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Research Article

Gender Differences in Care-Seeking Behaviour and Health Care Consumption after Work Related Whiplash Injuries

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- Whiplash
- Gender
- Care-seeking behavior

Abstract

Objective: The aim was to study gender differences in care seeking behaviour in the type of health care consumed, time elapsed before seeking care, type of treatment after work related whiplash trauma (WRWT), and the incidence of WRWT.

Design: A cross sectional retrospective study.

Setting: A population based register in a Swedish county from 1999 to 2008.

Participants: A cohort of 820 persons, aged 18-65 involved in traffic accidents who were either working at the time of trauma or on their way to or from work resulting in a clinical whiplash diagnosis.

Results: The annual incidence of WRWT decreased from 68/100 000 in 1999 to 43/100 000 in 2008. Women sought care at primary health care units more often than men (58% versus 48%, p=0.0048), who sought care mainly at hospital. Fifty two percent of those injured sought care at primary care units. Ninety one percent were treated and discharged, and six percent were sent home untreated after examination. Four percent of those injured were admitted to a hospital. There were no gender differences regarding type of treatment after trauma. Twelve percent of all patients delayed seeking care by at least three days after their WRWT. Women sought care later than men (3.2 days versus 2.6 days, p=0.011).

Conclusion: The incidence of WRWT in one Swedish county declined during 1999-2008. Women sought care at primary care units more often than men. Women sought care later than men after trauma, which may reduce the possibility of gaining workers' compensation.

INTRODUCTION

The incidence of whiplash associated disorders (WAD) varies and is estimated at 100-320 per 100 000 inhabitants annually in Sweden [1,2], 80-420 per 100 000 inhabitants annually in Denmark, Spain and France [3-6] and 400 per 100 000 inhabitants annually in the USA [7]. Costs are estimated at ten billion euros in Europe [8]. One factor affecting the outcome of injury assessments is the time take to seek health care following the accident. Another factor is the quality of the medical documentation. All this information is used by insurers for evaluation and compensation after injury. According to a structured management program for the treatment of whiplash injuries/WAD developed in Sweden, early clinical investigation

and treatment are recommended to avoid chronicity [9,10].

Sterner [11] and Cassidy [12] found that a multi modal rehabilitation program for chronic WAD had a positive effect on both men and women. Studies of WRWT, defined as the persons involved were either working at the time of the trauma, or on their way to or from work are lacking. Work related injury insurance is the name of the insurance that compensates individuals involved in work related accidents. The Social Insurance Agency administers this statutory insurance. Those who work in workplaces with collective bargaining agreements have complementary work related injury insurance. Late care seeking (72 hours after trauma or more) may reduce the probability of obtaining compensation from insurance companies. "The 72 hour rule" has been discussed in connection with assessments related to workplace injuries. In Sweden, there was a gender difference in obtaining compensation from statutory work-related insurance between 2005 -2013 [13], which suggest that women may be being disadvantaged. By investigating the incidence of WRWT in the working population of a Swedish county, some light may be shed on the care seeking behaviours related to the notion of the 72 hour rule and its impacts on insurance and compensation claims. Studies of WRWT from a gender perspective are therefore warranted.

We thus aimed to investigate differences in care seeking behaviour between men and women regarding the type of facility, time elapsed before seeking care, type of treatment, and length of hospital stay in patients who experienced a WRWT, based on a register in the county of Skaraborg in Sweden.

A second aim was to report changes over time in the incidence of WRWT.

METHODS

Registration of injuries in the county of Skaraborg in southern Sweden began in 1997 encompassing four hospitals, four primary health care units for emergencies and 25 primary health care units.

The process of retrieving data to the register was as follows:

Information about the injury was provided by the patient, or attending person on the injury form. Accidents were identified as "work-related" on the injury form.

