· Advances in Medical Sciences · Vol. 54(1) · 2009 · pp 20-26 · DOI: 10.2478/v10039-009-0022-7

Attention Deficit Hyperactivity Disorder and Increased Risk of Injury

Merrill RM[1*], Lyon JL[2], Baker RK[3], Gren LH[2]

1 Department of Health Science, College of Health and Human Performance, Brigham Young University, Provo, Utah
2 Department of Family and Preventive Medicine, University of Utah, Salt Lake City, Utah
3 Utah Department of Health, Division of Healthcare Finance, Bureau of Coverage and Reimbursement Policy, Salt Lake City, Utah

* CORRESPONDING AUTHOR:
Brigham Young University
Department of Health Science
229-A Richards Building
Provo, Utah 84604
tel. 801-422-9788; fax. 801-422-0273
e-mail: Ray_Merrill@byu.edu (Ray M. Merrill)

Received 06.01.2009
Accepted 26.05.2009
Advances in Medical Sciences
Vol. 54(1) · 2009 · pp 20-26
DOI: 10.2478/v10039-009-0022-7

ABSTRACT

Purpose: This study describes the influence of attention deficit hyperactivity disorder (ADHD) on the incidence rates of selected injuries.

Methods: A retrospective cohort study design was employed using medical claims data from the Deseret Mutual Benefit Administrators (DMBA), a health insurance company for employees of the Church of Jesus Christ of Latter-day Saints (LDS) and their spouses and dependent children. ADHD diagnosis, injury, medication, and demographic data were extracted from claims files during 1998-2005 for all enrollees aged 0-64 years.

Results: Incidence rates of ADHD were 1.83 (95% CI 1.68-2.00) times greater in males than females and highest in the age group 5-9 years and income group $80,000 or greater. ADHD increased the risk of selected injuries. The most common injuries involved sprains and strains of joints, then open wounds of the head, neck and trunk, and upper/lower limb, and then fractures of the upper/lower limb. Medication did not significantly protect against injury in ADHD patients. The rate of severe injury (i.e., fracture of skull, neck and trunk; intracranial injury excluding those with skull fracture; and injuries to nerves and spinal cord) was 3.07 (95% CI 2.37-3.98) times more common in ADHD enrollees compared with non-ADHD enrollees. Those with 1, 2, 3, or 4 or more injuries were 1.67 (1.50-1.86), 2.11 (1.75-2.56), 2.63 (1.80-3.84), and 2.94 (1.47-5.87) times more likely to have ADHD, respectively.

Conclusions: ADHD is positively associated with injuries. More severe injuries have a significantly stronger associated with ADHD than less severe injuries.

Key words: ADHD, claims data, incidence, injury, retrospective cohort, risk

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a neurobehavioral problem that reflects pervasive inattention or hyperactivity. In 2003, 4.3% of children aged 4-17 years had previously been diagnosed with ADHD and were taking medication for the disorder. Males had a higher prevalence of the disorder than females across all ages [1].

Research has shown that people with ADHD are significantly more likely to be injured while riding a bicycle or driving a car, to receive head injuries, and to be hospitalized for accidental poisoning, burns, or other unintentional injuries [2-11]. ADHD affects the risk of injuries in both children and adults. For example, in a study involving school aged children aged 6-17 years in the United States during the years 1997-2002, injury rates in the prior three months were compared between children ever identified with ADHD and non-ADHD children. A significantly greater risk of injury overall was found in children with ADHD, after adjusting for potential confounders [3]. In a worksite study involving adults, ADHD was associated with a significant 4-5% reduction in work performance, a significantly greater number of days absent from work, and a significantly higher number of accident-related injuries [10].

Reasons for the higher risk of injuries among ADHD persons are not fully understood. It may be that a person with

ADHD is more likely to be inattentive, distracted, impulsive, or not foresee consequences of certain behaviors as readily as non-ADHD persons. One study found that although ADHD and non-ADHD children were similarly able to identify hazards, ADHD children anticipated less severe consequences to risky behaviors and were less able to derive prevention strategies and safety rules [6].

