

Peer Review

The Australasian Epidemiological Association – membership profile and their views on the Association’s future strategic directions

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Abstract

The Australasian Epidemiological Association (AEA) formed in 1987 and is the peak professional body for epidemiologists in Australia and New Zealand. In the past 20 years, the discipline of epidemiology in Australia has grown in response to increased demands for evidence-based practice and advances in technology such as data linkage. As such, the professional development and support needs of epidemiologists working in Australia may have changed since the inception of the AEA. This paper aims to describe the membership profile of the AEA and report on the views of members about the future directions of the AEA as identified in a membership survey undertaken in 2007. The survey was initially emailed in March 2007 to all 567 financial members of the AEA. Two hundred and twenty-five (40%) members responded and were broadly representative of the 2006/2007 AEA membership in terms of sex, age and residence. Members were predominantly female, located in New South Wales or Victoria, aged between 30 and 49, working at a university or research institute, had joined the AEA within the past five years and was a member of at least one other professional organisation. Most AEA members had a PhD and a high level of introductory or advanced training in both epidemiology and biostatistics. A range of epidemiological interest and expertise areas are represented within the AEA membership. Information obtained in the survey shall be used to inform AEA council decisions on the future direction of AEA and how to best attend to its diverse membership.

Introduction

A brief history of the development of AEA

In 1985 the Australian and New Zealand Society for Epidemiology and Research in Community Health – Public Health Association of Australia (ANZSERCH-PHA) encouraged the development of special-interest groups with the intention of providing a framework through which members could, amongst other goals, develop their professional skills and exchange views and information¹. In February 1985 the first epidemiological special interest group meeting was held and four terms of reference developed;¹

1. What are the roles of career epidemiologists in Australia and what are minimum requirements to become a career epidemiologist?
2. What are the needs for career epidemiologists in Australia in the next ten years?
3. What steps should be taken to ensure that minimum standards for training programs and individuals are met?
4. What steps should be taken to ensure availability of appropriate positions in epidemiology at all stages in career development?

In August 1986 the formation of the Australasian Epidemiological Association (AEA) was first discussed and a steering group was formed.¹ By February 1987 the AEA was born with 121 foundation members, many of whom attended the inauguration in Canberra.^{1,2} The association is governed by a voluntary council consisting of four executive members (president, vice president, treasurer, secretary), three additional members (New Zealand branch president, chapter coordinator, membership officer) and two co-opted positions which can be shared (student representative, Australasian Epidemiologist editor) In the early years, full membership in the AEA was granted after review by an election committee and membership at the ‘associate’ level was available for those who did not qualify for full membership.³ However, this was soon abolished and full membership became available to anyone with an interest in epidemiology. Since then, the membership of AEA has diversified and grown to over 500 full-time, student, corporate and life members.

The four terms of reference developed in 1985 are still valid today, however in the past 20 years the discipline has seen rapid growth in clinical epidemiology associated with evidence based practice and demands from the private sector (e.g. the pharmaceutical industry), as well as advances in technology (e.g. data linkage) and access to quality health information.⁴ As such, the needs of epidemiologists in Australia in relation to professional support and development may have changed. After 20 years of incorporation, the AEA executive committee

determined it was timely to reflect on the profile of membership and the role of AEA from the membership's perspective through a survey of its membership. The AEA also wished to address a perceived shortage of 'higher level' epidemiologists and standardise 'higher order' epidemiology training.⁵⁻⁶

The aim of this paper is to report on the results of the membership survey and describe the membership profile of AEA in terms of the range of educational backgrounds, qualifications, expertise and specialist interest areas. The paper also aims to identify what the membership considers to be the priorities for the future directions of AEA.

Methods

Study population

The target population was all 567 financial members of the Australasian Epidemiological Association (AEA) for 2006/2007. 'Membership is open to anyone with an interest in epidemiology'.⁷ In 2006/2007/2008 annual fees were \$80 for ordinary members or \$60 for full-time student members, payable in AU\$ or NZ\$ dependent on residence.

The AEA 2006/2007 Membership list was compiled from the 'New Zealand' list held by the New Zealand Membership officer and the 'other countries' (including Australia) list held by Convention Associates Pty Ltd in Victoria. As survey collection spanned two financial years the membership list included 2006/2007 financial members as well as anyone newly joined until August 2007. The two organisations that were corporate members were excluded from data collection.

