The influence of parent–child relationship on safety belt use among school children in Beirut

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SUMMARY

Parent–child relationships have been linked to the health and social well-being of adolescents. This relationship may be especially influential in areas of the world where family bonds remain the strongest for children. The association of parent–child relations and safety belt use has not been extensively documented. The objective of this research was to investigate the influence of parent–child relationship on adolescent safety belt use, controlling for other variables. To our knowledge, this is the first study to examine determinants of safety belt use among school students in Lebanon. A two-stage sampling design resulted in the inclusion of 3/3 public and 10/23 private schools. Over 2400 students in grades 6–12 completed a cross-sectional self administered survey. Current safety belt use included student report to wearing seat belts in the front seat only or the front and back seat. Parent–child relationship was measured through student reports of ‘getting along with parents’. Other variables included socio-demographic status, health, lifestyle and social characteristics. Logistic regression was performed for variables significant at the bivariate level resulting in three models. Getting along with parents was a significant predictor of safety belt use in the bivariate and all multiple regression models. In the most comprehensive multiple regression model, having a good relationship with parents doubled the likelihood of using a safety belt (95% CI: 1.1–3.1). The study provides enhanced evidence of the importance of the parent–adolescent relationship. Interventions with parents are recommended to enhance their awareness of their influence on their children.

Key words: parent–child relations; safety belt use; adolescents; Lebanon

INTRODUCTION

Parent–child relationships are important and have been linked to the health and social well-being of the child (Turner et al., 1993; Resnick et al., 1997; Hatcher and Scarpa, 2001; Friestad and Klepp, 2006). This relationship may be especially influential in areas of the world where family bonds remain the strongest for children.

The relationship between children and their parents has been shown to enhance general well-being and result in better social support (Canetti et al., 1997); protect against emotional distress and suicide (Resnick et al., 1997) and protect children from engaging in risky health behaviors (Bailey and Hubbard, 1990; Turner et al., 1993; Resnick et al., 1997; Sieving et al., 2000; Hatcher and Scarpa, 2001; Ledoux et al., 2002; Borawski et al., 2003; Foster et al., 2007). Despite the consistency in the finding of the importance of a link between parents and children to health, the measurement of parent–child relations has differed between various
studies and included an assessment of parenting style (Foster et al., 2007), parental monitoring and trust (Borawski et al., 2003), care and control (Canetti et al., 1997), and perceived satisfaction with the relationship with mother (Sieving et al., 2000), among others.

The influence of parent–child relationship on safety belt use has not been investigated extensively. The impact of parenting on seat belt use has been limited to the effect of role modeling of safety belt use (Shin et al., 1999; Williams et al., 2004). Studies have indicated that parental influence, including encouragement to wear a safety belt through modeling the behavior of safety belt use, has increased use of safety belt among adolescents (Shin et al., 1999; Williams et al., 2004). For example, 68% of youth were belted in a car when their adult driver was belted, whereas only 28% were belted if the driver was not. The assumption in this study was that the driver was the parent since the drop off location was the school (Williams et al., 2004). No other measure of the relationship between parent and children has been investigated as a determinant of safety belt use.

Research exploring determinants of safety belt use is important as safety belts are considered to be the single most effective strategy against road traffic injuries and deaths (National Highway Traffic Safety Administration, 2003). Worldwide, road traffic injuries are considered a major public health concern and are expected to rise from being the ninth leading cause of death in 2004 to the fifth in 2030 (WHO, 2009). The number of people killed in road crashes each year is estimated at almost 1.2 million, with the number of injuries as high as 50 million (WHO, 2009). Among young people aged 5–14 years of age, road traffic injuries are the second leading cause of death worldwide, and among those aged 15–24 years, they are the leading cause of death (World Health Organization, 2009). According to the WHO (WHO, 2009), the Eastern Mediterranean Region has the second highest reported mortality rate due to road traffic injuries, and is tied for highest when using modeled data. The statistics compiled by the Lebanese Internal Security Forces (WHO, 2009) revealed 497 fatalities and 6266 non-fatal injuries as a result of road traffic crashes in 2007. The data from 2003 (LISF, 2005) indicated that people aged between 14 and 25 years represented 26% of the total number of deaths and 39% of the injured in road traffic crashes. The WHO Global Status Report on Road Safety states that the seat belt use rate by people in Lebanon (no specification for age or location in vehicle) is 15% making it the lowest rate among its Arab neighbors (WHO, 2009). However, surveys of university students in Lebanon have indicated safety belt use rates of 29–37% (Shediac-Rizkallah, 2000–2001; Musharrafieh et al., 2003). There was no difference in safety belt use by gender in either study, or by type of university (public versus private) or field of study (arts and sciences, engineering, law, health sciences) (Musharrafieh et al., 2003). Tobacco use was unrelated to safety belt use but student who drank alcohol at least once per week were more likely to wear safety belts than those who did not (Musharrafieh et al., 2003).