Most research involving ADHD and injuries has associated injury risk with prevalent (i.e., ever diagnosed) cases of ADHD in children. Studies have also tended to combine all types of injuries. Measuring the incidence of ADHD provides a better estimate of the risk of the disorder. In addition, whether selected types of injuries correlate with ADHD incidence and exploring whether injury rates for ADHD children correspond with injury rates for ADHD adults deserves further attention. Such information can help direct tailored interventions for reducing unintended injuries among people with ADHD.

The purpose of this study is to evaluate the hypotheses that ADHD is associated with more serious forms of injury, that ADHD patients experience a higher number of injuries than non-ADHD patients, that the relationship between ADHD and injuries is influenced by age and sex, and that ADHD patients who receive medication experience fewer injuries.

MATERIALS AND METHODS

Study Population

A retrospective cohort study design was employed using medical claims data from the Deseret Mutual Benefit Administrators (DMBA), a health insurance company for employees of the Church of Jesus Christ of Latter-day Saints (LDS) and their spouses and dependent children. The company was established in 1970 to provide health insurance and retirement income to Church employees and their families. Electronic claims data were available for the years 1997 through 2006, with approximately 61,000 enrollees per year. Of this number over 96% are affiliated with the LDS Church. The cohort has little employment turnover, estimated at less than 5% per year. The majority of turnover occurs among young adults who lose eligibility for coverage under their parents and individuals who become eligible for Medicare at age 65. (Medicare is a program under the U.S. Social Security Administration that reimburses hospitals and physicians for medical care provided to qualified individuals ages 65 years and older.) The database is de-identified according to Health Insurance Portability and Accountability Act (HIPAA) guidelines and was exempt from the need for informed consent by the Institutional Review Board at the University of Utah.

Approximately 46% of enrollees were employed by the LDS church education system, seminaries, and institutes; 21% of enrollees were maintenance and custodial workers; and the remaining 33% of enrollees worked in other capacities for the LDS Church. Approximately 70% of enrollees resided in Utah, 11% in Idaho, 4% in other mountain states, 6% in pacific states, 4% in central states, 3% in southern states, and 2% in northeastern states.

Data Collection

The current study was classified as a low risk study by the Institutional Review Board of the University of Utah. We examined the automated claims records from January 1, 1997 to December 31, 2005 and used the International Classification of Diseases, 9th Revision, Clinical Modification codes to define injuries and ADHD [12]. A prevalent case of ADHD refers to a person who has ever been diagnosed with the disorder. On the other hand, an incident case of ADHD refers to a person who has been diagnosed within a short time period, such as in the last year. For the first year of available data, 1997, an ADHD case could have been a new case or a prevalent case. For this reason, incident cases were based on newly diagnosed cases occurring from January 1, 1998 to December 31, 2005 who had not been diagnosed in 1997. Data on age, sex, geographic location, annual income and pharmaceutical information were used in this analysis.

Because of considerable overlap between sub-codes and lack of uniformity by providers in applying the sub-codes, all patients seen for the first time with an ICD-9 code of 314 regardless of sub-codes (e.g., 314.00, 314.01, and 314.20) were suspected to have ADHD. However, as with most insurance claims, the DMBA claims do not differentiate between a visit where ADHD is suspected and one where a physician diagnosis is made. For this reason persons were defined as ADHD if they (a) had 2 or more visits with an ADHD diagnosis, (b) had a prescription of a Drug used to treat ADHD or (c) had a combination of diagnosis and ADHD drug.

The methodology used to identify persons that had ADHD based on medications included:

1. Discussions with physicians that treat ADHD, who generated a list of drugs prescribed to treat the condition.
2. The list of drugs was then grouped into three types: exclusively used for ADHD; predominantly used for ADHD; and not typically used for ADHD. ADHD-related drugs were Adderall, Concerta, Metadate, Methylin, Methylpheni, Pemoline, Ritalin, and Strattera.