The AEA membership survey was initially distributed to all AEA members in March 2007 via email and later as a specialised bulletin. There were problems contacting 54 (9.5%) AEA members via email, these included 39 invalid email addresses, 12 members with no email listed, two bounce back emails and one email with forwarding information. AEA members with email contact issues were contacted by phone or mail. Survey reminders were advertised through the fortnightly bulletin to all financial AEA members until the end of the AEA Scientific Meeting in August 2007.

Survey development

The survey content was structured to clarify the membership profile and to assess the strategic planning areas discussed at a 2006 face-to-face AEA Council meeting that included the prioritisation of surplus funds, areas of improvement and areas of advancement in a variety of areas including communication, use of existing skill base and funds. Questions regarding demographic characteristics were based on the information collected on the AEA membership form. The structure of the survey was initially developed by the AEA Executive and Executive Officer and revised based on comments from the other members of the AEA Council. A pilot version was sent to 15 AEA financial members for completion and minor changes were made before being sent to the entire membership.

The self-reported survey consisted of six sections with either fixed or open ended responses regarding:

- Qualifications, including educational background and experience;
- Interest areas in public health/epidemiology by indication in a tick box;
- Expertise areas in public health/epidemiology which consisted of participants rating their experience as 0 (no experience), 1 (have been involved with this once or twice), 2 (some experience), 3 (a job requirement that I am involved in occasionally), 4 (one of my job requirements that I am involved with often), 5 (expert – my sole job requirement);
- Assessment of the current provisions of AEA. Participants were reminded that the objectives of the Association are to develop and promote the discipline of epidemiology in Australasia through promoting excellence in epidemiological methods; communication; advocating for funding, capacity building and policy development; and strategic alliances with related organisations to maintain high standards of public health practice, teaching and research in Australia. This is achieved through being an organisation committed to excellence in governance and a strong member focus.⁷ Respondents were asked to rate their satisfaction for a number of the services currently provided by the AEA on a likert scale from 1 (extremely dissatisfied) to 5 (extremely satisfied);
- Recommendations for use of a \$10,000 per year budget surplus. Participants were asked to rate 8 options from 1 (top priority) to 8 (least priority) and were given the opportunity to nominate other priority items; and
- Demographic characteristics, which were collected at the end of the survey.

A copy of the survey is available upon request.

Analysis

Proportions and medians were calculated to summarise the data as appropriate. Comparisons of categorical data were undertaken using chi-square tests of association or Fisher exact chi-square tests where appropriate. P-values <0.05 were considered statistically significant.

Recruitment and generalisability of responder results were assessed by comparing demographic characteristic of 2007 Survey Participants with the AEA 2006/2007 Membership list. Members' title was restricted to Australian members only as the New Zealand database did not collect this information.

Results

Of the 567 AEA 2006/2007 members, 225 (41%) completed the 2007 survey (Table 1). Problems that arose through contacting members via email did not affect participation fractions (33.3% response fraction for AEA members with contact problems versus 40.4% without contacting problems, $p=0.3$). There were no significant differences between responders and non-responders in terms of sex, title, country of residence and Australian state or territory of residence. A similar age distribution was also found, however a direct comparison was not possible because data were collected using different age categories.

A high percentage of responders (46%) had joined AEA within the past 5 years, while 8% were 'founding members'. Forty-five (37%) of the 1987 AEA Foundation Members were still members

Table 1: Demographic characteristics of Australasian Epidemiological Association: Comparison between 2007 survey respondents and total 2007 membership†.

