

AN EXPLORATORY STUDY OF MOTOR VEHICLE USE IN HOMECARE NURSES

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Complete study results may be found in either of two articles that were published in two peer-reviewed professional nursing journals simultaneously in December 2002:

Sitzman, K., Pett, M., Blowski, D. (2002). An exploratory study of motor vehicle use in home visiting nurses. *Home Healthcare Nurse Journal*, 20(12), 784-793.

Sitzman, K., Pett, M., Blowski, D. (2002). An exploratory study of motor vehicle Use in home visiting nurses. *AAOHN Journal*, 50(12), 553-558

Full text of the article as it appeared in *Home Healthcare Nurse Journal* may also be found at this website: http://www.nursingcenter.com/library/JournalArticle.asp?Article_ID=288222

ABSTRACT

Driving is a fundamental aspect of occupational activity for nurses who make home visits. This national study explored ergonomic concerns, incidence of motor vehicle accidents, and overall concerns related to driving in a group of 421 home healthcare and hospice nurses. Specific areas of exploration included non-driving activities done while driving, discomfort associated with daily driving, discomfort associated with getting in and out of a car, discomfort associated with moving bags and other work-related supplies in and out of a vehicle, occupationally related motor vehicle crashes, community settings where crashes occurred, and workdays lost due to injury. Findings showed that nearly one fourth of the respondents reported having had a crash while at work, almost three fourths experienced some level of discomfort associated with daily driving activities, and nearly all engaged in non-driving activities while driving. The volume and consistency of open-ended responses indicated that this population experienced numerous driving-related stressors. Timely attention to key concerns illuminated by the results of this study may significantly improve the comfort and safety of nurses who make home visits. Results of this study also indicate the need for further study of motor vehicle concerns in this population.

INTRODUCTION

Occupational safety related to motor vehicle use is an important, yet undocumented area of concern for healthcare professionals who make home visits. There is a dearth of information about the prevalence of motor vehicle related discomfort, pain, injury, and crashes in this

workgroup. A retrospective study of Worker's Compensation claims in West Virginia briefly addressed this issue:

"An incidence of 52 injuries per 1000 workers [overall] per year was calculated....The incidence of injury attributed to motor vehicles in home healthcare workers was 7 per 1000 workers per year... greater than in nursing home or hospital workers." (Meyer & Muntaner, 1999, p. 295).

This study indicated that the risk of motor vehicle crashes for home care workers was higher than for the general nursing population. Because only one state was studied, it was difficult to generalize findings.

In 2000, motor vehicle crashes were the leading cause of work-related deaths in U.S workers (22.5 %), accounting for the deaths of 1205 workers, out of a total 5344 work-related fatalities (Retrieved from the Bureau of Labor Statistics website on June 11, 2002). Because reliable information could not be obtained related to home healthcare worker fatalities, focus was placed on driving discomfort, incidence of crashes and resulting injuries or lost workdays.

METHODOLOGY

A 16 question survey was developed and mailed to a random sample of 1000 participants, chosen from a list of 4,829 U.S. residents who subscribed to a home healthcare journal. Areas addressed in the survey included:

- Non-driving activities while driving
- Discomfort associated with daily driving
- Discomfort associated with getting in and out of a car
- Discomfort associated with moving bags or other work-related supplies in and out of a vehicle
- Occupationally related motor vehicle crashes with and without injury, and fatalities
- Work days lost due to injury
- Community settings where crashes occurred

Out of the 1000 surveys mailed, 421 were returned. Responses to the survey were kept anonymous, and information gathered was coded and entered into the Statistical Package for the Social Sciences (SPSS, Chicago, Illinois) for Windows version 10 (Microsoft, Redmond, Washington).

RESULTS

Respondent Characteristics

Of the 421 respondents, 90.2% were registered nurses (RNs) and nurse managers, 6.9% were licensed practical nurses (LPNs), and the remaining 2.9% were other professional visiting staff. Respondents were primarily female (96.9%), and ages ranged from 25 to 78, with a mean age of 48, and a mode of 50.