Claims with diagnoses codes 800.00-957.00 were used to define injuries. Some minor injuries may not have required medical attention and were not included in the claims database. Attention deficit hyperactivity disorder participants with injury claims following the incidence date were included in the analyses. Incidence rates were calculated for each injury category using the baseline population (enrollment) numbers. If an injury occurred in the same year as a diagnosis with ADHD, we assumed that ADHD influenced the incidence of that injury. Multiple injuries were possible and included in the analyses. Those aged 65 years or older were excluded, since most are covered by Medicare and are not included in the DMBA database.

Table 1. **Characteristics of attention deficit hyperactive disorder (ADHD) in the Deseret Mutual Benefit Administration population, 1998-2005.**

	No.with ADHD	ADHD Rate per 1,000	Chi-square P value	Rate Ratio	95% Confidence Interval	Rate Ratio†	95% Confidence Interval†
Age distribution at diagnosis*							
30-64 years	636	3.1	< 0.0001	1.00	---	1.00	---
25-29 years	58	2.6		0.84	0.64, 1.09	0.83	0.63, 1.09
20-24 years	202	3.5		1.13	0.97, 1.33	1.07	0.91, 1.25
15-19 years	373	5.4		1.76	1.56, 2.00	1.70	1.50, 1.93
10-14 years	425	8.0		2.60	2.30, 2.94	2.53	2.24, 2.86
5-9 years	462	10.8		4.23	3.22, 5.55	4.12	3.14, 5.41
0-4 years	30	0.8		0.26	0.18, 0.38	0.26	0.18, 0.37
Sex							
Female	784	3.2	< 0.0001	1.00	---	1.00	---
Male	1402	5.8		1.84	1.68, 2.00	1.80	1.64, 1.96
Annual household income							
0-39,999	749	4.1	< 0.0001	1.00	---	1.00	---
40,000-59,999	516	4.6		1.12	1.01, 1.26	0.99	0.88, 1.11
60,099-79,999	485	5.0		1.22	1.09, 1.37	1.05	0.93, 1.18
80,000 +	323	5.2		1.28	1.12, 1.45	1.17	1.03, 1.34
Unknown	113	3.3		0.80	0.65, 0.97	0.92	0.75, 1.12

*Age for non-ADHD patients was their age at the time of injury or on July 1 in each year.
†Adjusted for age and sex.

A total of 490,378 individuals were enrolled in DMBA during the study period, of which 2,186 were classified as having ADHD. There were 599 persons with one ICD-9 code for ADHD who did not receive one of the medication schemes listed above for treating ADHD and did not receive a follow-up visit for ADHD. For these individuals it appears that the initial workup for ADHD did not confirm the disorder. Hence, they were included in the non-ADHD group.

Statistical Techniques

Differences in means were evaluated using the *t* test and differences in proportions were assessed using the chi-square test. ADHD rates were calculated per 1,000 person-years. The numerator in the rate calculation consisted of first time, newly diagnosed ADHD cases, and the denominator consisted of all enrollees in the DMBA database. Trends in rates were evaluated using the Mantel-Haenszel (MH) chi-square test [13]. Incidence rates of ADHD were compared across the levels of age, sex, and annual household income using rate ratios and 95% confidence intervals. Incidence rates of selected types of injuries were compared between ADHD and non-ADHD persons using rate ratios and 95% confidence intervals. Finally, rates of injuries were compared according to ADHD status across the levels of age and severity of injury, and evaluated using the chi-square test. Two-sided tests of significance were used, based on the 0.05 level. Statistical analyses were derived from Statistical Analysis System (SAS) software, version 9.1 (SAS Institute Inc., Cary, NC, USA, 2003).

RESULTS

The average age of those in the ADHD group was 23.0 (SD = 16.5) compared with 28.3 (SD = 18.7) in the non-ADHD group ($P < 0.0001$). Approximately 61% of ADHD patients were less than age 20 compared with 44% in the non-ADHD group. ADHD patients were also more likely to be male (64% vs. 49%; P < 0.0001).

