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研究代表者

小笠原 メリッサ (Ogasawara, Mellisa)

青森県立保健大学・健康科学部・講師

研究者番号：60457736

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研究成果の概要(和文)：この研究の目的は、青森県における拘束シート使用の有病率を特定し、CRS 不使用に関連する親/保護者の要因を特定することです。2019年には、自己申告アンケートを用いた調査を実施。調査対象者は、青森県内の幼稚園に通う園児の保護者であり、0歳から6歳までの児童を持つ保護者2,159名が参加した。その結果、高速道路や中長距離を移動する際、常にチャイルドシートに拘束されている子どもが90.6%いることがわかりました。ただし、短い旅行で常にチャイルドシートを使用しているのは78.4%だけです。

研究成果の学術的意義や社会的意義

The results of this study showed that Aomori parents' attitudes and behaviours affect CRS use. The results can be used to develop education programs that provide parents with information on the dangers of not using a child safety seat and the real risks associated with short-distance trips.

研究成果の概要(英文)：This study aimed to determine parent factors associated with CRS non-use in Aomori prefecture. A study using self-report questionnaires was conducted at 79 nursery schools throughout Aomori prefecture. Study participants were parents of children attending a nursery school. A total of 2159 parents of children aged between 0 - 6 years took part in the study. Results showed that 90.6% of children are always restrained in a car seat when travelling on highways or medium-to-long distance. However, only 78.4% consistently use a child seat on short trips. Factors positively associated with the use of a CRS on a short distance trip were: parent's use of a seat belt as a rear passenger, a sense of high risk for traffic accidents on both short drives and travel on highways, and confidence in using a safety seat.

研究分野：Child passenger safety

キーワード：child restraint seat use parent behaviour Aomori prefecture

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様式 C - 19、F - 19 - 1、Z - 19 (共通)

1 . 研究開始当初の背景

Evidence shows children are 7.9¹⁾ times more likely to be killed in a car crash if they are not restrained in a child restraint seat (CRS), illustrating CRS use is essential in reducing injury and death in the case of a motor vehicle accident. Although Japan's legislation has mandated CRS use for children under six years since 2000, twenty years later, the national CRS rate of use is still low compared with many other developed countries. The National Police Agency (NPA) and Japan Automobile Federation (JAF) conduct a nationwide survey of CRS use annually. In 2019, the national average rate of use was 70.5%²⁾. Aomori's rates of use have consistently ranked much lower than the national average; however, in 2018, the rate of use in Aomori (68.5%)³⁾ exceeded the national average for the first time in 12 years, and again in 2019 (73.5%)²⁾. This increase is promising, yet the reality is that CRS use is still significantly lower than the driver (99%, 2020)⁴⁾ and front passenger (96.5%, 2020)⁴⁾ seat belt use. To understand why the level of child seat use remains low, it is necessary to understand parents' behaviors and attitudes; however, no previous investigations specific to Aomori prefecture have addressed parental factors affecting CRS non-use.

2 . 研究の目的

The purpose of this study was to obtain baseline data of child seat use and to determine parent/guardian factors associated with CRS non-use in Aomori prefecture.

3 . 研究の方法

Study participants were parents/guardians of children attending nursery schools throughout Aomori prefecture. Ethics approval was obtained by the university ethics committee before recruitment began. A letter of invitation to join the study was sent to the 434 nursery schools in Aomori prefecture, and 78 agreed to participate. A total of 4245 surveys were distributed, and 3143 were returned. All participants were self-selected.

This was a cross-sectional study using a self-report questionnaire containing Likert-scale questions. The questionnaire included the following variables: sociodemographic characteristics, CRS use, CRS knowledge, perceived susceptibility and severity of injury, self-efficacy, and attitudes. A pilot study was conducted to test the questionnaire.

Data were analysed using SPSS 26 software. Descriptive statistics were used to show frequencies for the study variables. Logistic regression was performed to identify variables significantly associated with the use of a CRS on short-distance trips.

4 . 研究成果

Incomplete questionnaires were excluded from the 3143 returned questionnaires, resulting in a final total of 2159 participants representing children aged 0 – 6 years.

1. Descriptive statistics

Most of the study participants were women (90.3%). The mean age was 34.1 (SD = 5.8), ranging from 19 to 60 years. 45.9% were high school graduates, and 83% were full-time employees. The average age of the children was 3.74 (SD = 1.7).

Results showed that consistent child seat use was determined by driving distance. Consistent use on short trips (78.4%) was considerably lower than use when traveling on highways (90.6%) or medium-to-long distance (90.6%) trips.

