2 Methods

This study is a secondary analysis of the data collected by the BEACH study from April 1999 to March 2000 inclusive. The methods specific to this study in determining differences in GP–patient encounters on the basis of patient sex are outlined in Sections 2.2 and 2.3.

2.1 The BEACH program

The standard BEACH methods used to gather, store and analyse BEACH data are described in detail elsewhere[48-50]. In summary, 1,000 randomly selected GPs are recruited yearly, in a rolling sample of approximately 20 GPs per week for 50 weeks. Each GP records (on paper) a cluster of 100 consecutive patient encounters (the recording form is included as Appendix 1). The BEACH source population includes all recognised GPs (see Glossary) who claimed more than 375 A1 Medicare items of service (see Glossary) in the most recent Health Insurance Commission (HIC) 3-month data period. The GP Branch of the Department of Health and Aged Care (DHAC) draws the sample on a regular basis.

The randomly selected GPs are then recruited by letter, with a follow-up phone call. GPs who agree to participate are set a starting date, usually 3 to 4 weeks in advance. The paper recording packs are sent out 10 days in advance of this starting date and the GPs are given a follow-up phone call within the first days of the agreed recording period.

Information on each participating GP is gained through a GP characteristics questionnaire (see Appendix 2). The GP sample at the end of the year of research is examined in comparison to the total GP source population, using the chi-square statistic (significant at the 5% level), to determine differences in GP characteristics. When GP characteristics are found to differ significantly from the source population the data provided by these GPs are weighted. Data weights also incorporate the GP activity level (reflecting the number of A1 Medicare items claimed by each participating GP) to increase the validity of national estimates.

Data produced by the BEACH study are stored within a relational database, described diagrammatically in Figure 2.1. It demonstrates that all variables are directly related to GP and patient characteristics and to the encounter. There is only an indirect relationship between the patients' reasons for encounter (RFEs) and the problem managed by the GP.

The data collected at each encounter are patient demographics, encounter details, RFEs, problems managed, pharmacological and non-pharmacological treatments, referrals, and tests ordered (shown in Figure 2.1). With the exception of medications these data items are classified according to the International Classification of Primary Care (Version 2) (ICPC-2)[51], using ICPC-2 PLUS[52], an extended vocabulary of GP terms. ICPC-2 is regarded as the international standard for data classification in primary care. Medications (prescribed, provided or advised over-the-counter purchase) are classified according to an in-house classification, the Coding Atlas for Pharmaceutical Substances (CAPS). This has a hierarchical structure that includes medication group, medication class, generic composition and brand name. Further details can be found at http://www.fmrc.org.au/.