Trends in ADHD incidence rates over calendar years were not statistically significant for males ($P = 0.082$) or females ($P = 0.48$). For the combined years 1998-2005, the incidence rate of ADHD was 5.8 per 1,000 for males (95% CI 5.5-6.1) and 3.2 per 1,000 for females (95% CI 2.9-3.4). ADHD was associated with age, sex, and income (*Tab. 1*). The rate of ADHD is greatest in the age group 5-9 years and then decreases thereafter. Males were more likely to be diagnosed with ADHD than females and the rate of ADHD was greater among those in the income group $80,000 and greater.

Attention deficit hyperactivity disorder was significantly associated with increased risk of several types of injury (*Tab. 2*). The most common injuries involved sprains and strains of joints, then open wounds of the head, neck and trunk, and then fractures of the upper/lower limb. Attention deficit hyperactivity disorder was most strongly associated with intracranial injury; then injury to blood vessels, late effects of injuries, poisoning, toxic effects and other external causes;

Table 2. **Incidence of injuries (ICD-9 800.00-957.00) in the Deseret Mutual Benefit Administration population according to ADHD status, 1998-2005.**

		Total		ADHD		No ADHD		Rate Ratio*	95 % CI
	ICD-9-CM	No.	Rate/1000	No.	Rate/1000	No.	Rate/1000		
Fracture of skull, neck and trunk	800-809	2197	4.5	20	9.1	2177	4.5	2.05	1.32, 3.18
Fracture of upper/lower limb	810-829	13367	27.3	97	44.4	13270	27.2	1.63	1.34, 1.98
Dislocation	830-839	7987	16.3	36	16.5	7951	16.3	1.01	0.73, 1.40
Sprains and strains of joints and adjacent muscles	840-848	32412	66.1	211	96.5	32201	66.0	1.46	1.29, 1.66
Intracranial injury excluding those with skull facture	850-854	2196	4.5	37	16.9	2159	4.4	3.83	2.77, 5.28
Internal injury of thorax, abdomen and pelvis	860-869	434	0.9	6	2.7	428	0.9	3.13	1.40, 7.00
Open wound of head, neck and trunk, upper/lower limb	870-897	16018	32.7	131	59.9	15887	32.5	1.84	1.56, 2.18
Injury to blood vessels, late effects of injuries, poisonings, toxic effects	900-909	779	1.6	13	5.9	766	1.6	3.79	2.19, 6.55
Superficial injury	910-919	5968	12.2	47	21.5	5921	12.1	1.77	1.33, 2.35
Contusion with intact skin surface and crushing injury	920-928	13098	26.7	111	50.8	12987	26.6	1.91	1.59, 2.29
Effects of foreign body entering through orifice	930-939	2337	4.8	17	7.8	2320	4.8	1.64	1.02, 2.63
Burns	940-949	1262	2.6	11	5.0	1251	2.6	1.96	1.09, 3.55
Injuries to nerves and spinal cord	950-957	756	1.5	5	2.3	751	1.5	1.49	0.62, 3.58

* Obtained by dividing the incidence rate of injuries in the ADHD participants to the non-ADHD participants. After adjusting for age, sex, and income, all of the significant rate ratios remained statistically significant with the exception of "effects of foreign body entering through orifice" (data not shown). This rate ratio became 1.51 (95% CI 0.94-1.43).

and then internal injury of the thorax, abdomen and pelvis. Statistically significant rate ratios remained significant after adjusting for age, sex, and annual household income, with the exception of "effects of foreign body entering through orifice" ($P = 0.0895$).

Overall, the rate of injuries was 1.55 (95% CI 1.44-1.66) times greater among those with ADHD compared with those without ADHD, after adjusting for age, sex, and annual household income. Injury was regressed on ADHD, sex, age, annual household income and interaction terms involving each of these variables and ADHD. All possible interactions with ADHD were considered in the model. Only the interaction involving ADHD by age was significant ($P = 0.0035$). A significantly higher rate of injury in the ADHD group compared with the non-ADHD group varied across the age span, being greatest for those in the age group 0-4 years, followed by the age group 20-64 years (*Fig. 1*).

