



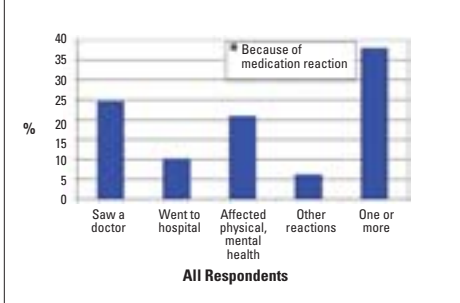
Quarterly Index

ADVERSE DRUG REACTIONS

Adverse drug reactions (ADRs) are cited as one of the major risks in the application of therapeutic medications. In the April 14 1998 *Journal of the American Medical Association*¹ a meta-analysis of existing studies estimated that some 2.2 million Americans experienced an ADR in hospital each year, and that some 100,000 of them died. In Canada, these figures would translate into about 7,000 to 10,000 hospital deaths a year.

In 2002 (Survey #23), we examined ADRs from the patients' perspective, without regard to whether the incident occurred in a hospital or community setting. The results suggest that: a substantial proportion of the population have experienced ADRs; that one has to treat population-based reports of medical occurrences with some caution; and that despite these caveats the problem of ADRs is widespread and of significant importance to population health and demands on hospital and other health services.

Figure 1: Adverse Drug Reactions: Close to 40% of Canadians Report One or More Adverse Drug Reactions. Represents About Nine Million People - A Conservative Estimate



In all, four in 10 (38%) of respondents 15 and older reported that they had "ever" experienced a reaction to medication prescribed by a physician. This includes 25% of the population who said they had to see their physician, 10% who had to go to hospital and 21% who reported that they had a reaction that affected their physical or mental health. These figures translate into about six million people who had to see their physician because of an ADR, and about 2.4 million who had to go to hospital.

A closer analysis of the data reveals unexpected as well as expected results.

Figure 2: Adverse Drug Reactions: Reporting of ADRs Varies By Gender and Age

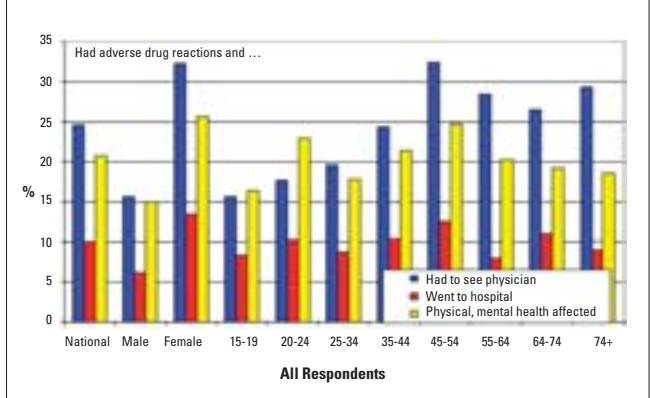


Figure 2 indicates that, as expected, older people are more likely to have experienced an ADR than younger people. However, the experiences of those 45-54 are about the same as those 75 and older.

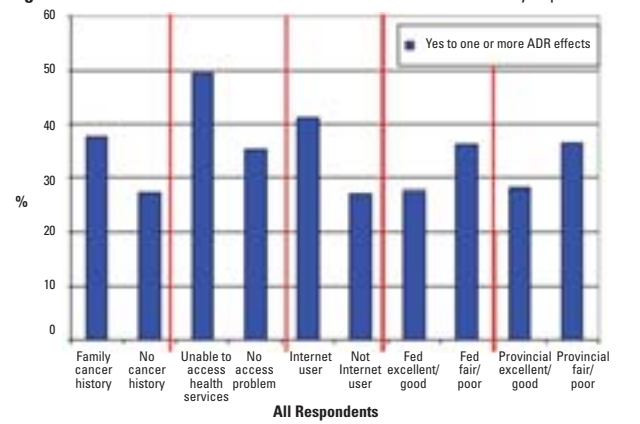
We also see that women are more likely to report having experienced an ADR than men, perhaps because women generally are more likely to have taken a prescription medication (including birth control pills) than men, and are more likely to have taken more of them.² Hospital visits because of ADRs, however, are not that much more common among seniors than among youth,³ although they are much more common amongst women than men. Women are twice as likely to report ADR-related hospital visits than are men.