The physician in charge documented the diagnosis according to the WHO International Classification of Diseases version ten (ICD-10) and recorded suggested treatment, including hospitalization. To estimate missing cases in the register all visits to the clinics due to any type of injury were compared to the register entries, resulting in 14-22 % missing cases during the ten year period. All hospitals and health care units dealing with acute injuries used the injury form for patients. Quality control of the process was performed regularly. The registry was funded by Region Västra Götaland and The National Board of Health and Welfare. The present study extracted data such as gender, age, type and circumstances of the collision, time elapsed before seeking care, health care contact, treatment, and days of hospitalization from the register in 1999-2008. The Regional ethical review board of Gothenburg University, Sweden approved the study (Dnr: 138-08 Exp.2008-04-28).

Study population

The study base comprised all inhabitants of Skaraborg County, approximately 255 000 individuals, studied during 1999-2008. The 820 individuals included were between 18-65 years of age, involved in work-related traffic accidents, with the ICD-10 diagnosis S 13.4, distortion of the cervical column and whiplash (Figure 1).

Statistical analysis

The chi-square test was used to analyse differences between men and women in care seeking behaviour and type of care received. Mann Whitney's U-test was used to analyze differences between men and women concerning the period from injury to seeking care and Student's T-test for length of stay in hospital. Statistical significance was set at $p< 0.05$. Factors associated with seeking primary health care were analysed by multivariate regression.

Forward stepwise logistic regression was used to analyse odds ratios for seeking primary health care (dependent variable) after a WRWT. Independent variables were age (year), sex (female/male) and time-span between accident and seeking care (days).

RESULTS

Between 1999 and the end of 2008, there were 265 324 injuries registered, and 15% (39 819) of these were traffic collisions. 3 292 persons were diagnosed with whiplash ICD-10 code S 13.4, of which 83% (2 722 persons) were traffic related. 820 persons (30%) between the ages of 18-65 years were involved in WRWT (Figure 1). Fifty two percent, 427 of the 820 with whiplash trauma sought care at primary health care units. 393 persons (48%) sought hospital care. There was a statistically significant difference in care seeking behaviour between men and women where 218 (57%) of the women sought care at primary care units compared to 209 (48 %) of the men (p=0.0048) (Table

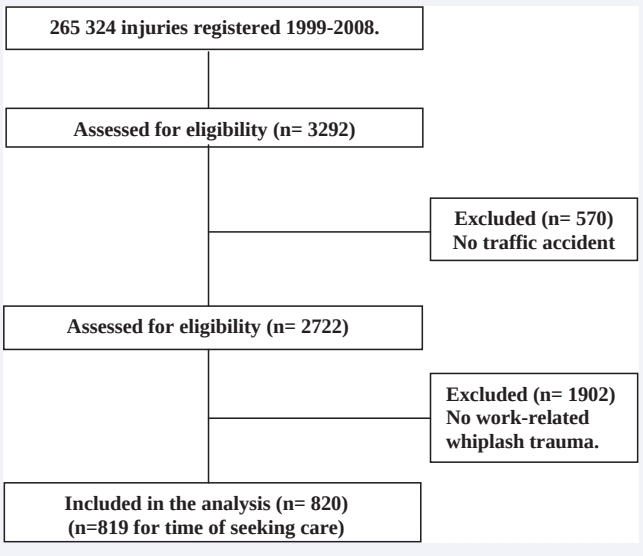

Figure 1 Work-related whiplash trauma (WRWT) included in the study.