The severity of injury was also associated with ADHD. Injuries were stratified by severity, with the more severe group including fracture of skull, neck and trunk; intracranial injury excluding those with skull fracture; and injuries to nerves and spinal cord. The less-severe group included all other categories of injuries listed in *Tab. 2*. The rate of severe injury was 3.07 (95% CI 2.37-3.98) times more common in ADHD enrollees compared with non-ADHD enrollees. The rate of less severe injury was 1.71 (95% CI 1.54-1.89) times more common in ADHD enrollees compared with non-ADHD enrollees. The rate of injuries for ADHD compared with non-ADHD individuals is presented according to severity of injury, age and sex in *Fig. 2*. In this figure, ADHD was significantly more strongly associated with severe injury than less severe injury in males ($P = 0.0355$) and females ($P = 0.0019$) aged 0-19 and in males ($P = 0.0212$) aged 20-64 years.

The number of injuries experienced was directly associated with ADHD. Those with one injury were 1.61 (95% CI 1.45-1.80) times more likely to have ADHD, those with two injuries were 1.93 (95% CI 1.59-2.34) times more likely to have ADHD, those with three injuries were 2.30 (95% CI 2.58-3.36) times more likely to have ADHD, and those with four or more injuries were 2.55 (95% CI 1.28-3.09) times more likely to have ADHD, after adjusting for age, sex, and annual household income.

Among those with ADHD, 78% (n = 1,697) received medication. A significantly higher percentage of females received medication than males (82% vs. 75%; $P < 0.0001$). There was not a significant trend in medication use across the age span ($P = 0.1745$). However, when age was stratified by 0-19 years and 20 years and greater, those in the latter group had significantly higher levels of medication (74% vs. 82%, $P < 0.0001$). Among ADHD individuals, those receiving medication were not significantly less likely to experience injury than those without medication, after adjusting for age,

Figure 1. **Rate of injury for ADHD compared with non-ADHD persons according to age.**

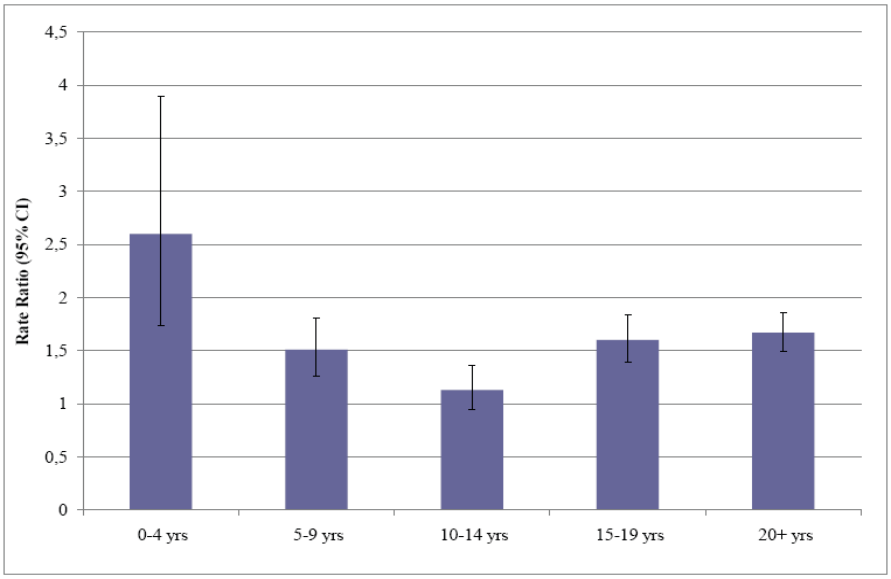
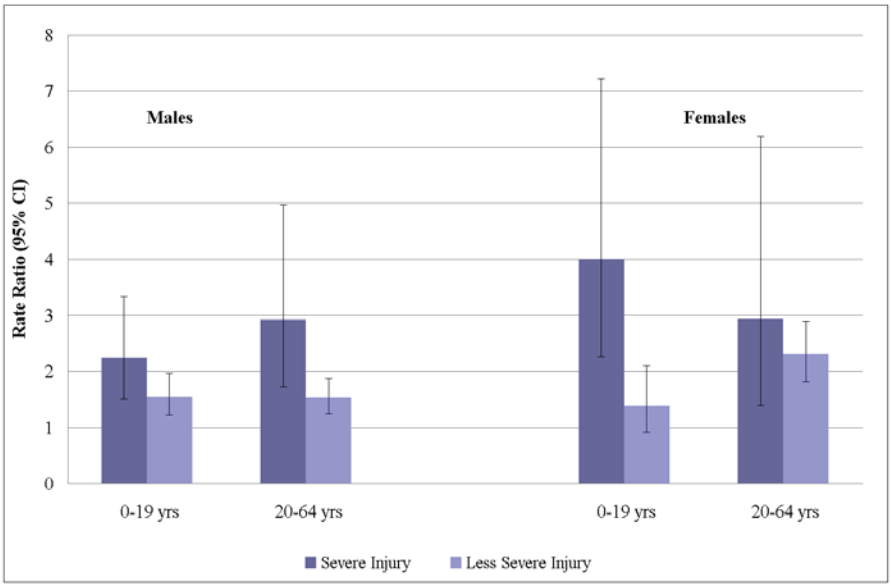