The traffic law in Lebanon dates back to 1967. However, in 1983, a decree was added requiring that all cars be equipped with seat belts in the front seats and requiring front seat passengers to wear safety belts. Enforcement of this primary law is sporadic at best.

This research investigates the influence of parent–child relationships on the child’s use of safety belts, controlling for other socio-demographic variables that have been associated with safety belt behavior. To our knowledge, this is the first study that investigates the determinants of safety belt use among adolescents in Lebanese schools. In addition, the study adds to the international literature on the influence of parent–child relations on adolescent behavior, especially in areas of low prevalence of safety belt use.

METHODS

Survey instrument and sampling

This cross-sectional study was conducted with school children during the spring semester of the academic year 2002–2003 in the Greater Beirut area. The area (Beirut city and its suburbs)—which consists of 33% of the Lebanese population, includes a total of 159 private intermediate and secondary schools (with 28 378 students) and 57 public schools (with 9791 students) (Lebanese Ministry of Education, 1999–2000). Approval to conduct the present study was granted from the general director of the Lebanese Ministry of Education.
and by the administrators of all participating private schools as well.

Schools were randomly selected and students in intermediate and secondary levels were asked to take part in the study and read an informed consent cover page prior to proceeding. Students filled out a self-administered anonymous questionnaire that was handed to them in the classroom and then collected after 15–20 min. During that time, a research assistant was constantly present in the classroom to answer students’ questions.

The questionnaire included items related to

(i) Outcome variables: Safety belt use was assessed by the question ‘Do you wear a safety belt in the car’. The response categories were: i) Yes, in the front seat only, ii) Yes, both in the front seat and the back seat, and iii) Never. Only front seat users (47%) along with front and back seat users (13%) were grouped together to constitute the variable ‘use of safety belt’. We dichotomized the outcome variable because the current law in Lebanon only requires passengers in the front seat to wear seat belts.

(ii) Independent variable: parent–child relationship was measured using one variable asking how well the respondent got along with his/her parents (very well, well, not at all well).

(iii) Control variables:

(a) Socio-demographic characteristics: items included gender, age, parents’ education and occupation, the number of persons living in the home and number of rooms—used to create a crowding index, number of siblings, year in school and type of school (public, private). With respect to occupation, skilled and unskilled were combined into one category as the percentage of unskilled workers was very small in the sample for both the mother’s and father’s occupation (<1.5%).

(b) Health and lifestyle characteristics: items included self-reported height and weight which was used to create a BMI variable, perceived health (excellent/very good, good, bad/very bad), whether the student exercises regularly (yes, no), how many hours of television the respondent watches per day (<2, 2–5, >5), how many hours of sleep the respondent usually gets per day (<8; ≥8), smoking (having smoked either cigarettes or narghile at least once in the last month); and

(c) Personal characteristics such as self-esteem measured through responses to the statement: I feel satisfied with myself (always, sometimes, never).

Data analysis

Adolescents who self-reported using a safety belt in the front seat were compared with adolescents who did not. Unadjusted odds ratios (OR) were used to test the association between safety belt use and getting along with parents as well as the remaining variables. Two multiple logistic regression models (Model 2 and Model 3 in Table 3) were conducted to examine the effect of getting along with parents while controlling for other confounders. In Model 2, gender, age and socio-economic variables that were significant at the bivariate level were included. Only school type, although not significant at the bivariate level, was forced in the model since it is considered to be an important socio-economic variable. The other multiple regression model, Model 3, additionally included all the other significant variables at the bivariate level. The odds ratios with 95% confidence intervals (CI) evaluated the strength and the precision of the association between safety belt use and the associated factors. Statistical significance was set at 5%. The Statistical Package for Social Sciences SPSS version 10 was used for data analysis.

RESULTS

A total of 23 schools were randomly selected among the 159 private schools, 10 schools agreed to participate (~6% of private schools). Three public schools (~5% of public schools) were selected randomly from the list of 57 public schools, all of which agreed to participate. The school grades included in the sample ranged from first intermediate to third secondary. The distribution of these grades was as follows: first intermediate: 1%, second intermediate: 21%, third intermediate: 22%, fourth intermediate: 3%, first secondary: 27%, second secondary: 23%, third secondary: 3%. Response
rate of students from within the selected schools was above 95%.

The final study sample consisted of 2443 school children. However, the sample for analysis herein included 2350 students [86 students (4%) did not complete the question regarding safety belt use; and 7 students had missing information on whether school was public or private]; 1740 (74%) were from private schools and 610 (26%) from public schools. The proportion of children in public and private schools in our sample is reflective of the distribution in Beirut schools.