	2007 Survey Participants	Membership 2006/2007
	n (%)	n (%)
Total	225	567
Sex‡		
Male	82 (36.4)	222 (39.2)
Female	143 (63.6)	345 (60.8)
Age group (years)		
20–29	18 (8.0)	-
30–39	55 (24.4)	-
40–49	70 (31.1)	-
50–59	61 (27.1)	-
60–69	9 (4.0)	-
70+	1 (0.4)	-
Unknown	11 (4.9)	-
Title§		
Ms/Mrs/Mr	84 (41.4)	208 (41.6)
Dr	82 (40.4)	221 (44.2)
A/Prof	18 (8.9)	32 (6.4)
Prof	19 (9.4)	34 (6.8)
Unknown	0 (0)	5 (1.0)
Country of residence		
Australia	203 (90.2)	498 (87.8)
New Zealand	20 (8.9)	57 (10.0)
Other Countries	2 (0.9)	12 (2.1)
ACT	14 (6.2)	32 (5.6)
NSW	45 (20.0)	120 (21.1)
NT	7 (3.1)	16 (2.8)
QLD	31 (13.8)	66 (11.6)
SA	17 (7.6)	46 (8.1)
TAS	8 (3.6)	19 (3.3)
VIC	56 (24.9)	132 (23.2)
WA	25 (11.1)	69 (12.1)
Indigenous Origin		
Aboriginal	2 (0.9)	-
Maori	3 (1.3)	-
None	212 (94.2)	-
Unknown	8 (3.6)	-
Type of organisation‡*		
University or research institute	171 (76.0)	-
Government / Government Administration	27 (12.0)	-
Hospital	3 (1.3)	-
Private sector	2 (0.9)	-
Unknown	22 (9.8)	-
Joined AEA (years ago)		
0–4	104 (46.2)	-
5–9	53 (23.6)	-
10–14	32 (14.2)	-
15–19	12 (5.3)	-
Foundation Members		
(20 years)	17 (7.6)	-
Unknown	7 (3.1)	-

† Two organisational memberships were excluded from data collection

§ Australia only

* Research institutes attached to hospitals have been coded as a 'research institute'

Note: No significant difference between 2007 Survey Participants and Membership 2006/2007

in 2007/2008 (data not presented in table format). Forty-five respondents (20.0%) were current AEA chapter members, and 73 (32%) indicated an interest in joining a chapter. The chapters with the highest number of responding members were (in order); PEG in Western Australia, QEG in Queensland, VTEG in Victoria and Tasmania and DREG in the Northern Territory. The majority of respondents (63%) were members of at least one other professional organisation and a fifth (19%) were members of at least two. Other organisational memberships included the Public Health Association (42%), Australasian Faculty of Public Health Medicine (16%) and the International Epidemiological Association (10%).

The majority of respondents (60%) had a research doctorate and an additional 32% had a Masters qualification (Table 2). As displayed in Table 3, three quarters of responders reported having biostatistical and epidemiological training above the undergraduate level. The vast majority (86%) of responders reported having at least introductory level training in both epidemiology and biostatistics or statistics. Just over half of responders (56%) reported having advanced levels of training in both epidemiology and biostatistics and most of this training was undertaken at a higher level (postgraduate, masters or PhD thesis). Twenty per cent reported using advanced levels of epidemiology and biostatistics in their PhD thesis.

The most common epidemiological area of interest, regardless of category, was observational studies, followed by epidemiological methods and specific disease/condition epidemiology, as seen in Table 4. Within the epidemiological specialities category the most prevalent interests were social determinants (38% interested), chronic disease (34%), cancer (31%), Indigenous health (29%), behavioural (27%), cardiovascular (27%), health services research (26%), environmental epidemiology (25%), mental health (21%) and nutrition (18%). The most frequent expertise within the epidemiological specialities category were chronic disease (median rating 1; mean rating 1.7), social determinants (1; 1.6), health services research (1; 1.6), cancer (1; 1.6), cardiovascular (0; 1.3), Indigenous health (0; 1.2), general (0; 1.2), behavioural (0; 1.3), environmental (0; 1.1) and mental health (0; 1.0) (Table 4). When ordered by the number of 'expert' participants indicated by a rating of 5, the highest number of experts within the epidemiological specialities category were for cancer (17 experts), Indigenous health (11), injury (10), chronic disease (9) and health services research (8). Responders offering to be an AEA advisor for their epidemiological speciality area was limited, with the majority (71%) of areas having less than five advisers.