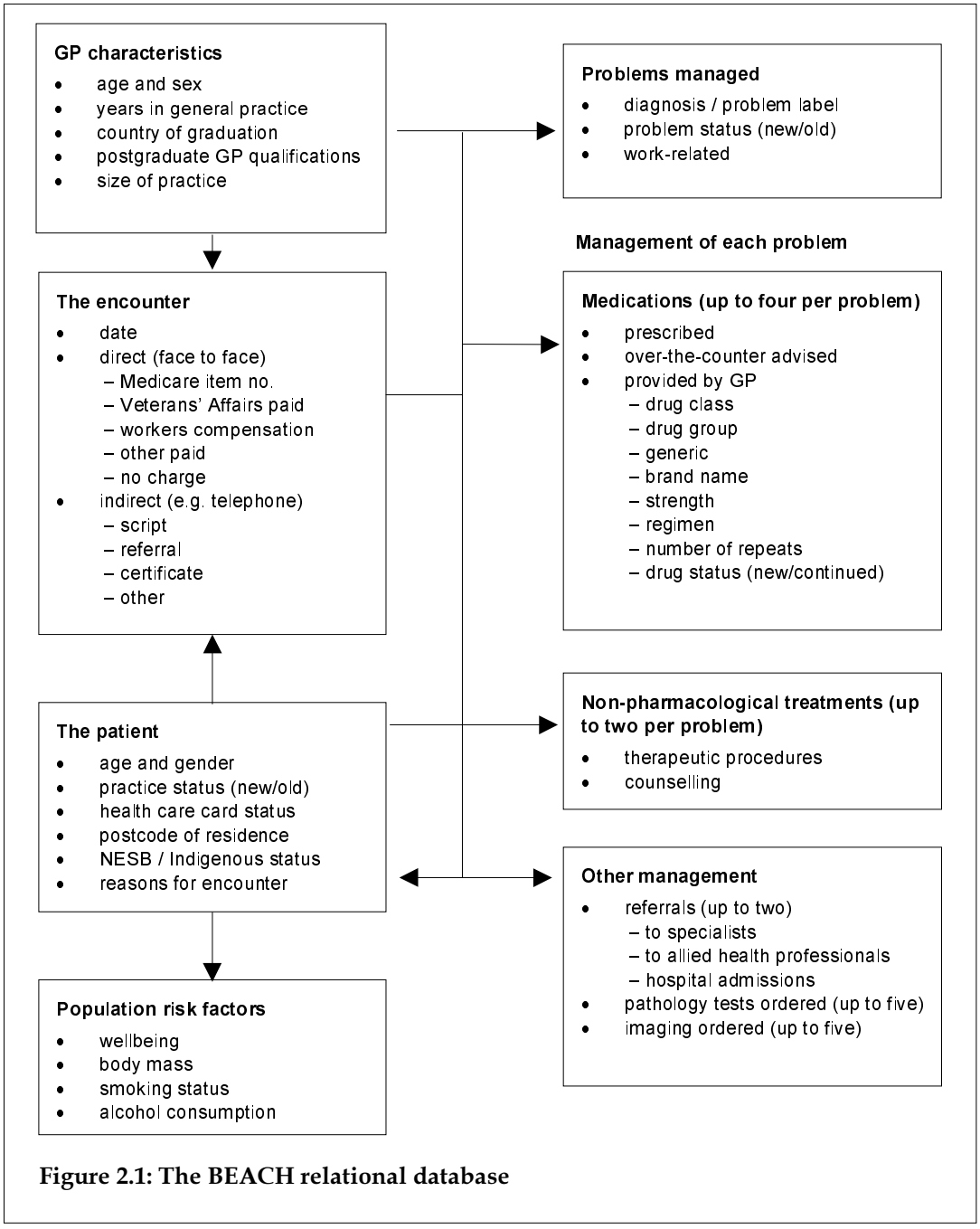

Figure 2.1: The BEACH relational database

Since BEACH began in April 1998, a section on the bottom of each encounter form has been allocated to investigate aspects of patient health or health care delivery not covered by the consultation-based information (see Appendix 1). These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). In the 1999–00 data period, each GP's pack of 100 recording forms included 40 forms with questions on wellbeing, alcohol consumption, and height and weight (to calculate body mass index, BMI); 40 forms with questions on the patient's smoking status; and 20 with questions on a range of other topics (not presented in this report).

2.2 Statistical methods

The analysis of the BEACH database was done using the Statistical Analysis System (SAS) Version 6.12[53]. The primary unit of analysis is the GP–patient encounter. The results of analysis are reported in two ways, proportions and rates per 100 encounters. Proportions are used when the event of interest occurs once per encounter (e.g. patient sex, patient age, encounter type) or when describing an event relevant to a specific group of events (e.g. amount of problem *A* in total problems). Rates per 100 encounters are used when an event can occur more than once per encounter (e.g. problems managed, medications).

Comparative results in this report present the number of observations (*n*), rate per 100 encounters and the 95% confidence limits after adjustment for clustering. Significant differences are highlighted by the shading of significant results in the tables.

