



## ORIGINAL ARTICLE

# Uptake of advance care planning and its circumstances: An nationwide survey in Australian general practice

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## Abstract

There are potential benefits associated with advance care planning (ACP), and general practitioners (GPs) are well placed to coordinate ACP initiatives with their patients. Few studies have reported on the uptake of different forms of advance care plan conducted by GPs and how this affects patients' place of death. The primary aims of the study were to examine uptake of verbal (conversations regarding care preferences) and written (documented care preferences) advance care plans and their associated factors from the perspective of Australian GPs. The secondary aim was to determine the impact of different types of advance care plans on place of death. Sixty-one GPs from three Australian states used a validated clinic-based data collection process to report on care provided for decedents in the last year of life, including provision of services, place of death, and uptake of ACP. We found that 58 (27.9%), 91 (43.7%) and 59 (28.4%) reported decedents had no advance care plans, verbal plans or written plans, respectively. There were increased uptake of both verbal plans (relative risk ratio [RRR] = 13.10, 95% confidence interval [CI]: 2.18–77.34) and written plans (RRR = 10.61, 95% CI: 1.72–65.57) if GPs foresaw the death for >90 days versus <7 days. Palliative care training history for GPs predicted uptake of verbal plans (RRR = 5.83, 95% CI: 1.46–31.93). Patients with verbal plans versus no plans were more likely to die at a private residence (odds ratio = 4.97, 95% CI: 1.32–18.63). Our findings suggest that expectation of death for at least three months prior to the event (where clinically possible) and palliative care training for GPs improve the uptake of ACP in general practice. Larger pragmatic trials are required to determine the impact of ACP on patients' place of death.

## KEYWORDS

advance care directives, advance care planning, advance care plans, general practitioners, palliative care, place of death, primary care

## 1 | INTRODUCTION

Advance care planning (ACP) is defined as a process that enables patients to identify their values and goals and to discuss and/or document their preferences for future health care, with care providers and/or significant others, in the event that they become unable to make specific decisions for themselves (Rietjens et al., 2017). Ideally, ACP encourages the discussion about the beliefs, goals, and values of patients, rather than focusing on specific outcomes or interventions (Mullick et al., 2013; Rietjens et al., 2017). A number of countries and regions have established their own clinical and legislative frameworks for ACP. These variously involve the appointment of a substitute decision-maker (SDM) to make medical treatment and care decisions on behalf of the individual and may include formal and/or informal documentation of the persons' health care wishes (Carter et al., 2016; Fountain et al., 2018; Lockett et al., 2015; Sabatino, 2010; Tsoh et al., 2015).

According to previous literature, there are a number of potential benefits of ACP for end-of-life care, including improved communication between patients and care providers, greater quality of life and satisfaction with care, broader utilisation of palliative care services, and a reduced number of hospital admissions (Brinkman-Stoppelenburg et al., 2014; Houben et al., 2014; Klingler et al., 2016). Despite these benefits, the uptake and implementation of ACP have been relatively piecemeal (Detering et al., 2019; Meeussen, Van den Block, Echteld, Bossuyt, et al., 2011; Rhee et al., 2012). Both patient and general practitioner (GP)-related factors may affect engagement in ACP (Alano et al., 2010; Detering et al., 2019; Meeussen, Van den Block, Echteld, Bossuyt, et al., 2011; Morrison & Meier, 2004; White et al., 2014). Increased uptake of ACP more likely occurs where there is a close relationship between patients and their GPs (Meeussen, Van den Block, Echteld, Bossuyt, et al., 2011; Morrison & Meier, 2004; Sinclair et al., 2016). Theoretically, GPs are ideally placed to engage in ACP discussions because of their long-standing and trusted relationships with patients.

Previous studies evaluating the implementation of ACP have primarily focused on document completion and subsequent use of services (Biondo et al., 2016). However, one of the central goals of the ACP initiative is to ensure patients receive the preferred care in their preferred circumstances (Mullick et al., 2013; Rietjens et al., 2017). There is a lack of studies reporting on how ACP affects patients' place of death (Biondo et al., 2016; National Guideline Centre, 2019).