Figure 2. **Rate ratios of injuries in the Deseret Mutual Benefit Administration ADHD vs. non-ADHD population according to injury severity, age and sex, 1998-2005.**



sex, and annual household income (Rate Ratio = 0.89 [95% CI 0.75-1.05]). In the younger age group, those receiving medication were not significantly less likely to experience an injury as those without medication, after adjusting for age, sex, and annual household income (Rate Ratio = 0.95 [95% CI 0.77, 1.17]). The corresponding rate ratio for those age 20 years and older is 0.87 (95% CI 0.65, 1.17).

DISCUSSION

This study presented incidence rates of ADHD based on information from a large health insurance database. The rates were greatest in the age group 5-9 years, among males, and in the highest household income category. Age, sex, and household income were each significantly associated with injury, but only age significantly interacted with ADHD to influence the association between ADHD and injury. ADHD has the greatest association with injury in the age group 0-4 years and the lowest association in the age group 10-14 years, possibly because ADHD is less likely to be identified and treated in the youngest age group. It may also be that children with ADHD in the youngest age group tend to have more severe symptoms.

In general, the positive association found between ADHD and injury is consistent with the literature. For example, the current study found that those with a burn injury were 1.96 times more likely to have ADHD. Similarly, a study involving a

retrospective chart review of youth admitted to a burn care unit in the prior 20 years found that of 39 burn patients identified with ADHD, impulsive behavior was associated with the burn injury in 21 cases (54%). Four additional patients may also have displayed impulsive behavior [8]. In addition to a greater tendency toward impulsive behavior, ADHD patients may be generally less inattentive and able to foresee consequences of certain behaviors.

ADHD versus non-ADHD persons had significantly higher risk of serious forms of injury, such as fractures, intracranial injuries, and internal injuries. Similarly, in the follow-up study, attention deficit hyperactivity disorder persons were more likely than controls to experience an auto crash, have more severe injuries, and be at fault for the crash [4]. Oppositional defiant disorder/conduct disorder was especially associated with increased crashes and associated injuries. One study focused on hospitalized adults with musculoskeletal trauma. Of these patients, 36 (62.2%) had ADHD compared with 4 (13.3%) without ADHD. The severity of the trauma was directly associated with ADHD [11]. Another study found that among children with injuries, ADHD children had more severe injuries [5].