1). Forty seven (6 %) were sent home without treatment, 743 (91 %) were discharged with a prescription (usually analgesics, NSAIDs) and a referral to a physiotherapist. There was no difference between men and women in type of treatment after trauma (p=0.66) (Table 1). 30 patients (4 %) had been admitted to the hospital but none for more than five days. Of the 15 male patients under hospital care, eight had other ICD-10 diagnoses as well. Two had shoulder contusions, 1 ribcage contusion, 1 abdominal wall contusion, 1 radius fracture, 1 tooth fracture, 1 head abrasion, and 1 forearm abrasion. Of the 15 female patients, 6 had other ICD-10 diagnoses. Two had commotio cerebri, 2 ribcage contusions, 1 rib dislocation, 1 fracture of the upper arm. The total hospital stay was 59 days for all 820 patients. Ninety eight (12%) patients involved in WRWT sought care with a delay of at least three days. Women sought care later than men (3.2 days versus 2.6 days, p=0.011). The regression model including gender and days between trauma and care seeking, explained 14 % of the variance in the dependent variable (Table 2). Female gender and delayed care-seeking were found to be predictors of seeking primary health care over hospital care (Table 2). The incidence of WRWT in the county of Skaraborg decreased from 68 to 43/100 000 inhabitants annually during the indicated time period (Figure 2).

DISCUSSION

Studies from different parts of the world provide incidences of WAD ranging from 80 to 420 /100 000 inhabitants annually [4]. The international differences have been explained by varying traffic intensity, traffic safety and insurance systems [4]. Our results show a decreasing trend of WRWT in Sweden, from 68-43/100 000, during a ten year period. This was expected, since road traffic has become more intense, but car safety has increased, which leads to less serious consequences of traffic collisions [14]. The awareness, knowledge and discussion of WAD in society and among health care professionals has also increased during the last ten years, leading to better diagnostics, documentation and earlier rehabilitation efforts [14]. Another explanation for the decreasing incidence may be that the WAD classification system has changed in Sweden. The Swedish Whiplash Commission recommended that WAD 0, which refers to individuals who have been exposed to extreme forces on their neck, but have no symptoms or objective diagnoses after trauma, should be eliminated. WAD 4 refers to individuals that after trauma have been diagnosed with fractures. This group has also been recommended to be removed [4]. The results from the present study show that men seek hospital care rather than primary healthcare. However, the political intention in Sweden advocates primary health care for a first consultation. During the ten years studied, only 30 of 820 patients required hospital admission. Fourteen of these patients had other ICD-10 diagnoses. This also emphasizes that a greater proportion of patients with only a whiplash diagnosis can be treated at primary health care units.

Discussion of gender

This study shows gender differences in the time elapsed between trauma and seeking health care that may affect possible compensation when trauma is work related. It is important that this information is made public to avoid future possible gender differences in compensation due to gender differences in care seeking behaviour.

One explanation for women being more prone to seek primary health care rather than hospital care could be that

Table 1: Care seeking behaviour regarding type of facility, time span, and type of treatment and length of hospital stay after work related whiplash trauma (WRWT) due to a motor vehicle accident.

	Women (n=380)	Men (n=440)	P-values
Sought care at primary care units, [n (%)]a	218 (57%)	209 (48%)	0.0048*
Time-span between accident and seeking care (days)b	3,2 (13)---0 (0-2)§	2,6 (14)---0 (0-1)	0.011*
Type of treatment			0.66
Discharged without treatment, [n (%)]a	19 (5.0%)	28 (6.4%)	
Discharged after treatment, [n (%)]a	346 (91%)	397 (90%)	
Admitted to the hospital, [n (%)]a	15 (3.9%)	15 (3.4%)	
Days treated at the hospital, [mean (SD)]c	2.3 (1.1)	1.81 (0.86)	0.37

*Significant at the p< 0.05 level
§First figure mean values (standard deviation) second figure median (25th-75th percentile)
aChi-square test
bMann Whitney U-test
cStudents T-test

Table 2: Logistic regression analyses showing odds ratio for seeking primary health care after a work related whiplash trauma (WRWT) due to a motor vehicle accident (n=819).