These reasons for this gender-related difference are not readily apparent to the survey researchers. Three factors seem involved: one is that women take more medication and are therefore more likely to suffer an ADR; another is that women are more attuned to their bodies and recognize an ADR, or are more willing to acknowledge both that they are experiencing an ADR and that they should see someone about it; and the third is that there is a subjective aspect to the reporting of ADRs.

For example, the following reports of ADRs do not support easy explanation.

1. Bruce Pomeranz et al; The authors acknowledge shortcomings in the meta-analysis including the heterogeneity of the studies and representativeness of the data; nonetheless, the figures, even if halved, give one pause. Dr. Pomeranz is from the University of Toronto, but the study used U.S. data.
 2. In 2000, 70% of women reported taking at least one prescription medication in the previous year compared to 59% of men; among men pill takers, only 35% reported taking two or more compared to 43% of the women; Berger Population Health Survey, Survey #21, May 2000.
 3. This may be, in part, because many seniors who have experienced severe ADRs requiring hospitalization were too ill to participate in the survey or had died.

Figure 3: Associations of ADRs With Some Variables Not Immediately Explainable

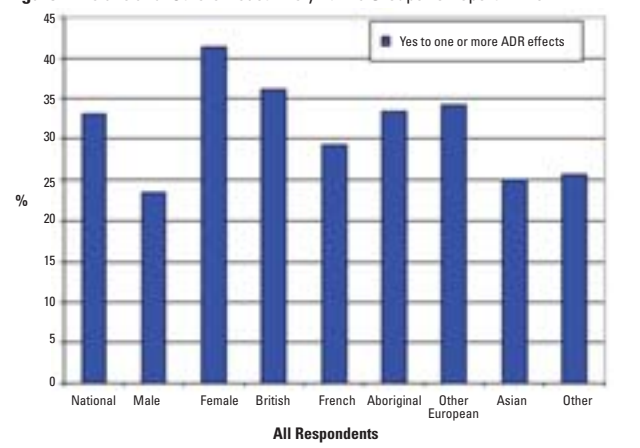


Here we find the reporting of ADRs associated with a range of factors. For example, those more likely to report experiencing an ADR include:

- Those with a family history of cancer compared to those without a family history;
- Those who report difficulty accessing health services in the previous year;
- Those who used the Internet for health-related purposes in the previous month; and
- Those who believe the federal government, or their provincial government, are doing only a fair or poor job of ensuring healthcare compared to those who believe the governments are doing a good or excellent job in ensuring quality healthcare.

There are explanations for each of these variations in the reporting of ADRs. For example, those who use the Internet for health-related purposes in the

Figure 4: Asians and 'Others' Least Likely Ethnic Groups To Report ADRs



previous month might be those who are more knowledgeable about health and aware of and sensitive to potential ADRs. Some of those with a family history of cancer might take more medication, or might be more sensitive to the effects of medication because they have seen the effects of chemotherapy. In each of these cases, the explanation includes the possibility of subjective judgment in population-based reports of ADRs.

This conclusion is reinforced by an examination of ethnic, cultural and religious affiliation differences in reporting ADRs.

Here we see that respondents of British and "other European" countries are among those most likely to report ever experiencing an ADR; while those of French, Asian and "other" are less likely to report experiencing one.

Similarly, we find that 38% of Protestants reported experiencing an ADR while only 23% of those of "other" (non-Judaeo-Christian "other") reported experiencing one.

It is not apparent what these differences indicate, if anything, with respect to ADRs. Whatever the vagaries of ADR estimates based on population reports, the differences among groups based on subjective assessments, although significant, do not detract from the overall conclusions that a substantial proportion of the population have experienced ADRs, and that the implications for population health, morbidity and mortality are substantial.

Data supplied by *The Berger Population Health Monitor*. Data from surveys prior to 2002 were administered to ±2,500 respondents 15 years of age and older in the 10 provinces. Data from Survey #23 are based upon 4,208 respondents 15 years of age and older in the 10 provinces plus the three Territories.

Topics in *The Berger Population Health Monitor* are selected in consultation with subscribers and The Hay Health Care Consulting Group. *The Berger Population Health Monitor* surveys are conducted jointly with the Physical Activity Monitor of the Canadian Fitness and Lifestyle Research Institute of Ottawa. Survey #23 was administered by the Institute for Social Research, York University. For more information contact, Earl Berger, Managing Director, 416-815-6405 or e-mail: Earl_Berger@haygroup.com