### 1.1 | Context

The term 'advance care planning' (ACP) usually encompasses process of planning, discussing and documenting preferences for treatment. This involves discussions about preferences with patients and families and can be expressed verbally, documented in case notes or elsewhere, or legally documented. All Australian states and territories have legislative provisions for ACP which allow for the appointment of a SDM who would make decisions for the person if they experienced impaired capacity (Carter et al., 2016; Fountain

### What is known about this topic

- Advance care planning (ACP) could facilitate provision of care in compliance with patients' care preferences.
- General practitioners (GPs) are well placed to coordinate ACP with their patients because of long-standing doctor-patient relationships.
- Few studies have explored uptake of ACP, its correlations and effect on place of death from GPs' perspective.

### What this paper adds

- Our study highlights the importance of early identification of approaching death (>90 days where clinically possible) in promotion of ACP.
- GP palliative care training can increase the uptake of verbal advance care plans amongst their patients, but they face multiple barriers in documenting ACP discussions.
- We found people having verbal advance care plans more frequently died in private residences than those having no plans, but this finding should be interpreted with caution due to the small sample size of the study.

et al., 2018; Lockett et al., 2015). 'Advance care directives' (ACDs) refer to formal and legally binding documentation of a competent adult's wishes or decisions for their future health care treatments and procedures. These are prepared using statutory forms in each jurisdiction, except for New South Wales and Tasmania, where common law applies (Carter et al., 2016; Fountain et al., 2018). In relation to ACDs, a recent national study in Australia showed that there was much lower completion of ACDs in general practice compared with residential aged care facilities and hospitals (Detering et al., 2019).

The primary aims of the study were to (a) examine the uptake of "verbal" (in the form of a conversation about life goals and/or care preferences between the GP and the patient) and "written" (a formal and/or informal documentation that records patients' life goals, values or care preferences) advance care plans conducted by GPs in Australia; (b) explore the associated patient and GP-related factors for uptake of different types of ACP from the perspective of Australian GPs. The secondary aim was to establish the impact of the different types of ACP on patients' place of death.

## 2 | METHODS

### 2.1 | Study design

This study was part of a larger project conducted in the states of Western Australia (WA), Queensland and Victoria, Australia. The larger project collected de-identified patient-level data from general practices. Information collected included the circumstances of death, information about continuity and coordination of care,

communication and care planning with patients and carers, and outcomes of care, etc, with the aim of determining the nature and quality of care, and the context in which it was provided, for patients in their last year of life (Ding et al., 2020).

We used two different data collection approaches: prospective case-finding in WA and retrospective case-finding in Queensland and Victoria. In WA, completion of the survey was triggered by notification of a death. Participating GPs were sent monthly reminder emails with the survey link for the 12 months between September 2018 and August 2019. In Queensland and Victoria, GPs participated in retrospective case-finding between August 2018 and April 2019. They were asked to report on care provided for decedents in their practice within the preceding two years. Decedents were identified from GPs' electronic medical records (EMRs) by either the participating GP or the practice managers with assistance from researchers if required.

## 2.2 | Measurements

A clinic-based data collection process was developed using a modified Delphi technique involving a comprehensive literature review, interviews with GPs and other stakeholders, and a consensus study with internal and external experts representing multiple disciplines. The clinic-based data collection process consisted of three questionnaires: 'Basic Practice Descriptors (to describe the basic characteristics of participating GPs and their practices)', 'Clinical Data Query (to extract standardised data from patients' electronic medical records for each decedent, such as prescribing and investigations)', and 'GP-completed questionnaire (to collect information from GPs about their experiences of providing and coordinating the end-of-life care for each decedent once they received a notification of death)'. A detailed description of the project development is included in a previous publication.<sup>18</sup> Evaluation of the GP-completed questionnaire demonstrated satisfactory levels of reliability and validity, with scale-level content validation index of 0.95 and Cronbach's alpha ranging from 0.67 to 0.93 for different domains (Ding et al., 2020).

This article was developed based on the data from the 'GP-completed questionnaire'. This questionnaire was primarily implemented using an online version with exception of few GPs who preferred a paper-based version. This paper focused on the patients for whom death was expected by the GP and where information about ACP was reported. In the questionnaire, we asked the participating GPs these two questions regarding each decedent: (a) "Was this patient's death expected by you?" (options: Yes, No); (b) "Did this patient ever formally express their future health and personal wishes (verbally or in writing)?" (options: Yes, verbally; Yes, in writing; No; and I do not know). Examples of questions involved in this report are provided in Data S1.