	Unadjusted (univariate) analysis		Adjusted (forward stepwise)analysis	
Independent variables	Odds ratio (95% CI)	*p-values*	Odds ratio (95% CI)	*p-values*
Age (year)	1.0 (1.0-1.0)	0.099	---	---
Sex, female	1.5 (1.1-2.0)	0.0049	1.5 (1.1-2.0)	0.0067
Time-span between accident and seeking care (days)	1.3 (1.2-1.4)	<0.0001	1.3 (1.2-1.4)	<0.0001

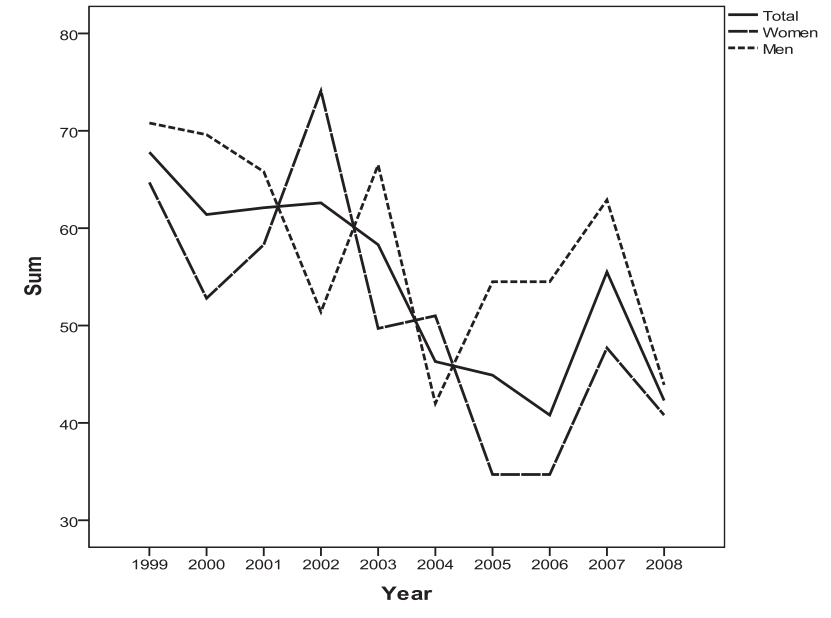

Figure 2 Work-related whiplash trauma (WRWT) per 100 000 inhabitants.

women are more apt to comply with rules and regulations. The other findings in this study were that women sought care later than men. A possible explanation to this finding might be that women tend to be more burdened by feelings of guilt for having been involved in traffic accidents [15]. Another explanation could be women's responsibility for the home and children, etc. whereupon women do not prioritize their own health even in the presence of symptoms [16]. Furthermore, men, unlike women, are not ashamed of having been involved in a car accident [17]. Another characteristic of men is their lower compliance to local and regional [18]. Due to Conell's economical gender dimension, we consider one explanation being men's higher frequency of bearing responsibility for insurance documents at home [19]. This might result in greater understanding of the importance of early medical contact to gain adequate documentation, and correct compensation.

Discussion of methodological strengths

The results from this study are based on the injury register in Skaraborg County. This register is of high quality. Furthermore, data collection was made during a ten-year period of organizational stability enabling high quality data and a low frequency of missing cases.

Discussion of methodological weaknesses

The missing traffic injury cases in the present study totaled approximately 20 percent. There is no reason to believe that those who were not registered were more seriously injured, although that is a possibility. Patients more seriously injured may have had neck distortion and whiplash, but have been registered as suffering from something other than that. A limitation is that no follow up was possible for individuals involved in WRWT. We can therefore not report on the long term fate or care of the patients. The study base, Skaraborg County in Sweden, (a rural area with four middle-sized cities) of this study is not necessarily comparable with other settings with larger cities where traffic may be more intense.

CONCLUSION

This study presents a description of the circumstances indicating gender differences in behaviour surrounding traffic collisions at or to/from work. It may be concluded that women may be being disadvantaged by the current insurance system when considering their behaviour after a traffic collision.

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Conflicts of Interest

None declared. No potential conflicts of interest for all authors'

Key Points

Gender differences exist in work-related whiplash injury, women seeking health care later than men, which may affect insurance outcomes for women.

The annual incidence of acute whiplash trauma vehicle injury decreased from 68/100 000/year to 43/100 000/year from 1999 to 2008.

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