

TABLE 3—Physician/Population per (100,000) Ratio in Non-SMSA Counties, Minnesota 1965–85

Practice Group	1965	1985	% Change
Family Practice	44	39	-11
Medical Specialties	5	11	114
Surgical Specialties	9	14	58
Other	7	12	81
Total	65	76	18
Primary Care	51	50	-2

reveals that 13 more osteopathic physicians were in non-metropolitan Minnesota in 1985 than in 1968. Seven of the new osteopaths were in counties of less than 10,000 population and would result in a small (6 per cent) increase in the physician-population ratio in the smallest counties. Aside from these smallest counties, the additional osteopaths would have had a negligible impact on the overall situation in non-metropolitan Minnesota.

The trends identified in this study may or may not reflect those in other areas of the US. Future investigations should also identify the impact of the changing demographic profile of physicians on primary care availability in smaller communities and the extent to which physicians classified as non-primary care specialists actually provide primary care, when they are located in smaller communities.

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The Accuracy of Industry Data from Death Certificates for Workplace Homicide Victims

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Abstract: This study compared death certificate data on usual industry for workplace homicide victims in five urban Texas counties, with medical examiners' data on the industries where victims were working when injured. The overall positive predictive value of the death certificate data was 72 per cent. Death certificate data on usual industry underestimated the number of victims working in high-risk industries when injured, partly because of victims whose usual industry was recorded as student, housewife, or military personnel. (*Am J Public Health* 1988; 78:1579-1581.)

Introduction

To determine the industry of a worker who was a homicide victim, recent studies¹⁻³ have used death certificate data on usual industry (the industry in which a person worked during most of his/her working life). However, at the time of injury, a workplace homicide victim might not have been

working in his/her usual industry (e.g., educational services) but rather in a second, different one (e.g., gasoline service stations). Therefore, death certificate data on usual industry might not accurately document the victim's industry when injured. Although studies have examined the accuracy with which death certificate data document a person's usual industry,⁴⁻⁷ none have examined the accuracy with which these data document a workplace homicide victim's industry at the time of injury.

In most urban Texas counties, medical examiners investigate all injury-related deaths. For workplace homicides, the medical examiners' records usually contain information on the victim's industry when injured. Using medical examiners' data from five urban Texas counties as the standard, I studied the extent to which death certificate data on usual industry accurately document the industries where victims were working when injured.

Methods

For the deaths they investigate, medical examiners in Texas complete certain parts of death certificates, including those on cause of death; accident, suicide, or homicide; injury at work; how a fatal injury occurred; and place of fatal

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injury (e.g., bar, street). Funeral directors also complete parts of these death certificates, including that on usual business or industry.

Cases of workplace homicide were identified via two steps. First, a review of Texas death certificates identified the death of any person who was ≥ 16 years old; whose cause of death was coded by the International Classification of Diseases (8th⁸ and 9th⁹ revisions) to "homicide" (ICD Codes E960-969); who was injured in Texas; whose death certificate had a positive response to "injury at work?"; and who died in the period 1975 through 1984 in Harris, Dallas, Tarrant, Bexar, or Travis Counties (which contain the cities of Houston, Dallas, Fort Worth, San Antonio, and Austin, respectively). In the second step, medical examiners' records on these deaths were reviewed to confirm that they were in fact homicides that had occurred in the workplace.

Data from death certificates on usual industry and from medical examiners' records on industry when injured were assigned three-digit codes according to the 1980 census industry classification system.¹⁰ The coding system has been described previously.² A death certificate entry was considered accurate if its three-digit industry code was identical to that for the entry on the medical examiner's record. Only cases with industry data on both the death certificates and medical examiners' records were included.

Results

Of the 533 confirmed cases included in the analysis, 386 had death certificate industry data that were accurate, yielding a positive predictive value of 72 per cent (Table 1). The

positive predictive value of death certificate data on male victims (320 of 446 industries accurate, 72 per cent, 95% CI 67-76 per cent) was similar to that for female victims (66 of 87 industries accurate, 76 per cent, 95% CI 66-84 per cent).

Of the industries previously shown to have high risks of workplace homicide (Table 1), six of seven had death certificate usual-industry data with positive predictive values for industry when injured of ≥ 89 per cent. In contrast, the death certificate usual-industry entries "student", "military personnel", and "housewife" never correctly described the victims' industries when injured. For the 28 victims with these usual-industry entries on their death certificates, medical examiners' records revealed that when injured they were working in food-bakery-and-dairy stores (seven persons), gasoline service stations (seven), eating-and-drinking places (five), or other industries (nine).

For five of seven high-risk industries, death certificate usual-industry data underestimated the number of victims working in them when injured (Table 1). This was most marked for eating-and-drinking places, which had 96 persons listed on medical examiners' records but only 61 persons listed with that usual industry on death certificates.

Of the 147 death certificates whose usual-industry data did not reflect the industry when injured, 60 (41 per cent) had death certificate description-of-injury or place-of-injury portions that correctly described the victims' industries when injured. For the other 87 death certificates, these portions either had no description of the victims' industries (86 of 147 death certificates, 59 per cent) or an incorrect description (one of 147, <1 per cent).