Table 1: CRS Use

| | Always | | Usually | | Sometimes | | Never | |
|----------------------------------|--------|---------|---------|-------|-----------|-------|-------|------|
| CRS use on highways | 90.6% | (1,956) | 5.4% | (117) | 2.7% | (59) | 1.1% | (23) |
| CRS use on med.-to-long distance | 90.6% | (1,956) | 5.4% | (117) | 2.7% | (59) | 1.1% | (23) |
| CRS use on short distance | 78.4% | (1,692) | 11.7% | (252) | 6.5% | (140) | 3.3% | (72) |

Adult seat belt use showed a significant difference for use in the front and back. Only 25% of

respondents claimed to wear a seat belt when traveling as passengers in the rear seat.

Table 2: Parent / Guardian seat belt use

| | Always | Med. distance & highway | Highway only | Never |
|-----------------------------------|---------------|-------------------------|--------------|-------------|
| Driver seat belt use | 99.0% (2,138) | 0.6% (14) | | 0.1% (2) |
| Front seat passenger seatbelt use | 97.5% (2,104) | 0.7% (16) | 0.1% (2) | 0.1% (3) |
| Back seat passenger seatbelt use | 25.0% (539) | 24.8% (536) | 31.0% (669) | 17.4% (376) |

Traffic accident risk perception differed based on travel circumstances. Most respondents felt the highest risk was travel on highways (68.1%). In contrast, a higher percentage of parents believed they were unlikely or very unlikely to be involved in an accident on a short-distance trip (total 39%) compared with medium to long-distance (total 14.9%) and highway travel (total 13.7%).

Table 3: Accident risk perception

| | Risk of accident on highway | Risk of accident on medium- and long-distance trip | Risk of accident on short-distance trip |
|---------------|-----------------------------|--|---|
| Very unlikely | 0.3% (6) | 0.3% (6) | 1.2% (26) |
| Unlikely | 13.4% (289) | 14.6% (316) | 37.8% (817) |
| Likely | 18.2% (392) | 34.4% (742) | 17.6% (379) |
| Very likely | 68.1% (1,470) | 50.7% (1,094) | 43.4% (937) |

Results of self-efficacy for correct CRS use showed most parents are not very confident in choosing the right seat (58.6%), installing the seat (45.5%), and getting their child to sit in it when they resist (38.9%).

Table 4: Self-efficacy

| | Choosing CRS | Installing CRS | Getting child to sit correctly | Getting child to sit when they resist |
|--------------------|---------------|----------------|--------------------------------|---------------------------------------|
| No confidence | 3.0% (65) | 4.4% (95) | 2.0% (44) | 6.0% (129) |
| Not very confident | 58.6% (1,266) | 45.5% (983) | 39.0% (842) | 38.9% (840) |
| Quite confident | 29.1% (629) | 36.6% (791) | 44.3% (956) | 36.5% (789) |
| Very confident | 8.9% (193) | 13.2% (284) | 14.3% (309) | 18.3% (395) |

2. Regression analysis

For regression analysis the dependent variable was *CRS use on a short-distance trip*. Responses for use on a short trip were categorised into two groups: Always = 1 and Other = 2. Table 5 shows the variables found to have a positive correlation with CRS use on a short-distance trip. Parents who consistently wear a seat belt in the rear were 4.7 times more likely to restrain their child in a CRS on a short trip compared with parents who never wear one (95% CI: 3.24 – 6.80, $p < 0.001$). Respondents who sense a high risk of being involved in a traffic accident when traveling a short distance are approximately three times more likely to use a CRS on a short trip than those who do not (95% CI: 1.19 – 6.58, $p = 0.018$). Similarly, parents who sense a high risk of being involved in a traffic accident on a highway are 8.3 times more likely to use a CRS on a short drive (95% CI: 1.52 – 45.74, $p = 0.015$). Confidence in using a safety seat correctly is strongly associated with CRS use on a short trip. Parents who are very confident in choosing the right safety seat for their child, having the child sit correctly in the seat, and getting the child to sit in the CRS when they resist are 2.3 (95% CI: 1.18 – 4.61, $p = 0.014$), 8.8 (95% CI: 4.34 – 17.67, $p < 0.001$), and 13.51 (95% CI: 7.97 – 22.87, $p < 0.001$), respectively, more likely to always use a CRS when travelling short-distance than parents who are not confident at all.

