increase awareness among certain groups including parents, and to change attitudes and behaviors. Well-designed educational programs have not been developed (Child Safety Japan, 2005). To develop education programs and other interventions, first understanding barriers to child restraint seat use among a target group is necessary. The purpose of the study was to describe psychosocial

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and demographic variables associated with inconsistent child restraint seat use among Japanese households with children based on mothers' reports.

The study was conducted in two areas of Kanagawa prefecture, a suburban area of Tokyo. The areas are primarily residential communities. Compared to the Tokyo Metropolitan area and business areas of Kanagawa prefecture, the residential areas have less public transportation facilities; therefore, residents are likely to own private cars. Average numbers of private automobiles per household for Kanagawa was 0.80 compared to 0.52 for Tokyo (Automobile Inspection & Registration Information Association, 2007). Nevertheless, traffic environment of the areas in Kanagawa prefecture is almost the same as that in Tokyo; narrow roads, many intersections, and busy traffic. The study areas were considered to be an example of urban areas in Japan.

## 2. Study instrument design

Psychosocial conceptual models are useful tools in the areas of health research (Glanz et al., 2002) and unintentional injury research (Gielen and Sleet, 2003; Trifiletti et al., 2005) for examining associations between behaviors, attitudes, and perceptions. The Health Belief Model (HBM; Rosenstock, 1974) and the Theory of Reasoned Action (TRA; Ajzen and Fishbein, 1980) are two models that have been commonly used in health behavior research (Janz et al., 2002; Montano and Kasprzyk, 2002). HBM consists of five main components: perceived benefits from committing safety/health behavior; perceived barriers to committing safety/healthy behavior; perceived susceptibility and perceived severity of consequences of risky/unhealthy behavior (e.g., injury, disease); and self-efficacy to commit safety/healthy behavior, with safety/healthy behavior being outcome variable (Janz et al., 2002). Perceived benefits and barriers related to child restraint seat use were associated with reported seat use among parents in Maryland, U.S.; parents with positive attitudes (higher perceived benefits and lower barriers) were more likely to use child restraint seats compared to those with relatively negative attitudes (Gielen et al., 1984). Child discomfort and child resistance to sitting in a restraint seat were reported by parents as a barrier to using a seat (Agran et al., 2006; Gielen et al., 1984; Simpson et al., 2002). Being knowledgeable about the effectiveness of a child restraint seat in reducing child occupant injury and having positive attitudes toward seat use were positively associated with Israeli mothers' seat use (Gofin et al., 1990). A qualitative study conducted in New Jersey and Pennsylvania, U.S., reported that parents who perceived susceptibility of child occupant injury as being low stated that seatbelts were enough to prevent children from injury in a car and that booster seats were not necessary (Simpson et al., 2002). Based on the literature, questions relevant to the HBM components were developed and included in the questionnaire.

Attitudes and behaviors are determined by individual factors and also environmental and situational factors. In societies such as Japan which are assumed to consist of people with 'interdependent self' (Markus and Kitayama, 1991), individuals are likely to rely heavily on others' opinions and behaviors when they make a decision compared to those in 'independent self' societies (Markus and Kitayama, 1991). The 'interdependent self' style of decision-making may be observed even among some groups in the U.S., which is a society considered as 'independent self' society as a whole. A qualitative study of child restraint seat use among Latino families in the U.S. reported that husband's negative attitudes toward safety equipment use negatively affected wife's decision on use of child restraint seat (Lee et al., 2003). To examine the associations between child restraint seat use and others' norms perceived by mothers, a component of the subjective norm of the Theory of Reasoned Action (Ajzen and Fishbein, 1980) was included in the study.

Child restraint seat use tended to be considered less necessary on short drives compared to long drives (Gielen et al., 1984; Gofin et al., 1990; Simpson et al., 2002). Therefore, the study assessed child restraint seat use behaviors and intentions to use in the future on short drives and on long drives.

## 3. Methods

### 3.1. Participants

Study participants were mothers whose children were younger than 6 years of age. Participants were recruited through 11 kindergartens located in Kanagawa prefecture. The kindergartens agreed to distribute questionnaires to and collect them from mothers, in response to a request from the research group. Only mothers were invited to participate in the study to eliminate potential variability in reporting by gender. A total of 971 questionnaires were distributed, and 555 questionnaires were returned representing an overall response rate of 57.2%.

### 3.2. Procedure

Eleven kindergartens distributed questionnaires to mothers who came to kindergartens to drop off or to pick up children. A cover letter and consent form were attached to the questionnaire. The survey questionnaire was anonymous. The cover letter assured participants of anonymity and confidentiality. When a mother agreed to participate in the study, she completed the questionnaire, signed a consent form, and returned them to the kindergarten. Kindergarten staff mailed the questionnaires and consent forms to the research group. Consent forms were separated from questionnaires before data entering and kept separately from questionnaires. The study was approved by the Institutional Review Board at Colorado State University.

### 3.3. Materials

The questionnaire was written in Japanese, and included items described below. Tables 1 and 2 summarize the questions, response options, and scales.

*Car ownership, car use, and child restraint seat ownership* (*four questions*. Table 1): first, car ownership was asked. For the mothers with cars, three questions were asked: car use frequency; who drove the car in the household; and child restraint seat ownership.