3 The sample

This chapter describes the sample and sampling methods used in the BEACH program. The methods are only summarised in this chapter. For those wanting more detailed explanation, the BEACH methods are described in Chapter 2.

A summary of the total BEACH sample are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

3.1 Response rate

A random sample of GPs who claimed at least 375 general practice Medicare items of service in the previous 3 months is regularly drawn from Medicare Australia data by the Primary and Ambulatory Care Division of DoHA (see Chapter 2).

Contact was attempted with 3,884 GPs—12.6% could not be contacted. The majority of these had moved, retired or died, and were untraceable (Table 3.1). It is notable that of GPs approached who were aged less than 35 years, 26.1% were no longer at that practice and could not be traced. These would largely be registrars moving through practices during training. In contrast, 11.4% of GPs aged 35 years and over were not traceable (results not tabled).

The final participating sample consisted of 953 practitioners, representing 28.1% of those who were contacted and available, and 24.5% of those with whom contact was attempted (Table 3.1).

Table 3.1: Recruitment and participation rates

Type of contact	Number	Per cent of approached (*n* = 3,884)	Per cent of contacts established (*n* = 3,394)
Letter sent and phone contact attempted	3,884	100.0	—
No contact	490	12.6	—
No phone number	35	0.9	—
Moved/retired/deceased	228	5.9	—
Unavailable (overseas, maternity leave, etc)	36	0.9	—
No contact after five calls	191	4.9	—
Telephone contact established	3,394	87.4	100.0
Declined to participate	2,075	53.4	61.1
Agreed but withdrew	366	9.4	10.8
Agreed and completed	953	24.5	28.1

3.2 Representativeness of the GP sample

Whenever possible, the study group of GPs should be compared with the population from which the GPs were drawn to identify and, if necessary, adjust for any sample bias that may affect the findings of the study.

Statistical comparisons, using the chi-square statistic (χ^2) (significant at the 5% level), were made between BEACH participants and all recognised GPs in the sample frame during the study period (Table 3.2). The GP characteristics data for BEACH participants were drawn from the GP profile questionnaire. DoHA provided the data for all GPs in the sample frame, drawn from Medicare claims data.

Table 3.2 demonstrates that there were no significant differences in GP characteristics between the final sample and all GPs in the sample frame, in terms of sex, age, distribution across states, or across Rural, Remote and Metropolitan Area classes. However, participants who graduated in a country other than Australia were slightly under-represented when compared with the total sample.

Data on the number of Medicare A1 items of service claimed in the previous quarter were also provided by DoHA for each GP in the original sample, but not for all GPs in the sample frame. These data were used to determine the 'activity level' of each GP. The final sample included a greater proportion of GPs with an activity level of 375–750 services in the previous quarter, and a smaller proportion of GPs in the > 1,500 services category, compared with non-participants. There was no difference between the proportions of participants and non-participants in the 751–1,500 services group. There was a significant difference (p = 0.041) in the mean number of A1 items claimed by participants (1,194 claims for the quarter) compared with the GPs who declined to participate (1,244 for the quarter) (Table 3.3). Comparisons of the median scores for each group showed a difference of fewer than five consultations per week. It is possible that the time required to participate in BEACH may be a greater issue for busier GPs. BEACH also may offer an avenue for fulfilling RACGP Clinical Audit requirements to part-time GPs who may not be as able to take up other avenues. It cannot be assumed, however, that a GP seeing 15 patients per day 3 days per week is any less 'busy' than a GP seeing 15 patients per day 5 days per week.

Table 3.2: Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)

	BEACH[a][b]		Australia[a][c]	
Variable	Number	Per cent of GPs (n = 953)	Number	Per cent of GPs (n = 18,291)
Sex (χ^2 = 0.36, p = 0.55)				
Males	602	63.2	11,730	64.1
Females	351	36.8	6,561	35.9
Age (χ^2 = 3.61, p = 0.31)				
< 35 years	74	7.8	1,285	7.0
35–44 years	210	22.2	3,980	21.8
45–54 years	344	36.4	6,366	34.8
> 54 years	317	33.5	6,660	36.4

(continued)

Table 3.2 (continued): Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)

Variable	BEACH[a][b] Number	BEACH[a][b] Per cent of GPs(*n* = 953)	Australia[a][c] Number	Australia[a][c] Per cent of GPs (*n* = 18,291)
Place of graduation (χ^2 = 5.72, *p* = 0.017)				
Australia	698	73.5	12,772	69.8
Overseas	252	26.5	5,519	30.2
State (χ^2 = 13.81, *p* = 0.055)				
New South Wales	314	33.0	6,174	33.8
Victoria	246	25.8	4,568	25.0
Queensland	169	17.8	3,444	18.8
South Australia	93	9.8	1,538	8.4
Western Australia	74	7.8	1,663	9.1
Tasmania	29	3.1	494	2.7
Australian Capital Territory	13	1.4	289	1.6
Northern Territory	14	1.5	121	0.7
RRMA (χ^2 = 12.0, *p* = 0.062)				
Capital	645	67.8	12,127	66.3
Other metropolitan	67	7.0	1,411	7.7
Large rural	66	6.9	1,131	6.2
Small rural	45	4.7	1,250	6.8
Other rural	108	11.3	2,081	11.4
Remote centre	7	0.7	140	0.8
Other remote	14	1.5	151	0.8

(a) Missing data removed.

(b) Data drawn from the BEACH GP profile completed by each participating GP.

(c) All GPs who claimed at least 375 A1 Medicare items during the most recent 3-month Medicare Australia data period. Data provided by the Primary Care Division of the Australian Government Department of Health and Ageing.