## 2.3 | Recruitment of GPs and study settings

Multiple recruitment strategies were used to involve GPs. A contact list of general practices was established in the three states.

Invitation emails were sent to practice managers (in WA) or GPs (in Queensland and Victoria) and followed up with a phone call or personal visit to answer questions about the project, explain the process of data collection, and collect written consent. Substantial assistance was received from local primary care networks, professional GP organisations and palliative care services. We approached approximately 350 practices in WA, and in Queensland and Victoria, we directly approached approximately 220 and 130 GPs.

## 2.4 | Data analysis

We used percentages, means (with standard deviations) and medians (with interquartile ranges) to describe basic characteristics of participating GPs, deaths and services provided for patients. Differences in responses between different types of advance care plans were tested using chi-square tests or Fisher exact tests for categorical variables and Kruskal-Wallis tests for patients' age at death.

The question relating to GPs' awareness of uptake of ACP for the patient allowed multiple answers (Data S1). Patients could have been reported as having both verbal and written plans (care preferences were documented). In this analysis, we assigned patients into three non-overlapping groups: 'No plans' (having neither verbal nor written plans), 'Verbal plans' (having verbal but no written plans) and 'Written plans'. In this study, a verbal plan referred to communications about life goals, values or care preferences relating to end-of-life care between the patient and the GP; a written plan was defined as a documentation that records patients' life goals, values or care preferences, including a formal and legally binding ACD, appointment of an SDM and other types of record not covered in the ACD and appointment of SDM.

Given that most GPs in our study provided reports on multiple decedents, we fitted multilevel (patient and GP level) random intercept mixed models to investigate the associated factors of uptake of different types of advance care plans (multinomial responses), and the impact of different types of plans on death in a private residence (binary responses), with each GP as a random effect. We included both patient and GP-level variables (i.e. characteristics of GPs and the decedents) in the models. The age of GPs was excluded because of its high collinearity (variance inflation factor = 4.73) with the years of work. For the model investigating correlates of uptake of ACP, variables describing the services provided by GPs in the univariate comparisons of the three different groups (i.e. No plans, verbal plans and written plans) with a  $p$ -value < 0.1 were also included. All multilevel mixed-model analyses were conducted using GLLMM (generalised linear latent and mixed models) (Rabe-Hesketh et al., 2005). Stata 15.1 (StataCorp, College Station, TX, USA) was used to perform all analyses and the level for statistical significance was set at  $p < 0.05$ .

## 3 | RESULTS

Sixty-three participating GPs reported a total of 272 deaths across three states. After excluding 52 unexpected patient deaths and 12

deaths for whom availability of an advance care plan was unknown, 208 (76.5%) patient deaths from 61 GPs across metropolitan, regional and rural areas were included in the analysis. On average, 3.4 deaths were reported per GP (range 1–12). Of the 208 deaths, there were 58 (27.9%), 91 (43.7%) and 59 (28.4%) patients assigned to no plan, verbal plan and written plan groups, respectively.

### 3.1 | Characteristics of participating GPs

Table 1 summarises the characteristics of participating GPs ( $n = 61$ ). More GPs were male (55.8%), between 50 and 59 years old (37.7%), and located in rural (19.7%) or regional areas (36.1%). They had worked for 23.5 years on average. One-third (31.2%) had previously received formal palliative care training (including medical school education and professional continuing development).

### 3.2 | Characteristics of the reported deaths and provision of services involving the GP

Table 2 shows the characteristics of the reported deaths and services received by patients involving GPs. Across the three advance care plan groups, there were significant differences in principal cause of death ( $p = 0.002$ ), main place of residence ( $p < 0.001$ ), number of

days expecting approaching death prior to event ( $p = 0.006$ ), occurrence of a family meeting ( $p = 0.02$ ) and occurrence of a case conference ( $p < 0.006$ ).

### 3.3 | Place of death

The most common place of death was a residential aged care facility (RACF) (33.7%), and 21.2% died in a private residence. Statistically significant differences between the three types of advance care plans were observed for place of death ( $p < 0.001$ ) (Table 3).