TABLE 1—Accuracy of Death Certificate Industry Data for Workplace Homicide Victims, 16 Years old or older, 1975–1984, in Five Urban Texas Counties^a

Industry	Medical Examiners' Records (industry when injured)	Death Certificates (usual industry)		
		Listed	Accurate ^b	PPV ^c (95% CI)
High-risk Industries				
Food-bakery-and-dairy stores	114	99	92	93 (86, 97)
Eating-and-drinking places	96	61	59	97 (89, 99)
Gasoline service stations	49	38	37	97 (87, 100)
Justice, public order, and safety	33	35	31	89 (74, 95)
Taxicab service	25	22	22	100 (85, 100)
Detective and protective services	9	10	7	70 (40, 89)
Hotels, motels, and lodging places	8	7	7	100 (65, 100)
All high-risk industries	334	272	255	93 (90, 96)
Other Industries				
Students	0	19	0	0 (0, 17)
Military	0	6	0	0 (0, 39)
Housewives	0	3	0	0 (0, 56)
Other	199	233	131	56 (50, 62)
All Industries	533	533	386	72 (68, 76)

^aHarris, Dallas, Tarrant, Bexar, and Travis Counties.

^bAccurate indicates that death certificate data on usual industry correctly described a decedent's industry when injured.

^cPPV = positive predictive value (95% confidence intervals).

Discussion

This study found that when the usual industry entered on a workplace homicide victim's death certificate is a high-risk one, the victim very likely was working in that industry when injured. In contrast, when the usual industry entered on the death certificate is a low-risk one (and especially if the entry is student, housewife, or military personnel), the victim often was not working in that industry when injured but in a high-risk one. Due to the disparities between the usual-industry entries on death certificates and the industries where victims were actually working when injured, death certificate data on usual industry tend to underestimate the number of victims working in high-risk industries when injured.

Death certificate data on usual industry can correctly identify which industries have high risks of workplace homicide, but estimation of these risks might be made more accurate by supplementing the usual-industry data with data from the description-of-injury and place-of-injury portions of death certificates. Nevertheless, in 59 per cent of deaths with inaccurate usual-industry data, these latter two portions do not describe the victims' industries at the times of injury. Persons completing description-of-injury and place-of-injury portions of death certificates can increase the usefulness of death certificates for the study of workplace homicides by including in these portions descriptions of the industries where victims were working when injured.

ACKNOWLEDGMENTS

I wish to thank Charles E. Alexander, MD, DrPH, for guidance and support; Leland N. Carmichael, William E. Barrington, MPH, and William D.

Carroll, MPH, for providing vital statistics services; Angela Caban and Tina Suniga for assistance with data entry; Jan W. Pelosi, Mary Jo Preece, and Lucina Suarez, MS, for technical assistance; the staffs of the medical examiners' offices of Harris, Dallas, Tarrant, Bexar, and Travis Counties for assistance in reviewing records; and the staffs of the Texas Department of Health and the Centers for Disease Control who read and commented on the manuscript. Dr. Davis conducted this study while he was an Epidemic Intelligence Service Officer, Epidemiology Program Office, Centers for Disease Control, assigned to the Texas Department of Health.

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Nurse Administration of Sleep Medication: A Comparison of Registered Nurses and Licensed Practical Nurses

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Abstract: This study examines differences in the administration of PRN (pro re nata or give "as needed") sleep medication between licensed practical nurses and registered nurses working in long-term care facilities. Work characteristics, characteristics of the residents cared for, and the extent of orders and administration of PRN sleep medications were similar in the two groups. No significant differences in the administration of PRN sleep medication were found. (*Am J Public Health* 1988; 78:1581-1583.)

Introduction

Administration of medication in long-term care facilities (LTCFs) is a function performed primarily by licensed practical

nurses (LPNs) and registered nurses (RNs). According to the National League for Nursing, "LPNs/LVNs are prepared to function under the guidance of a registered nurse or licensed physician. . . .¹ However, one report indicates that even in the structured setting of the hospital, nine out of ten RNs responded that, in their facility, LPNs routinely administered medications without the direct supervision of an RN.² In the less structured nursing home setting, the autonomy of LPNs is likely to be even greater than in hospitals.³⁻⁶

When medications are prescribed PRN (pro re nata or give "as needed") the ultimate decision is delegated to the nurse in charge of administering medication. Studies examining PRN prescribing in LTCFs report that residents have an average of three to four orders for PRN medications during a time frame of 30 days or less.⁷⁻¹⁶ Yet little is known about the factors affecting the nurse's medication decisions.

Sleep medications are commonly ordered for nursing home residents,^{8,13,16,17-19} and about 50 per cent of sleep medication orders are written for PRN administration^{13,20}; elderly individuals are particularly sensitive to and more likely to experience adverse effects than would younger individuals.²¹⁻³⁰ We examined the differences in sleep medication administration patterns between RNs and LPNs working in skilled nursing facilities.

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