The current study also assessed the frequency of injury according to ADHD status. The number of injuries experienced was positively associated with ADHD. In a consistent manner a 5 year follow-up study of teenagers and young adults diagnosed with ADHD and a control group found that ADHD was associated with less sound driving habits and an increased risk of multiple crashes [4]. In contrast, one study found that among people with an accident claim, ADHD patients and controls had a similar number of claims [2]. Another study found that 58% of preschool children with ADHD versus 0% of controls exhibited behavior putting them at risk for physical injury. Yet, although these children were at greater risk for minor injuries, the ADHD children did not experience significantly more injuries requiring medical treatment in a hospital [7].

Our study also assessed whether the relationship between injuries and ADHD was influenced by age, sex, or annual household income. Only age significantly influenced this relationship; that is, the higher risk of injury among ADHD persons was greatest in the youngest age group, then the oldest age group, and then middle age groups. In a study that utilized administrative medical, pharmaceutical, and disability national claims data for employees, spouses, dependents, and retirees, higher risk among ADHD persons was also seen in the older and younger ages. They found a greater risk of injury among ADHD adults (38% vs. 18%; Ratio = 2.1), then children (28% vs. 18%; Ratio = 1.6), and then adolescents (32% vs. 23%; Ratio = 1.4) [2].

In a small study involving ADHD children and adolescents, it was found that males were more likely than females to experience comorbid disorders (e.g., head injury, bed wetting, dyslexia) [9]. We similarly found the association between ADHD and injury was greater among males, until adjustment was made for age and annual household income. However, in the age group 15-19, the mean number of injuries was 0.54 for males and 0.35 for females ($P = 0.02$).

The study data were based on all claims from this population from 1998 to 2005, so no selection of subgroups that might have resulted in bias was present. Insurance coverage was not cancelled if an ADHD diagnosis was reported, making selective under-reporting of ADHD claims for this reason unlikely. However, it is possible that some ADHD patients were not identified by the criteria used in this study. Incorrect diagnosis and treatment of ADHD is also possible. The current data does not allow us to identify the level of under or over reporting of ADHD due to these potential influences.

ADHD is associated with familial instability, family conflict, and psychiatric disorders, which might also predict injuries. Failure to adjust for these influences on injuries because of limited data likely resulted in an overestimation of the direct effect of ADHD on injuries. However, we assume the combination of direct and indirect effects of ADHD on injuries is minimally biased.

It appears that 599 individuals who visited the doctor for an ADHD workup failed to receive a confirmation of the disorder. This is assumed because they neither received medication nor a follow-up visit for ADHD. However, it is possible that some of these individuals did have ADHD and including them in the non-ADHD group may have dampened any positive relationship between ADHD and injury. In addition, the fact that some minor injuries may not have been included in the claims database may also have dampened any association between ADHD and injury.

Small numbers for selected injuries among ADHD cases, such as injuries to the nerves and spinal cord, resulted in wide confidence intervals and failure to detect statistical significance.

Finally, generalization of the results may be limited because nearly all of the DMBA enrollees are LDS. Comparatively low prevalence of tobacco smoking, alcohol drinking, and illicit drug use in this population has been associated with significantly lower chronic disease [14-19]. Research has shown that ADHD is positively associated with tobacco, alcohol, and illicit drug use [20]. If these substances increase injury, then the current results would underestimate the influence of ADHD on injury for the general population. In addition, LDS are more likely married, have more children living in the household, and their age distribution is younger than in the general U.S. population [14].

CONCLUSIONS

This study showed that the incidence rate of ADHD is dependent on age, sex, and income; ADHD is positively associated with an increased risk of several types of injuries; the association between severe injury and ADHD is significantly greater in females than males in the ages 0-19 years, but in adults there is no difference; the association between less severe injury and ADHD is significantly greater in females than males among

adults, but in those aged 0-19 years there was no difference; ADHD is positively associated with number of injuries. Targeting ADHD persons of any age with prevention efforts for injury is warranted.