### 3.4 | Factors associated with the prevalence of advance care plans

Using patients with no reported advance care plans as the reference group, GPs expectation of the patient's likely death for >90 days versus <7 days prior to the actual death was strongly associated with increased uptake of both verbal plans (relative risk ratio [RRR] = 13.10, 95% confidence interval [CI]: 2.18–77.34) and written plans (RRR = 10.61, 95% CI: 1.72–65.57) (Table 4). There was lower reported uptake by GPs of both verbal plans (RRR = 0.13, 95% CI: 0.04–0.47) and written plans (RRR = 0.21, 95% CI: 0.06–0.78) for patients living in a RACF versus private residence in the last year of their life. Similarly, being a female versus male GP was also associated with lower uptake of verbal and written plans (RRR = 0.20, 95% CI: 0.06–0.72; RRR = 0.25, 95% CI: 0.04–0.93) (Table 4).

We also observed an increased uptake of verbal plans versus no plans for GPs who had a history of palliative care training (RRR = 5.83, 95% CI: 1.46–31.93) (Table 4). However, the correlation was not found in the comparison of written plans versus no plans. Factors in relation to the services provided by/involving GPs were not significantly associated with uptake of both verbal and written plans (Table 4).

### 3.5 | Impact of different types of advance care plans on place of death

Patients with verbal plans versus no plans strongly predicted the place of death being at a private residence (odds ratio = 4.97, 95% CI: 1.32–18.63) (Table 5). No significant differences were observed in the comparison of written plans versus no plans on the place of death being a private residence.

## 4 | DISCUSSION

This study examined the factors associated with different types of advance care plans and explored the impact of these plans on patients' place of death. Our findings highlight that living at a RACF versus private residence, and having a female versus male GP, were

TABLE 1 Characteristics of participating GPs ( $n = 61$ )

|                                    | n (%)           |
|------------------------------------|-----------------|
| Gender                             |                 |
| Male                               | 34 (55.8)       |
| Female                             | 26 (42.6)       |
| Missing                            | 1 (1.6)         |
| Age group (years)                  |                 |
| <30                                | 2 (3.3)         |
| 30–39                              | 11 (18.0)       |
| 40–49                              | 12 (19.7)       |
| 50–59                              | 23 (37.7)       |
| 60–69                              | 10 (16.4)       |
| 70+                                | 3 (4.9)         |
| Locality of practice               |                 |
| City (inner and outer suburbs)     | 27 (44.2)       |
| Regional (including country towns) | 12 (19.7)       |
| Rural and remote                   | 22 (36.1)       |
| Years of medical work              |                 |
| Mean $\pm$ SD                      | 23.5 $\pm$ 13.4 |
| Received palliative care training  |                 |
| Yes                                | 19 (31.2)       |
| No                                 | 41 (67.2)       |
| Missing                            | 1 (1.6)         |

Abbreviations: GP, general practitioner; SD, standard deviation.

**TABLE 2** Characteristics of reported patients, provision of services involving GPs and place of death by types of advance care plans ( $n = 208$ )