Generally, as seen in Figure 1, participants were satisfied with the provisions of AEA. Fifty-four per cent of responders were interested in accessing an electronic version of the journal, however it should not replace the hard copy version as there was still interest (62%) in this original form of delivery. Eighty two per cent of responders wished to be included on a publicly available membership index through the website and 84% were interested in online membership renewal. The majority of respondents had visited the website within the last year (61%), however only 28% had visited the website within the last month

Table 2: Educational characteristics of Australasian Epidemiologists: 2007 survey.

	n	%
Highest qualification†		
Research doctorate	135	60.0%
Public health medicine	-	-
Masters	73	32.4%
Graduate certificate	3	1.3%
Graduate diploma	14	6.2%
Other	0	0.0%
Unknown	0	0.0%
Country of training‡		
Australia	142	63.1%
New Zealand	16	7.1%
United Kingdom	11	4.9%
United States or Canada	8	3.6%
Europe or South Africa	5	2.2%
Asia & the Middle East	2	0.9%
Unknown	41	18.2%
Australian State or Territory of training		
ACT	16	11.3%
NSW	37	26.1%
QLD	19	13.4%
SA	11	7.7%
TAS	4	2.8%
VIC	37	26.1%
WA	18	12.7%
Year training completed‡‡		
1967-1977	4	1.8%
1978-1988	11	4.9%
1989-1988	46	20.4%
1999-2008	114	50.7%
Training ongoing	32	14.2%
Unknown	18	8.0%

and 16% had never visited the website (data not presented in table format). The main reason for visiting the website was to obtain information on the upcoming AEA scientific meeting.

Eight options were provided for the prioritisation of a \$10,000 per year of the AEA budget surplus (data not presented in table format). Whether analysed by mean, median or first priority, the results were consistent. Thirty per cent indicated additional executive support as their top preference (29.7% first preference, mean (SD)=3.01 (2.01), median=3), followed by student support (21.1%, 3.29 (2.01), 3) and chapter funds (16.8%, 3.32 (1.99), 3). Increasing the AEA journal size and frequency was fourth (11.4%, 4.57(2.44), 5), followed by an additional conference day (9.2%, 4.84(2.52), 5), contracting experts on a one-off basis for specific activities (4.9%, 4.70(2.09), 5), creating AEA promotional materials (2.7%, 5.59(2.12), 6), and document prepared by a nominated 'expert' via casual employment (2.2%, 4.90(1.96), 5). Four additional suggestions were nominated by respondents and these referred to top-up scholarships for students and additional support for symposiums and workshops. No differences in the priority for budget surplus was seen between sex (p=0.2), age category (p=0.1), Australia and New Zealand location (p=0.06), Australian state/territory location (p=0.3), responders who do or do not hold another organisation membership (p=0.1), workplace organisation type (p=0.9), highest level of biostatistics/statistics (p=0.7) or epidemiological (p=0.09) training and overall satisfaction with the AEA (p=0.1). There was a significant trend in the priority for budget surplus by highest qualification year; as members' year of highest qualification became more recent, members were less likely to prioritise the budget surplus for public consultation documents, document preparation and AEA promotional material, and more likely to prioritise student support and extending the annual conference, (p=0.04). Similarly, 'Ms/Mrs/Mr' members were less likely to prioritise public consultation documents and more likely to prioritise student support and extending the annual conference than 'Dr' and 'Associate Professor/Professor' members (p=0.02). However, when the three categories of 'Research Doctorate', 'Masters' and 'Graduate Certificate/Diploma' were assessed, there was no difference in their priorities for the budget surplus (p=0.3).

Table 3: Level of training in epidemiology and biostatistics amongst survey respondents

Biostatistics Training	Epidemiological Training						Total
	None	Under-graduate	Post-graduate	Masters	PhD Thesis	Unknown	
None†	2	0	0	0	0	0	2 (1%)
Undergraduate‡	2	5	2	3	3	5	20 (9%)
Postgraduate	1	2	47	9	16	2	77 (34%)
Masters	0	0	8	36	0	0	44 (20%)
PhD Thesis	1	0	3	0	60	1	65 (29%)
Unknown	1	0	3	2	7	4	17 (8%)
Total	7 (3%)	7 (3%)	63 (28%)	50 (22%)	86 (38%)	12 (5%)	225 (100%)