| Table 5: Regression analysis | | | Beta | | | | <0.05 | Exponential | n=2159 | |
|---------------------------------------|---------------------------|---------|---------|----------------|------|-------------------|----------------------|-------------|-----------------------------|------------------|
| Parents' seat belt use | | | B | Standard Error | Wald | Degree of freedom | P value (Unadjusted) | Exp(B) | Confidence Interval (CI)95% | |
| | | | | | | | | | Lower | Higher |
| | | | | | | | | | Driving | Never |
| | Highway only | 0 | | | 0 | | | | | |
| | Med. distance and highway | -21.49 | 28415.7 | 0 | 1 | 0.999 | 0 | 0 | | |
| | Always | -19.897 | 28415.7 | 0 | 1 | 0.999 | 0 | 0 | | |
| Sitting passenger seat | Never | | | 15.331 | 3 | 0.002 | | | | |
| | Highway only | -21.896 | 28420.7 | 0 | 1 | 0.999 | 0 | 0 | | |
| | Med. distance and highway | -1.482 | 1.338 | 1.226 | 1 | 0.268 | 0.227 | 0.016 | 3.131 | |
| | Always | 0.624 | 1.226 | 0.259 | 1 | 0.611 | 1.866 | 0.169 | 20.626 | |
| Sitting rear seat | Never | | | 75.562 | 3 | 0 | | | | |
| | Highway only | 0.2 | 0.142 | 1.991 | 1 | 0.158 | 1.221 | 0.925 | 1.613 | |
| | Med. distance and highway | 0.509 | 0.154 | 10.979 | 1 | 0.001 | 1.664 | 1.231 | 2.25 | |
| | Always | 1.547 | 0.189 | 66.825 | 1 | 0 | 4.697 | 3.241 | 6.806 | |
| Perceived risk of traffic accident | | | B | Standard Error | Wald | Degree of freedom | P value (Unadjusted) | Exp(B) | Confidence Interval (CI)95% | |
| | | | | | | | | | Lower | Higher |
| | | | | | | | | | Short-distance | No risk |
| | Low risk | 0.13 | 0.432 | 0.091 | 1 | 0.763 | 1.139 | 0.489 | 2.657 | |
| | High risk | 0.225 | 0.441 | 0.261 | 1 | 0.609 | 1.253 | 0.528 | 2.971 | |
| | Very high risk | 1.032 | 0.435 | 5.613 | 1 | 0.018 | 2.806 | 1.195 | 6.587 | |
| Medium and long-distance | No risk | | | 36.97 | 3 | 0 | | | | |
| | Low risk | -0.829 | 1.102 | 0.566 | 1 | 0.452 | 0.436 | 0.05 | 3.784 | |
| | High risk | -0.487 | 1.099 | 0.197 | 1 | 0.657 | 0.614 | 0.071 | 5.292 | |
| | Very high risk | 0.001 | 1.098 | 0 | 1 | 0.999 | 1.001 | 0.116 | 8.619 | |
| Highway | No risk | | | 16.627 | 3 | 0.001 | | | | |
| | Low risk | 1.792 | 0.877 | 4.177 | 1 | 0.041 | 6 | 1.076 | 33.447 | |
| | High risk | 1.725 | 0.874 | 3.898 | 1 | 0.048 | 5.612 | 1.013 | 31.095 | |
| | Very high risk | 2.121 | 0.869 | 5.963 | 1 | 0.015 | 8.338 | 1.52 | 45.748 | |
| Confidence in using CRS | | | B | Standard Error | Wald | Degree of freedom | P value (Unadjusted) | Exp(B) | Confidence Interval (CI)95% | |
| | | | | | | | | | Lower | Higher |
| | | | | | | | | | Choosing CRS | Very unconfident |
| | A little unconfident | 0.127 | 0.285 | 0.2 | 1 | 0.655 | 1.136 | 0.65 | 1.984 | |
| | A little confident | 0.716 | 0.298 | 5.773 | 1 | 0.016 | 2.046 | 1.141 | 3.67 | |
| | Very confident | 0.85 | 0.346 | 6.029 | 1 | 0.014 | 2.34 | 1.187 | 4.614 | |
| Installing CRS | Very unconfident | | | 9.197 | 3 | 0.027 | | | | |
| | A little unconfident | -0.033 | 0.255 | 0.017 | 1 | 0.897 | 0.967 | 0.587 | 1.593 | |
| | A little confident | 0.142 | 0.259 | 0.3 | 1 | 0.584 | 1.152 | 0.694 | 1.912 | |
| | Very confident | 0.493 | 0.293 | 2.822 | 1 | 0.093 | 1.637 | 0.921 | 2.909 | |
| Getting child to sit correctly | Very unconfident | | | 78.505 | 3 | 0 | | | | |
| | A little unconfident | 0.788 | 0.311 | 6.416 | 1 | 0.011 | 2.199 | 1.195 | 4.047 | |
| | A little confident | 1.467 | 0.314 | 21.859 | 1 | 0 | 4.334 | 2.344 | 8.015 | |
| | Very confident | 2.173 | 0.359 | 36.556 | 1 | 0 | 8.784 | 4.343 | 17.767 | |
| Getting child to sit when they resist | Very unconfident | | | 166.637 | 3 | 0 | | | | |
| | A little unconfident | 0.715 | 0.191 | 14.014 | 1 | 0 | 2.045 | 1.406 | 2.974 | |
| | A little confident | 1.804 | 0.205 | 77.803 | 1 | 0 | 6.075 | 4.069 | 9.071 | |
| | Very confident | 2.603 | 0.269 | 93.874 | 1 | 0 | 13.51 | 7.979 | 22.877 | |