|                                                           | Total<br><i>n</i> (%) | No plans<br><i>n</i> (%) | Verbal plans<br><i>n</i> (%) | Written plans<br><i>n</i> (%) | Comparisons <sup>a</sup><br>( <i>p</i> -values) |
|-----------------------------------------------------------|-----------------------|--------------------------|------------------------------|-------------------------------|-------------------------------------------------|
| Total number                                              | 208                   | 58 (27.9)                | 91 (43.7)                    | 59 (28.4)                     |                                                 |
| Gender                                                    |                       |                          |                              |                               |                                                 |
| Male                                                      | 92 (44.2)             | 23 (39.7)                | 41 (45.1)                    | 28 (47.5)                     | 0.54                                            |
| Female                                                    | 112 (53.9)            | 35 (60.3)                | 49 (53.8)                    | 28 (47.5)                     |                                                 |
| Missing                                                   | 4 (1.9)               | 0 (0)                    | 1 (1.1)                      | 3 (5.0)                       |                                                 |
| Age at death (years)                                      |                       |                          |                              |                               |                                                 |
| Median (IQR)                                              | 82 (70–90)            | 83.5 (74–91)             | 80 (68–89)                   | 80 (70–90)                    | 0.16                                            |
| State                                                     |                       |                          |                              |                               |                                                 |
| Western Australia                                         | 104 (50.0)            | 26 (44.8)                | 54 (59.3)                    | 24 (40.7)                     | 0.11                                            |
| Queensland                                                | 65 (31.2)             | 22 (37.9)                | 24 (26.4)                    | 19 (32.2)                     |                                                 |
| Victoria                                                  | 39 (18.8)             | 10 (17.3)                | 13 (15.3)                    | 16 (27.1)                     |                                                 |
| Principal cause of death                                  |                       |                          |                              |                               |                                                 |
| Cancer                                                    | 78 (37.5)             | 11 (19.0)                | 44 (48.3)                    | 23 (39.0)                     | 0.002*                                          |
| Non-cancer                                                | 127 (61.1)            | 45 (77.6)                | 47 (51.7)                    | 35 (59.3)                     |                                                 |
| Missing                                                   | 3 (1.4)               | 2 (3.4)                  | 0 (0)                        | 1 (1.7)                       |                                                 |
| Main place of residence                                   |                       |                          |                              |                               |                                                 |
| Private residence                                         | 138 (66.4)            | 22 (37.9)                | 76 (83.5)                    | 40 (67.8)                     | <0.001*                                         |
| Residential aged care facility                            | 65 (31.2)             | 34 (58.6)                | 13 (14.3)                    | 18 (30.5)                     |                                                 |
| Other                                                     | 5 (2.4)               | 2 (3.5)                  | 2 (2.2)                      | 1 (1.7)                       |                                                 |
| Number of days expecting approaching death prior to event |                       |                          |                              |                               |                                                 |
| <7                                                        | 41 (19.7)             | 18 (31.0)                | 13 (14.3)                    | 10 (16.9)                     | 0.01*                                           |
| 14–29                                                     | 65 (31.3)             | 21 (36.2)                | 22 (24.2)                    | 22 (37.3)                     |                                                 |
| 30–90                                                     | 39 (18.7)             | 12 (20.7)                | 20 (22.0)                    | 7 (11.9)                      |                                                 |
| >90                                                       | 56 (26.9)             | 6 (10.4)                 | 30 (32.9)                    | 20 (33.9)                     |                                                 |
| Missing                                                   | 7 (3.4)               | 1 (1.7)                  | 6 (6.6)                      | 0 (0)                         |                                                 |
| Provision of services involving the GP                    |                       |                          |                              |                               |                                                 |
| Consultation on phone                                     | 161 (77.4)            | 40 (69.0)                | 74 (81.3)                    | 47 (79.7)                     | 0.19                                            |
| Telehealth/videoconference                                | 37 (17.8)             | 11 (19.0)                | 14 (15.4)                    | 12 (20.3)                     | 0.71                                            |
| Home visits                                               | 172 (82.7)            | 48 (82.8)                | 76 (83.5)                    | 48 (81.4)                     | 0.943                                           |
| Family meeting                                            | 148 (71.2)            | 44 (75.9)                | 56 (61.5)                    | 48 (81.4)                     | 0.02*                                           |
| Case conference                                           | 68 (32.7)             | 14 (24.1)                | 25 (27.5)                    | 29 (49.2)                     | 0.01*                                           |
| Hospital consultation                                     | 71 (34.1)             | 14 (24.1)                | 38 (41.8)                    | 19 (32.2)                     | 0.08                                            |
| Care plans/team-care arrangements                         | 122 (58.7)            | 27 (46.6)                | 58 (63.7)                    | 37 (62.7)                     | 0.09                                            |
| Counselling                                               | 95 (45.7)             | 21 (36.2)                | 46 (50.6)                    | 28 (47.5)                     | 0.22                                            |

Abbreviations: GP, general practitioner; IQR, interquartile range.

<sup>a</sup>Comparisons among three groups with different types of advance care plans (e.g. no plans, verbal plans only and written plans) were conducted using chi-square test, Fisher exact test or independent t-test (for age at death only).

\*Significant value  $p < 0.05$ .

strongly associated with lower uptake of both verbal and written advance care plans. General practitioners' awareness of the patient's death for more than 90 days before the actual death (vs. <7 days) strongly predicted uptake of both verbal and written plans. There was higher uptake of verbal plans with GPs who had a history of palliative care training. The principal cause of death, age at death and use of services were not significantly associated with uptake

of neither verbal nor written plans. Patients with verbal plans were more likely to have died at a private residence. However, interpretation of the findings from this study should be made with caution because of the small sample size and our inability to undertake random sampling.