Perceived Physical Findings

Information regarding body mass and level of fitness was collected to explore possible connections to driving-related discomfort. *Present level of physical fitness* as perceived by respondents showed that 82.6% ($n=345$) reported an “average” or better state of physical fitness:

- Poor (2.4%)
- Fair (15.1%)
- Average (56.0%)
- Excellent (25.4%)
- Exceptional (1.2%)

Body Mass Index, or BMI, a basic measurement of overall risk for health problems associated with body weight. BMIs (Murray & Zentner, 2001, p. 602), were calculated from height and weight information obtained from the survey:

- Low or very low risk (74.7%)
- Moderate risk (14.9 %)
- High Risk (7.5%)
- Very High Risk (2.9)

Employment and Vehicle Information

Hours worked per week ranged from 2 to 90, with the most common response being 40 hours per week. Of the full time workers, 41.79% worked greater than 40 hours per week. Years of employment in home care ranged from .50 to 36 (mean = 10.52, SD 6.73).

In response to the statement *I drive a motor vehicle in the performance of daily work activities, (including client visits, acquisition of supplies and medications, and other work-related duties)*, 95.7% ($n=403$) respondents indicated, “yes,” with the remaining respondents ($n=18$ or 4.3%) listing other modes of transportation including walking, subway, boat, bus, or plane. Of those who drove, vehicle types were listed as follows:

- Car 68.5% ($n=276$)
- Sport utility vehicle (SUV) 18% ($n=76$)
- Van 9.2% ($n=37$)
- Truck 3.5% ($n=14$)

Non-driving Related Activities Done While Driving

Of the respondents who drove, 99 % ($n=399$) acknowledged engaging in at least one non-driving related activity while driving over the past year, 87.09% ($n=351$) engaged in at least three, and 32.25 % ($n=130$) engaged in six or more. Non driving activities reported (rank ordered) were:

• Consumed beverages – 91%
• Tuned the radio – 90%
• Used a cell phone or checked pager – 80%
• Ate – 79%
• Read a map or directions – 50%
• Read text – 35%
• Wrote – 25%
• Groomed self or changed clothing – 29%

Discomfort Over the Past Year

Respondents were asked to indicate if they had experienced discomfort in specific body parts associated with the categories below. Of all respondents who drove, 71.96% ($n=290$) indicated one or more categories causing discomfort over the past year:

1. Daily driving – 57% - discomfort in neck and lower back
2. Moving bags or other work-related supplies – 45% - discomfort in shoulders and lower back
3. Repeatedly getting in and of a car – 37% - discomfort in lower back and hips.

The lower back was either the first or second area of discomfort listed for all three activities. Overall discomfort severity tended to be mild or moderate. Responses of “Mild” ranged from 44% to 47 %, of “Moderate” ranged from 40% to 44 % and of “Severe” ranged from approximately 10% to 14.5 %.

Motor Vehicle Crashes While Working

Of the 421 respondents, 24.9% ($n=105$) indicated they had ever been in a crash while working. Nearly all of the crashes occurred while the respondent was driving- rather than being the passenger- (95.24 %, $n=100$). The crash settings were:

- Rural 33.33% ($n=35$)
- Suburban 33.33% ($n=35$)
- Urban 31.43% ($n=33$)
- Missing Responses 1.9% ($n=2$)

Of the 105 respondents who acknowledged being in a crash, 69.5 % ($n=73$) indicated that no injuries were sustained; 30.1% ($n=32$) indicated some degree of injury.

The areas most injured were:

Neck - 50%, Shoulders – 40%, Upper Back – 37%, Lower Back – 27%.

Crashes almost always occurred as a result of collision with another automobile (67.0 %, n= 69), or a truck (14.6 %, n= 15). The remaining 21 crashes resulted from collision with such things as animals, signposts, fences or embankments.

