P1.17 DAY OF THE WEEK AND MYOCARDIAL INFARCT DEATH IN CANADA AND AUSTRALIA IN THE 1980's

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1. INTRODUCTION

Several studies have recently identified increased heart attack incidence on Mondays (Chenet and Britton 2001, Evans et al. 2000, Tunstall-Pedoe et al 1999). This study uses data from urban areas in Canada and Australia to investigate whether similar peaks occurred in those locations.

2. DATA & METHODS

Daily numbers of myocardial infarct deaths for the period 1983 to 1991 were obtained from Statistics Canada for the Census Metropolitan Areas of Montreal, 45E 23'N 73E 36'W, Toronto, 43E 42'N 79E 46'W, Winnipeg, 49E 53'N 97E 10'W and Vancouver, 49E 13'N 123E 06'W. The numbers of deaths were divided by gender and by age above and below age 65 years. In 1986 the populations of these cities were 2,921,360; 3,427,165; 625,305; 1,380,725 respectively.

Data for the Australian City of Brisbane, 23E 30'N 153E 10'W., was obtained from the Bureau of Statistics divided by gender and age, for the years 1981-1985.

The Canadian data was divided into two overlapping 5 year periods, 1983-1987 and 1987-1991 while the Brisbane data was treated as a single period. Arithmetic averages were calculated for the numbers of deaths on each of the days of the week . Subsequently, annual averages were calculated for each of the five years from 1983-1987 for Toronto and from 1987- 1991 for Vancouver. The results were graphed for all ages, for those over 65 years and for those under 65 years.

3. RESULTS & DISCUSSION

In Brisbane, Monday had the highest average number of deaths for both genders over 65 years old and for the entire population. However, younger women experienced peak values on Sundays and younger men on Saturdays. These last might be explicable in terms of women's increased family responsibilities during the weekend and males sporting proclivities on Saturdays.

Mondays in Montreal from 1983-1987 had the highest number of deaths for all ages, both male groups and younger women. Older women, on the other hand, had peak values on Saturdays with Monday and Tuesday having next highest values. From 1987-1991, Tuesdays had the highest numbers for all groups except for younger women where Wednesday, Saturday and Sunday had equally high values. See Figure 1.

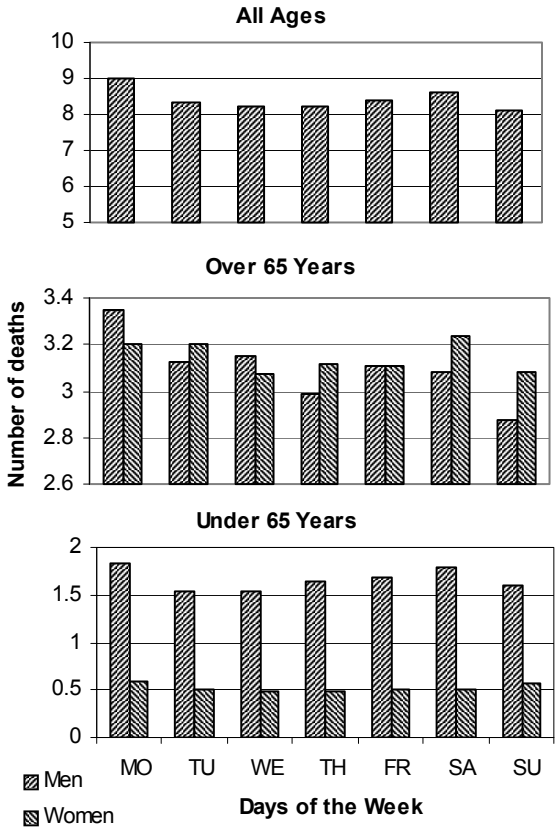

Figure 1. Montreal 1983-1987. Average number of myocardial infarct deaths per day of the week, for all ages, for men and women over age 65 and for men and women under age 65.

In Toronto from 1983-1987, Saturdays recorded the largest number of deaths for all ages, and both genders over age 65. Younger men had peak numbers on Sundays but younger women on Wednesdays. In the later time period, Saturday continued dominant for all ages and younger men, but highest numbers for older men were on Fridays, on Mondays for older women and on Sunday for younger women.