The sample was 55% females, and the median age of the students was 15 years (SD = 1.8), the 25th percentile was 13 years and the 75th percentile was 16 years. Over half (52%) were at the intermediate level.

About 60% of the students reported wearing seat belts in the front and/or back seat. Table 1 describes the relationship between safety belt use and socio-demographic factors. At the bivariate level, gender, parents’ education and household crowding were the only significant factors for safety belt use.

Table 2 describes the relationship between safety belt use and getting along with parents, as well as potential confounding variables including health, lifestyle and self esteem. Getting along very well with parents was strongly linked to use of safety belts (OR: 2.5, 95% CI: 1.7–3.7); this association appeared to follow a trend where the more the students got along with their parents, the higher was the likelihood of them using safety belts. In addition, self esteem and hours of sleep were positively associated with safety belt use; whereas, TV watching and smoking were negatively associated with safety belt use.

Table 3 compares the unadjusted and adjusted associations of safety belt use. Model 1 is the unadjusted model. In Model 2, parent–child relationship remained significant for relationships rated to be very good—adjusted for demographic variables. Similarly in Model 3, parent–child relationship remained significant after adjusting for all other additional covariates significant at the bivariate level. Getting along very well with parents doubled the likelihood of using the safety belt among adolescents. Other variables that remained significant in the final model were hours of sleep: students who reported sleeping 8 h or more were 40% more likely to use the safety belt compared to their counterparts (95% CI: 1.1–1.8); and TV watching: watching TV for 2 h or less was positively associated with safety belt use (95% CI: 1.2–2.3). Females were 30% more likely to use a safety belt, however this result showed a borderline significance (95% CI: 1.0–1.6).

DISCUSSION

Our study findings indicate that getting along with parents, as a proxy for parent–child relationship, influenced safety belt use significantly, and remained significantly associated with safety belt use even after controlling for many other demographic, health, lifestyle and personal variables. Students who reported getting along very well with their parents were twice as likely to wear seat belts as those who reported they did not get along with their parents. This result upholds the established evidence regarding the protective aspects of relationships between children and parent in this specific behavior as in others. Getting along with parents could affect safety belt use either through children being more willing to model adult behavior of safety belt use, or through being more willing to listen to advice and encouragement of the parent to use safety belt. We are unsure which of the above explanations might be at play in this case, as the survey did not include questions about parental safety belt use, nor about parent encouragement to wear safety belts. In addition, it is possible—given the cross-sectional nature of this research, that the association between getting along with parents and safety belt use is spurious, and that some children are more likely to be generally conformist, more likely to act in a specific way, i.e. to wear seat belts if expected, and to get along with parents as expected. The same could be said for parents, that parents who encourage children to wear safety belts are also those who are more likely to get along with their children.

Over a third of adolescents in our study do not wear safety belts when sitting in the front seat of a car (41%). The prevalence, self reported in this study, of safety belt use among Lebanese school children in greater Beirut (59%), was nearly two-fold larger than that reported by Musharrafieh et al. (Musharrafieh et al., 2003) in a study carried out among university students (37%) in Greater Beirut.
Our findings were in accordance with previous research among adults and youth indicating a positive association (though borderline in significance) between safety belt use and being female (Reinfurt et al., 1996; Begg and Langley, 2000; Lerner et al., 2001; Shinar et al., 2001; Kim and Kim, 2003; McCartt and Northrup, 2003; Williams et al., 2004). In addition, our results indicated that TV viewing was negatively associated with safety belt use which supports previous literature on TV viewing and risk behaviors of adolescents in general (Klein et al., 1993). Hours of sleep were positively associated with safety belt use, also supporting previous related literature (Donovan et al., 1993).

Contrary to previous reported research on increasing use of safety belt with age (Reinfurt et al., 1996; Li et al., 1999; Lerner et al., 2001;
Shinar et al., 2001; Kim and Kim, 2003; McCartt and Northrup, 2003; Williams et al., 2004, Barss et al., 2008), we found no association between safety belt use and age. This finding perhaps suggests that—in a country where healthy behaviors are not common, safety belt use is an acquired habit that once begun persists. Similarly, although lower safety belt use has been correlated with other high-risk behaviors such as smoking (Sahai et al., 1998), our findings did not show such a correlation. Up to 60% of 13–15-year olds have smoked (either cigarettes or the water pipe) at least once in the last month (Saade et al., 2008), and both social and environmental cues in Lebanon are promotive of youth smoking. Thus, young people who generally choose healthy behaviors—such as use of safety belt, or exercising, may still smoke.