The BEACH study is a random sample of GPs providing data about a cluster of encounters. Clustered sampling study designs violate the simple random sample assumption. In this study the standard error calculations used in the 95% confidence limits accommodate both the single-stage clustered design and sample weighting according to Kish's description of the formulae[54]. SAS 6.12 was limited in its ability to calculate the standard error in this study design and so further programming was done to incorporate the formulae. This methodological issue is described in detail elsewhere[49].

Multiple logistic regression

Multiple logistic regression analyses were performed to determine which variables (i.e. predictors), independent of other predictors, were related to patient sex at the GP encounter. The results of these analyses are discussed in Chapter 6, Section 6.4.

As the BEACH study employs a cluster sample survey design, with patients clustered around each GP, Stata 7[55] was used for the modelling, to allow adjustment for the design effect of the cluster sample.

Unadjusted differences between male and female patients were analysed using simple logistic regression, with patient sex (1 = Male, 0 = Female) as the outcome (dependent) variable.

The variables of interest were grouped into three families: morbidity, social factors, and patient and GP demographics. Morbidity was analysed at both the specific problem level (Table 6.3) and the broader ICPC-2 chapter-based body system level (Table 6.2). Social variables included non-English-speaking background status, Indigenous status, whether a new or an existing patient to the practice, whether living in an urban or a rural location, whether a health concession card holder, and the level of socioeconomic disadvantage (as defined by the Socio-Economic Indexes for Areas, SEIFA, using postcode of residence). The patient and GP demographics included age of patient (< 15, 15–44, 45–64, 65–74, 75+), and GP age (< 55, 55+) and sex.

Multiple logistic regression was used to determine the independent predictors of patient sex. Adjusted odds ratios are reported with the 95% confidence interval (CI), corrected for the cluster sample effect. The models were reduced using backward elimination, with the morbidity family reduced first, followed by social and demographic variables, resulting in a parsimonious model of significant predictors. Individual variables were removed if the *p*-value of the Wald statistic (adjusted for the cluster sample) was not significant ($\alpha = 0.05$).

In the analysis of problems managed by ICPC-2 chapter, the univariate method counts the number of times a problem from a chapter is managed. Up to four problems can be managed

per encounter; therefore, it is possible to count multiple problems per chapter at an encounter. In contrast, the modelling/odds ratios examine the presence of at least one problem from a chapter being managed at an encounter.

2.3 The study of sex-specific encounters

This report primarily aims to describe the health issues of male patients, but by making comparisons with female patients it provides data on all encounters where patient sex was recorded. However, two primary areas specific to male patients were analysed separately:

- problems managed in each of the following age groups: 15–24, 25–34, 35–44, 45–54, 55–64, 65–74 and 75+ years (see below)
- work-related problems managed (see below).

The proportion of the Australian population who attended a GP and population GP-attendance rates were also examined to identify any sex-specific, age-related patterns in the use of general practice services. The proportion of the population using GPs was calculated for age–sex groups by dividing the number of people in each age–sex group who had claimed at least one A1 Medicare item during 2000–01 (data supplied by the GP Branch of the DHAC), by the number of people in the total population in that age–sex group in 1999 (the most recent data available)[56], multiplied by 100. The age–sex-specific rate of GP attendances in Australia was calculated by dividing the total number of claims for A1 Medicare items, by the total population in each age–sex group.

Morbidity managed in specific male age groups

An analysis of the problems managed at encounters with male patients was conducted in 10-year age groups. Only patients aged 15 years and above were included because these patients would (in the majority) be likely to be responsible for seeking their own health care. The aim was to determine patterns of problems managed and treatment provided. Note that the data used in this section are not weighted because weighting is not necessary when using age–sex defined groups, as this stratifies the data effectively.

Work-related problems managed at male encounters

Work-related problems are defined as those problems that GPs judged likely to be work-related, irrespective of whether they were claimable through workers compensation or Medicare. Work-related problems were selected because there was a significant difference between males and females in the relative rate of work-related problems and workers compensation claimable encounters. This substudy describes the types of work-related problems managed, the age distribution of male patients with work-related problems and the characteristics of these patients.