There are advantages and disadvantages for both data collection approaches used in this study. The prospective case-finding

TABLE 3 Place of death by types of advance care plans

|                                     | Total<br>n (%) | No plans<br>n (%) | Verbal plans<br>n (%) | Written plans<br>n (%) | Comparisons<br>(p-values) <sup>a</sup> |
|-------------------------------------|----------------|-------------------|-----------------------|------------------------|----------------------------------------|
| Place of death (n = 208)            |                |                   |                       |                        |                                        |
| Residential aged care facility      | 70 (33.7)      | 35 (60.3)         | 15 (16.5)             | 20 (33.9)              | <0.001*                                |
| Inpatient palliative care           | 52 (25.0)      | 9 (15.5)          | 28 (30.8)             | 15 (25.5)              |                                        |
| Private residence                   | 44 (21.2)      | 3 (5.2)           | 29 (30.8)             | 12 (20.3)              |                                        |
| Hospital apart from palliative care | 39 (18.7)      | 8 (13.8)          | 19 (20.9)             | 12 (20.3)              |                                        |
| Other                               | 3 (1.4)        | 3 (5.2)           | 0 (0)                 | 0 (0)                  |                                        |

<sup>a</sup>Comparisons among three groups with different types of advance care plans (e.g. no plans, verbal plans only and written plans) were conducted using Fisher exact test. The category of "other" was not included in the analysis.

\*Significant value  $p < 0.05$ .

|                                                                          | Verbal plans vs. no plans <sup>a</sup><br>RRR (95% CI; p-value) | Written plans vs. no plans <sup>a</sup><br>RRR (95% CI; p-value) |
|--------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------|
| Characteristics of decedents                                             |                                                                 |                                                                  |
| Gender of patients (ref. male)                                           | 1.37 (0.47–3.98; 0.56)                                          | 1.04 (0.35–3.12; 0.95)                                           |
| Age at death                                                             | 1.02 (0.99–1.05; 0.15)                                          | 1.01 (0.98–1.04; 0.69)                                           |
| Principal cause of death (ref. cancer)                                   | –                                                               | –                                                                |
| Non-cancer                                                               | 0.49 (0.14–1.78; 0.28)                                          | 0.77 (0.20–2.96; 0.70)                                           |
| Number of days expecting approaching death prior to event (ref. <7 days) | –                                                               | –                                                                |
| 7–30 days                                                                | 1.10 (0.30–3.98; 0.89)                                          | 1.45 (0.40–5.28; 0.58)                                           |
| 30–90 days                                                               | 2.02 (0.50–8.23; 0.33)                                          | 0.70 (0.15–3.34; 0.66)                                           |
| >90 days                                                                 | 13.10 (2.18–77.34; 0.01)*                                       | 10.61 (1.72–65.57; 0.01)*                                        |
| Main place of residence (ref. private residence)                         | –                                                               | –                                                                |
| Residential aged care facility                                           | 0.13 (0.04–0.47; 0.002)*                                        | 0.21 (0.06–0.78; 0.02)*                                          |
| Other                                                                    | 1.38 (0.09–21.04; 0.82)                                         | 0.56 (0.02–15.10; 0.73)                                          |
| Provision of services involving the GP (ref. no provision)               |                                                                 |                                                                  |
| Hospital consultation                                                    | 2.25 (0.65–7.74; 0.20)                                          | 1.00 (0.27–3.78; 0.99)                                           |
| Care plan                                                                | 1.23 (0.38–4.01; 0.74)                                          | 1.49 (0.45–4.95; 0.52)                                           |
| Family meeting                                                           | 0.54 (0.17–1.75; 0.30)                                          | 1.63 (0.43–6.15; 0.48)                                           |
| Case conference                                                          | 1.44 (0.40–5.17; 0.58)                                          | 2.63 (0.75–9.22; 0.13)                                           |
| Characteristics of GPs                                                   |                                                                 |                                                                  |
| Gender of GPs (ref. male)                                                | 0.20 (0.06–0.72; 0.01)*                                         | 0.25 (0.04–0.93; 0.04)*                                          |
| Years of medical work                                                    | 0.96 (0.92–1.00; 0.06)                                          | 0.97 (0.93–1.03; 0.28)                                           |
| Locality of practices (ref. city)                                        | –                                                               | –                                                                |
| Regional areas                                                           | 1.97 (0.41–9.45; 0.40)                                          | 0.26 (0.04–1.66; 0.15)                                           |
| Rural and remote                                                         | 2.03 (0.40–10.34; 0.40)                                         | 2.09 (0.43–10.30; 0.36)                                          |
| Received palliative care training (ref. no)                              | 5.83 (1.46–31.93; 0.02)*                                        | 2.61 (0.55–12.44; 0.23)                                          |

Abbreviations: CI, confidence interval; GP, general practitioner; Ref., reference category; RRR, relative risk ratio.