There are several limitations to the conclusion drawn from this study. The data were collected in greater Beirut and our results may not be applicable to adolescents from other urban or rural areas. The sampling methodology yielded a sample that was skewed in favor of private schools but provided a student sample that was reflective of the distribution of students in Beirut schools. The cross-sectional nature of the study hampered any causal inference between the study variables and safety belt use. In addition, the data may be subject to bias inherent in the self-reporting method adopted in this research. However, research has suggested that self report is an accurate measure of child health and adolescent risk behaviors generally (Brener et al., 2003; Riley, 2004) and of safety belt use specifically (Nelson, 1996; Parada, 2000; Zambon,
2008)—although over-reporting has been more likely to occur in areas with low safety belt prevalence. The specific item measuring safety belt use asked about general use, rather than frequency of use. Ascertaining frequency is important to understand risk of morbidity and mortality. Parent–child relationship is a broad construct that was measured by only one variable that has not been validated. However, it is consistent with another measure of parent–child relationship: how often students tell their parents where they are going when they leave the house. Students who self reported getting along very well with parents were more likely to always (82%) tell them where they were going as opposed to those who reported getting along well with parents (61%) or those who reported not getting along with parents (37%) \((p < 0.001)\). Other studies of parent influence on safety belt use have asked about parental use as an indicator of role modeling. Additionally, in recent studies of parent influence on adolescent health behavior, several variables have been measured under the rubric of parental monitoring including quality of communication between parents and children, parental structure of children’s lives (joint activities, joint decision making and rules), and trust (as an indicator of quality of relationship). Generally, more than one item should be included in any research investigating the association between parent–child relationships and health behaviors. No multi-level modeling was conducted in this analysis. This could have identified any possible clustering effect within schools. Finally, this survey was primary constructed to assess tobacco use. Therefore, several potential confounding factors for safety belt use such as religiosity, student knowledge about safety belt efficacy, attitudes towards safety belt use, parental use of safety belt or previously being in a car crash were not included in the survey.

The present study extends evidence of the importance of parent–child relationships, measured through getting along with parents, on children’s use of car safety belt to developing world settings. To our knowledge, this is the first study to determine safety belt use among school students in Lebanon, and one of the few internationally to assess the influence of parent–child relationships on this use. Our findings have important public health implications on both research and practice. Further research should be conducted with the specific objective of exploring associations between parent–child relations and safety belt use. Both the measurement of safety belt use and the parent–child relationships should be more specific in order to assess which aspect of the parent–child relationship is most important for consistent safety belt use. Further research should also consider testing various analytic models using a conceptual/theoretical framework as a guide. As for practice, interventions with parents to enhance their awareness of their influence on children are important. Previous interventions of the effect of parent–child communication have shown its impact on various adolescent risk behavior (Litrownik et al., 2000; Schuster et al., 2008). Awareness of the importance of parental relationships and of effective communication techniques can be disseminated through a variety of channels, including media; and programs with parents initiated by NGOs as well as GOs. Recently, several interventions for parents have been developed and implemented with various population groups in Lebanon with the intent of improving relations with their children. These were received with enthusiasm by parents. Finally, better enforcement of existing laws related to safety belt use, and expansion of the law to include rear seats is recommended.

**ACKNOWLEDGEMENTS**

The authors thank the school students who participated in this study. The authors would also

**Table 3: Unadjusted and adjusted association between parent–child relationship and safety belt use**

<table>
<thead>
<tr>
<th>Parent–child relationship</th>
<th>Model 1: unadjusted association OR (95% CI)</th>
<th>Model 2: adjusted for age, gender and SES OR (95% CI)</th>
<th>Model 3: adjusted for all other confounders OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Good</td>
<td>1.7 (1.2–2.4)</td>
<td>1.5 (0.9–2.3)</td>
<td>1.3 (0.8–2.1)</td>
</tr>
<tr>
<td>Very good</td>
<td>2.5 (1.7–3.7)</td>
<td>2.4 (1.5–3.7)</td>
<td>1.9 (1.1–3.1)</td>
</tr>
</tbody>
</table>

\[a\] All socio-economic variables significant at the bivariate level along with school type were added to the model. The sample size for this model is 1812.

\[b\] In addition to Model 2 variables, all other confounders significant at the bivariate level were added to the model. The sample size for this model is 1715.

\[c\] Odds ratio, \[d\] confidence interval.
like to thank the reviewers for constructive comments which strengthened the manuscript.

FUNDING

The work was supported by grants from Research for International Tobacco Control (RITC), an international secretariat housed at the International Development Research Centre (IDRC) in Ottawa Canada; and the University Research Board (URB) at the American University of Beirut, Lebanon.

REFERENCES