REFERENCES

1. Mental health in the United States: Prevalence of diagnosis and medication treatment for attention-deficit/hyperactivity disorder. United States, 2003. MMWR. 2005;54(34):842-7.
2. Swensen A, Birnbaum HG, Ben Hamadi R, Greenberg P, Cremieux PY, Secnik K. Incidence and costs of accidents among attention-deficit/hyperactivity disorder patients. J Adolesc Health. 2004 Oct;35(4):346.e1-9.
3. Pastor PN, Reuben CA. Identified attention-deficit/hyperactivity disorder and medically attended, nonfatal injuries: US school-age children, 1997-2002. Ambul Pediatr. 2006 Jan-Feb;6(1):38-44.
4. Barkley RA, Guevremont DC, Anastopoulos AD, DuPaul GJ, Shelton TL. Driving-related risks and outcomes of attention deficit hyperactivity disorder in adolescents and young adults: a 3- to 5-year follow-up survey. Pediatrics. 1993 Aug;92(2):212-8.
5. DiScala C, Lescohier I, Barthel M, Li G. Injuries to children with attention deficit hyperactivity disorder. Pediatrics. 1998 Dec;102(6):1415-21.
6. Farmer JE, Peterson L. Injury risk factors in children with attention deficit hyperactivity disorder. Health Psychol. 1995 Jul;14(4):325-32.
7. Byrne JM, Bawden HN, Beattie T, DeWolfe NA. Risk for injury in preschoolers: relationship to attention deficit hyperactivity disorder. Child Neuropsychol. 2003 Jun;9(2):142-51.
8. Thomas CR, Ayoub M, Rosenberg L, Robert RS, Meyer WJ. Attention deficit hyperactivity disorder & pediatric burn injury: a preliminary retrospective study. Burns. 2004 May;30(3):221-3.
9. Wiśniewska B, Baranowska W, Wendorff J. The assessment of comorbid disorders in ADHD children and adolescents. Adv Med Sci. 2007;52 Suppl 1:215-7.
10. Kessler RC, Lane M, Stang PE, Van Brunt DL. The prevalence and workplace costs of adult attention deficit hyperactivity disorder in a large manufacturing firm. Psychol Med. 2009 Jan;39(1):137-47.
11. Kaya A, Taner Y, Guclu B, Taner E, Kaya Y, Bahcivan HG, Benli IT. Trauma and adult attention deficit hyperactivity disorder. J Int Med Res. 2008 Jan-Feb;36(1):9-16.
12. International Classification of Diseases, 9th Revision, Clinical Modification, 4th ed., 3 vol. U.S. Department of Health and Human Services, October 1991.
13. Mantel N. Chi-square tests with one degree of freedom: extensions of the Mantel-Haenszel procedure. J Am Stat Assoc. 1963;58:690-700. – nie ma w pubmed
14. Daniels M, Merrill RM, Lyon JL, Stanford JB, White GL Jr. Associations between breast cancer risk factors and religious practices in Utah. Prev Med. 2004 Jan;38(1):28-38.
15. Merrill RM, Thygerson AL. Religious preference, church activity, and physical exercise. Prev Med. 2001 Jul;33(1):38-45.
16. Merrill RM. Life expectancy among LDS and non-LDS in Utah. Demogr Res [Internet]. 2004 Mar 12 [cited 2008 Nov 18]; 10:61-82. Available from: http://www.demographic-research.org/volumes/vol10/3/10-3.pdf
17. Merrill RM, Lyon JL. Cancer incidence among Mormons and non-Mormons in Utah (United States) 1995-1999. Prev Med. 2005 May;40(5):535-41.
18. West DW, Lyon JL, Gardner JW. Cancer risk factors: an analysis of Utah Mormons and non-Mormons. J Natl Cancer Inst. 1980 Nov;65(5):1083-95.
19. Enstrom JE. Cancer and total mortality among active Mormons. Cancer. 1978 Oct;42(4):1943-51.
20. Upadhyaya HP, Carpenter MJ. Is attention deficit hyperactivity disorder (ADHD) symptom severity associated with tobacco use? Am J Addict. 2008 May-Jun;17(3):195-8.