Note: RRMA—Rural, Remote and Metropolitan Area classification.

Table 3.3: Activity level of participating and non-participating GPs

Variable	Participants[a] (*n* = 953) Number of claims	Participants[a] (*n* = 953) Per cent of GPs	Non-participants[a] (*n* = 2,441) Number of claims	Non-participants[a] (*n* = 2,441) Per cent of GPs
Activity (χ^2 = 6.09, *p* = 0.048)				
374–750 services in previous quarter	267	28.0	631	25.9
750–1,500 services in previous quarter	443	46.5	1,085	44.5
> 1,500 services in previous quarter	243	25.5	725	29.7
Mean activity level (*t* = 2.05, *p* = 0.041)	1,193.7	—	1,243.5	—
Median activity level	1,050	—	1,107	—
Standard deviation	629.77	—	639.18	—

(a) Missing data removed.

3.3 Weighting the data

Activity weights: In BEACH, each GP provides details of 100 consecutive encounters. There is considerable variation in the number of services provided by different GPs in a given year. Encounters were therefore assigned an additional weight that was directly proportional to the activity level of the recording GP. GP activity level was measured as the number of Medicare A1 items claimed by the GP in the previous 12 months (data supplied by DoHA).

Age–sex weights: In most previous years, BEACH has had an under-representation of young GPs. In order to achieve comparable estimates and precision, GP age–sex weights were applied to the data sets for these years in post-stratification weighting. In the current year (2007–08) this under-representation did not occur, but post-stratification weighting was again applied for consistency of method.

Total weights: The final weighted estimates were calculated by multiplying raw rates by the GP age–sex weight and the GP sampling fraction of services in the previous 12 months. Table 3.4 shows the precision ratio calculated before and after weighting the data.

3.4 Representativeness of the final encounter sample

BEACH aims to gain a representative sample of GP–patient encounters. To assess the representativeness of the final weighted sample of encounters, the age–sex distribution of patients at BEACH A1 MBS/DVA-claimable encounters was compared with that of patients at all encounters claimed as MBS/DVA A1 items of service in the 2007–08 study period (data provided by DoHA).

As shown in Table 3.4, there is an excellent fit of the MBS and BEACH age and sex distribution both with and without weighting, with no age–sex category varying by more than 20% from the population distribution. The range of raw precision ratios (0.91–1.14) indicates that the BEACH sample of encounters is a good representation of Australian GP–patient encounters. After weighting, the precision ratios improved slightly in some aspects, and all were within the 0.93–1.12 range.

Table 3.4: Age–sex distribution of patients at BEACH and MBS A1 services

	BEACH						
	Raw[a]		Weighted[b]		Australia[c]	Precision ratios	
Sex/age	Number	Per cent (*n* = 75,300)	Number	Per cent (*n* = 76,111)	Per cent	Raw[a]	Weighted[c]
Male							
< 1 year	896	1.2	847	1.1	1.2	1.00	1.09
1–4 years	1,951	2.6	1,911	2.5	2.8	1.08	1.12
5–14 years	2,179	2.9	2,322	3.1	3.3	1.14	1.06
15–24 years	2,328	3.1	2,546	3.3	3.3	1.06	1.00
25–44 years	5,955	7.9	6,459	8.5	8.5	1.08	1.00
45–64 years	8,521	11.3	9,362	12.3	11.8	1.04	0.96
65–74 years	4,087	5.4	4,467	5.9	5.8	1.07	0.98
75+ years	3,825	5.1	4,056	5.3	5.3	1.04	1.00

(continued)

Table 3.4 (continued): Age–sex distribution of patients at BEACH and MBS A1 services

	BEACH						
	Raw[a]		Weighted[b]		Australia[c]	Precision ratios	
Sex/age	Number	Per cent (*n* = 75,300)	Number	Per cent (*n* = 76,111)	Per cent	Raw[a]	Weighted[c]
Female							
< 1 year	798	1.1	760	1.0	1.0	0.91	1.00
1–4 years	1,716	2.3	1,713	2.3	2.4	1.04	1.04
5–14 years	2,083	2.8	2,182	2.9	3.2	1.14	1.10
15–24 years	4,920	6.5	4,779	6.3	6.2	0.95	0.98
25–44 years	11,955	15.9	11,212	14.7	14.6	0.92	0.99
45–64 years	12,604	16.7	12,129	15.9	15.6	0.93	0.98
65–74 years	5,456	7.2	5,471	7.2	6.7	0.93	0.93
75+ years	6,026	8.0	5,893	7.7	8.4	1.05	1.09

(a) Unweighted data, A1 items only, excluding encounters with patients who hold a DVA Repatriation health card.

(b) Calculated from BEACH weighted data, excluding encounters with patients who hold a DVA Repatriation health card.

(c) Data provided by the Primary Care Division of the Australian Government Department of Health and Ageing.

Note: A1 Medicare services—see Glossary. Only encounters with a valid age and sex are included in the comparison.

3.5 The weighted data set

The final unweighted data set from the 10th year of collection contained encounters, reasons for encounters, problems and management/treatments. The apparent number of encounters, reasons for encounter and number of medications all increased after weighting, and the number of problems managed, other treatments, referrals, imaging and pathology all decreased after weighting. Raw and weighted totals for each data element are shown in Table 3.5.

Table 3.5: The BEACH data set

Variable	Raw	Weighted
General practitioners	953	953.1
Encounters	95,300	95,897.7
Reasons for encounter	146,405	146,695.5
Problems managed	147,724	145,078.0
Medications	96,488	98,439.3
Other treatments	51,332	49,129.8
Referrals	13,747	12,941.8
Imaging	9,469	9,143.0
Pathology	45,597	41,375.4