Lost Workdays Resulting From Crashes

Of those who reported having a crash while working, 72.4 % (n= 76) reported not missing any workdays as a result of the crash. The range of workdays lost by others was 0 to 190 days, with a mean of 4.7 (*SD* 22.10). The mean was higher than expected, having been skewed due to three respondents who missed 60-190 days of work. Only 9 respondents who reported having a crash missed more than 4 workdays.

Concerns about Work-related Driving

In reply to an open-ended question, [*“What concerns you most about work-related driving?”*], the descriptive information by respondents were initially separated into 44 separate categories, and later clustered into thematic groupings. The top five may be found in the following table.

Top five concerns about work-related driving:

Concern	N	%
Weather-related driving hazards	84	20.0
Productivity pressures	62	14.7
Monetary cost of driving for work every day	53	12.6
Defensive driving issues	51	12.1
Increased possibility of having an crash due to so much driving	50	11.9

Four Pearson-*r* correlations and two independent *t* tests indicated that several factors related to occupational driving were associated with discomfort and potential crashes:

1. Lower perceived level of driver fitness was associated with higher reported frequency of discomfort ($r = .154, p = .002$).
2. As BMI increased, more discomfort was reported in two areas of concern; driving ($r = .170, p = .001$) and getting in and out of car ($r = .128, p = .013$).

3. As hours worked per week increased, respondents were more likely to report discomfort associated with moving bags and supplies ($r=.106, p=.03$).
4. As hours worked per week increased, respondents were more likely to report having had a crash at work ($t=2.89, p=.004$).
5. Those who reported having a crash at work were more likely to also report greater daily driving-related discomfort ($t=2.61, p=.010$).

While the correlations for numbers 1, 2, and 3 above are statistically significant, the r-values ranged from .154 to .170 indicating weak associations. For numbers 4 and 5 above, the t-values of 2.61 and 2.89 show stronger associations. Factors that did not appear to be associated with a crash or discomfort included age, gender, type of vehicle, and non-driving activities while driving.

DISCUSSION

Findings indicate the need for timely attention to several key points:

- Nearly one-fourth of the respondents reported having had a crash at work.
- Almost three-fourths experienced discomfort associated with daily driving-related activities.
- Nearly all respondents who drove engaged in non-driving activities while driving
- The volume and consistency of open ended responses about daily driving concerns indicated many respondents were experiencing numerous driving-related stressors

Survey results indicated that a majority of home visiting nurses experience discomfort associated with driving activities, and that motor vehicle crashes during work hours are not uncommon. Almost all of the respondents who drove engaged in non-driving activities while driving. Body mass index (BMI), level of fitness, and number of hours worked per week were related to crashes and frequency of discomfort.

Because the survey indicated one-time responses rather than a longitudinal view of nurses' opinions and experiences, it was not possible to determine directional, or clear cause and effect relationships between the frequencies and associations reported. Nonetheless, concerns shown in the survey findings deserve further attention.

Information and interventions exist that, if used by those affected and their employers, may decrease the severity and/or frequency of many of the identified driving related concerns. This exploratory study identified specific concerns that warrant prompt attention using current knowledge and interventions related to ergonomic and automobile safety. Further inquiry is needed to more fully characterize motor vehicle concerns specifically for home healthcare workers.

REFERENCES

Bureau of Labor Statistics, United States Department of Labor. (2002). Injuries, Illnesses, and Fatalities Home Page Retrieved June 11, 2002 from <http://stats.bls.gov/iif/home.htm>.

Meyer, J.D., & Muntaner, C. (1999). Injuries in home health care workers: An analysis of occupational morbidity from a state compensation database. American Journal of Industrial Medicine, 35: 295-301.

Murray, R.B., & Zentner, J.P. (2001). Health Promotion Strategies Through the Life Span. (7th edition). Upper Saddle River, New Jersey: Prentice Hall.