† Biostatistics or statistics training

Table 4: Interest and expertise areas of Australasian Epidemiologists

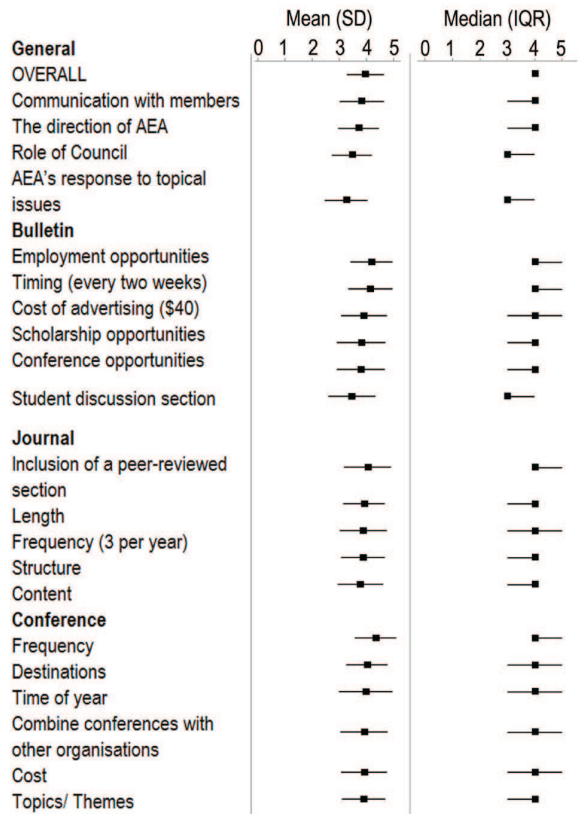
Category	Interest	Experience					Number of experts [§]	
	Popularity [†] n (%)	0	1	2	3	4		5
Discipline	Biostatistics	131 (58.2) [†]						13
	Clinical epidemiology	76 (33.8)						7
	Disease / condition-specific epidemiology	161 (71.6) [†]						34 [*]
	Education (epidemiology specific)	85 (37.8)						10
	Epidemiological methods	169 (75.1) [†]						18
	Health economics	58 (25.8)						3
	Health policy	78 (34.7)						8
	Health statistics (eg. demography, descriptive)	129 (57.3)						15
Types of studies	Mathematical modelling	66 (29.3)						7
	Observational studies (eg. cross-sectional, cohort or case-control)	178 (79.1) [†]						50 [*]
	Program evaluation	80 (35.6)						7
	Qualitative research	70 (31.1)						5
	Randomised controlled trials	107 (47.6)						9
Surveys	Face-to-face	85 (37.8)						21 [*]
	Internet	55 (24.4)						0
	Mail	86 (38.2)						24 [*]
	Telephone	78 (34.7)						9
Analytical methods	Bayesian analysis	53 (23.6)						2
	Geographic Information Systems	70 (31.1)						1
	Longitudinal analysis	103 (45.8)						6
	Meta-analysis / Systematic review	98 (43.6)						9
	Multivariate analysis (eg. factor analysis, regression)	137 (60.9) [†]						20
	Record Linkage	95 (42.2)						13
Epidemiological Specialities	Survival analysis	96 (42.7)						6
	Behavioural	61 (27.1)						3
	Biosecurity and emergencies	24 (10.7)						2
	Cancer	69 (30.7)						17
	Cardiovascular	60 (26.7)						4
	Chronic disease	76 (33.8)						9
	Environmental	56 (24.9)						8
	Eye	13 (5.8)						0
	General	39 (17.3)						2
	Genetic	39 (17.3)						6
	Health services research	59 (26.2)						8
	HIV/AIDS	21 (9.3)						2
	Indigenous health	66 (29.3)						11
	Injury (unintentional/intentional)	36 (16.0)						10
	Law	15 (6.7)						1
	Mental health	47 (20.9)						6
	Musculoskeletal	26 (11.6)						3
	Nutrition	41 (18.2)						7
	Occupational	28 (12.4)						6
	Oral	12 (5.3)						1
	Pharmacoepidemiology	27 (12.0)						2
	Reproductive	38 (16.9)						4
	Respiratory	31 (13.8)						8
Sexual health	25 (11.1)						2	
Social determinants	85 (37.8)						6	
Veterinary	10 (4.4)						0	
Life Stages	Adult	90 (40.0)						29 [*]
	Paediatric	63 (28.0)						9
	Adolescent	59 (26.2)						5
	Perinatal	49 (21.8)						13
	Geriatric	52 (23.1)						1