Days in the middle of the week recorded the largest number of deaths in Winnipeg from 1983-1987, All ages and men over 65 experienced most deaths on Thursday while it was Wednesday for older women. However, it was Saturday for younger women and Sunday for younger men. In the second time period, older persons of both genders and those of all ages experienced most

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deaths on Thursdays while for younger men it was Friday and Sunday for younger women.

In Vancouver from 1983-1987 both male age groups experienced more deaths on Fridays, as did all ages, There were more deaths of older women on Sundays and on Fridays for younger women. Between 1987 and 1991, more deaths of older men were recorded on Thursdays , as also for all ages. Older women's deaths peaked on Friday but on Saturday for younger women and on Sunday for younger men.

Although these results from Brisbane and from the first time period in Montreal, accorded with expectations, the patterns from the other three Canadian cities showed little agreement either with expectations or with each other. One possible explanation might be that a particularly aberrant year was skewing the results from the five year periods. Accordingly, the first time period for Toronto and the second, 1987-1991, for Vancouver were selected for more detailed study .

	Men <65	Women <65	Men >65	Women >65	All
Monday					
1983	1.40	0.50	3.50	2.21	7.62
1984	1.67	0.48	3.04	2.58	7.77
1985	1.54	0.48	2.52	2.58	7.12
1986	1.87	0.40	2.88	2.90	8.06
1987	1.42	0.47	3.09	2.55	7.53
Saturday					
1983	2.13	0.42	2.87	2.73	8.15
1984	1.50	0.42	3.52	2.58	8.02
1985	1.75	0.46	3.27	2.56	8.04
1986	1.62	0.37	2.54	2.96	7.48
1987	1.58	0.58	3.00	2.42	7.58
Sunday					
1983	2.02	0.56	2.92	2.19	7.69
1984	1.63	0.48	3.29	2.85	8.25
1985	1.69	0.38	2.81	2.69	7.58
1986	1.52	0.38	3.23	2.52	7.65
1987	1.43	0.26	2.92	2.72	7.34

Table 1. Toronto 1983-1987 Average annual number of myocardial infarct deaths for Monday, Saturday and Sunday, for all ages, both genders and by age above and below age 65.

Annual average number of deaths for three critical days of the week are detailed In Table 1 for Toronto. The spread in the average annual number of deaths in each category is low in terms of absolute deaths, although much higher on a percentage basis for those categories with few daily deaths. There are no signs of unusually high or low values which might tend to skew results. In the cases of the other four days of the week not included in Table 1, the results were similar, again without aberrant values.

The same calculations were performed for 1987-1991 in Vancouver, a much smaller city than Toronto. In this instance there was a case of a single very high value substantially increasing the 5 year average, see Figure 2 , although it involved women below the age of 65, the group with the lowest number of heart attack deaths.

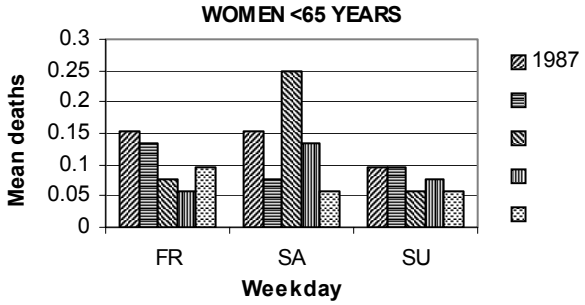

Figure 2. Vancouver 1987-1991, Friday, Saturday and Sunday, annual mean deaths per year, women below 65 years of age.

Chenet & Britton, 2001, have suggested that weekend binge drinking might be responsible for the Monday peak in heart attacks in Scotland. In Canada, although Monday peak values rarely occur, high numbers of deaths from Friday through Sunday do not completely preclude this explanation which could also apply in Brisbane, Australia.

4. CONCLUSIONS

Brisbane, Australia, followed the expected pattern, but in Canada in the 1980's, heart attack deaths did not necessarily peak on Mondays but were spread throughout the week with a slight preference for Friday through Monday. This tendency has implications for weekend emergency room staffing in hospitals.

5. REFERENCES

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