The results of this study suggest parental attitudes and behaviors are associated with the use of a CRS. Specifically, parents' risk perception concerning short-distance travel is low, resulting in lower levels of CRS use on short trips. Further, parents' non-use of a seat belt in the rear negatively affects the use of a CRS on short trips. Education programs to improve children's protection as passengers should target parents' perceptions of back seat safety and the risks associated with short-distance travel.

References

- 1) 警察庁交通局 (2017)平成 29 年上半期における 交通死亡事故の特徴等について https://www.npa.go.jp/toukei/koutuu48/H29_kamihannki_setumei.pdf
- 2) 警察庁/日本自動車連盟(JAF) (2019) チャイルドシート使用状況全国調査(2019) https://jaf.or.jp/-/media/1/2590/2610/2639/2653/3120/crsdata2019_002.pdf?la=ja-JP

- 3) 警察庁/日本自動車連盟(JAF) (2018) チャイルドシート使用状況全国調査(2018)
https://iaf.or.jp/-/media/1/2590/2610/2639/2653/crsdata2018_001.pdf?la=ja-JP
- 4) 警察庁とJAF(2020) シートベルト着用状況調査 (2020)
<https://jaf.or.jp/-/media/1/2590/2610/2639/sb2020.pdf?la=ja-JP>

5. 主な発表論文等

〔雑誌論文〕 計0件

〔学会発表〕 計5件（うち招待講演 0件 / うち国際学会 1件）

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|---|
| 1. 発表者名 Mellisa Ogasawara |
| 2. 発表標題 Seatbelt and Child Restraint Seat Behavior of Parents in Aomori Prefecture |
| 3. 学会等名 日本ヒューマンケア科学学会第 12 回 学術集会 |
| 4. 発表年 2019年 |

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| 1. 発表者名 小笠原メリッサ、千葉敦子、川内 規会、反町 吉秀 |
| 2. 発表標題 青森県におけるシートベルトとチャイルドシートの使用の 普及と予測因子の断面研究 |
| 3. 学会等名 日本ヒューマンケア科学学会第 13 回 学術集会 |
| 4. 発表年 2020年 |

| |
|---|
| 1. 発表者名 Back Seat Safety Belt Use and Child Restraint Seat Use in Japan |
| 2. 発表標題 Mellisa Ogasawara, Atsuko Chiba, Kie Kawauchi, Yoshihide Sorimachi |
| 3. 学会等名 Virtual Pre-Conference Global Injury Prevention Showcase (国際学会) |
| 4. 発表年 2021年 |

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| 1. 発表者名 A cross-sectional study to determine the prevalence and predictors of child restraint seat use in Aomori Prefecture |
| 2. 発表標題 Mellisa Ogasawara, Atsuko Chiba, Kie Kawauchi, Yoshihide Sorimachi |
| 3. 学会等名 日本セーフティプロモーション学会第14回学術大会 |
| 4. 発表年 2021年 |

〔図書〕 計0件

〔産業財産権〕

〔その他〕

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6. 研究組織

| | 氏名 (ローマ字氏名) (研究者番号) | 所属研究機関・部局・職 (機関番号) | 備考 |
|-------|--|-----------------------------------|----|
| 研究分担者 | 千葉 敦子 (Chiba Atsuko) (30404817) | 青森県立保健大学・健康科学部・准教授 (21102) | |
| 研究分担者 | 川内 規会 (Kawauchi Kie) (30315535) | 青森県立保健大学・健康科学部・教授 (21102) | |
| 研究分担者 | 反町 吉秀 (Sorimachi Yoshihide) (80253144) | 青森県立保健大学・健康科学部・教授 (21102) | |

7. 科研費を使用して開催した国際研究集会

〔国際研究集会〕 計0件

8. 本研究に関連して実施した国際共同研究の実施状況

| 共同研究相手国 | 相手方研究機関 |
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