†Top 5 overall interest areas

‡Rated from 0 (no experience) to 5 (sole job requirement) §An expert was considered a respondent who self-reported their experience as '5'

*Top 5 highest number of 'expert' participants overall

Figure 1: Satisfaction with AEA provisions



†Rated from 0 (extremely dissatisfied) to 5 (extremely satisfied)

Discussion

Respondents to the AEA membership survey tended to be female, aged between 30 and 49 years, had obtained a PhD qualification, be located in Australia and specifically in New South Wales or Victoria, working at a university or research institute, had joined the AEA within the past five years and a member of at least one other professional organisation.

Based on the survey results, the 2006/2007 AEA membership was highly qualified with 92% of respondents having achieved a research doctorate or masters qualification. Much of this training occurred in Australia within the last ten years, specifically New South Wales and Victoria, reflecting the population distribution. Many AEA members had at least introductory training in both epidemiology and biostatistics including three quarters who had training above the undergraduate level in both. Some concern has been expressed about a lack of 'higher-level' and 'research-capable' epidemiologists, and the 'industry-readiness' of current graduates,⁶ but this is not reflected in this study as we found that half (56%) who had advanced 'higher level' training in both epidemiology and biostatistics. However, responses were self-reported and with the varied avenues into the field of epidemiology as outlined by Rumbold et al.⁵ individuals may have differing understanding of what constitutes 'higher level' training.

The limited exposure to epidemiology in health related undergraduate and post graduate courses may be leading to the concern about higher level training. To combat this issue Rumbold et. al⁵ discusses the possibility of a 'PhD in epidemiology' and increased access to epidemiology specialised Masters programs.

Members were generally satisfied with the services provided by AEA. The lowest scores were observed for AEA's response to topical issues, the student discussion section and the role of Council. The latter two were also reflected as potential priorities for the use of the budget surplus as the respondents' rated ongoing executive support along with ongoing student support as relatively high priorities. In contrast, experts on a one-off basis for specific activities such as a response to a topical issue on behalf of AEA received limited support. In addition few respondents were willing to be an AEA advisor for such an activity, which further limits the capacity of the organisation to respond to topical issues.

The majority of respondents were interested in accessing an electronic version of the journal, being included on a publicly available membership index through the website and accessing online membership renewal. Few members had visited the website within the last month, which may indicate that the current monthly electronic bulletin may be sufficient in keeping members abreast of current issues. It may be, however, that by administering a website with different content, including educational resources and electronic issues of AE, membership involvement could be encouraged. Chapter activity could also be enhanced as 73 (32%) respondents indicated an interest in joining a chapter.

The 225 respondents represented the 2006/2007 AEA membership well as indicated from the demographic information available for survey responders and the AEA membership. However the response fraction was under 40% and there may be response bias despite the demographic similarities. One suggested improvement for the AEA database would be to collect 'highest qualification' at joining and annual renewal, and for this

information to be retained over time. Furthermore, all data were self-reported which may have led to different interpretation of questions. We also recognise that the AEA membership does not represent all individuals currently working in epidemiology. Nevertheless it is the peak professional body for the discipline in Australia.

Since the AEA was founded in 1987, membership has steadily increased every year with nearly half of the membership having joined within the past five years. However, the importance of retaining members needs to be emphasised and nomination of life members is encouraged. With the membership age now spanning more than 50 years, the year that training was completed spanning more than 40 years and the many different avenues into the field of epidemiology, the AEA needs to think innovatively about how to attend to all its members needs. It is reassuring to know that the membership is currently satisfied with the provisions of AEA. The information regarding AEA provisions and use of finances shall be used by the AEA council when assessing its priorities and attending to its diverse membership.

Acknowledgements

We thank all the AEA members who completed the survey. We are also grateful to the support and help of the other AEA 2006/2007/2008 Council members for their guidance on the design of the survey. We would like to acknowledge the AEA for partially funding the data entry for this study.

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