<sup>a</sup>Two-level (patient and GP) random intercept multivariate logistic regression model for multinomial responses based on GLLAMM. Random intercepts were only applied to GP level. This model was based on a population of 190 patients reported by 58 GPs.

\*Significant value  $p < 0.05$ .

TABLE 4 Multilevel regression analysis of uptake of different types of advance care plans



**TABLE 5** Multilevel regression analysis of impact of advance care planning on place of death

|               | Death at private residence <sup>a,b</sup><br>(Yes vs. no)<br>OR (95% CI; <i>p</i> -value) |
|---------------|-------------------------------------------------------------------------------------------|
| No plans      | Ref                                                                                       |
| Verbal plans  | 4.97 (1.32–18.63; 0.02)*                                                                  |
| Written plans | 2.76 (0.66–11.62; 0.17)                                                                   |

Abbreviations: CI, confidence interval; GP, general practitioner; OR, odds ratio; Ref., reference category.

<sup>a</sup>Two-level random intercept multivariate logistic regression model based on GLLAMM adjusting for characteristics of decedents and participating GPs.

<sup>b</sup>This model was based on a population of 190 patients reported by 58 GPs.

\*Significant value  $p < 0.05$ .

approach used in WA promoted timely reporting and could have alleviated recall issues, but required longer follow-up of a larger number of GPs and ongoing survey reminders. However, the retrospective case-finding approach used in the other two states raises concerns about data quality, given the delays between patient death and time of reporting, although it accelerated the data collection process.

Consistent with previous reports that ACP occurs verbally more often than in writing (Meeussen, Van den Block, Echteld, Boffin, et al., 2011; Meeussen, Van den Block, Echteld, Bossuyt, et al., 2011), our study identified that GPs were aware of advance care plans for 72.1% of patients, of which 60.7% occurred verbally and 39.3% occurred in writing. It should be noted that this study specifically focused on patients with *expected* deaths for whom a 100% ACP completion rate could be theoretically achieved. Our estimate for written plans (28.4%) is comparable to the overall prevalence of ACDs (29.8%) reported in a recent national study (Detering et al., 2019) but is higher than earlier estimates which ranged from 0.2% to 22% across different settings and populations in Australia (Bradley et al., 2014; Nair et al., 2000; White et al., 2014). These earlier studies focused on one particular type of advance care plan, but we included statutory and non-statutory written plans. Furthermore, our report targeted deceased people who were *expected* to die, therefore, were likely to have a higher level of uptake of ACP. Previous studies reported that older age predicted increased uptake of ACD (Alano et al., 2010; Bradley et al., 2014; Lo et al., 2010), and GPs often initiated end-of-life care conversations when death was imminent (De Vleminck et al., 2016; Glaudemans et al., 2015; Meeussen, Van den Block, Echteld, Bossuyt, et al., 2011).

Our study identified increased uptake of both verbal and written plans for patients who were mainly situated in a private residence versus RACF. This finding may relate to Australian GPs' reduced level of involvement in patients' care after patients are admitted to residential care settings. Furthermore, the time and cost associated with travel to RACFs limits available time for GPs to spend with the resident (Balmer et al., 2020). Also, in many cases, Australian GPs might

not be aware of the written plans stored at RACFs due to limited access to health records at these facilities. Regarding verbal plans, lower uptake in RACFs could relate to residents more commonly having cognitive impairment that impairs their ability to engage in ACP discussions (deLima Thomas et al., 2018; Gaugler et al., 2007). Therefore, our study could have underestimated the uptake of verbal or written plans for patients at RACFs. Conversely, the Australian national study of ACDs prevalence reported a higher prevalence of ACDs in RACFs (47.7%) compared with general practices (3.2%) according to Detering et al. (2019). This inconsistency could relate to different data collection strategies used in the two studies. The national study trained data collectors to search for written advance care plans/ACD documents within patients' health records, whereas we relied on reports from GPs.

There was increased uptake of both verbal and written plans in the presence of earlier expectation of approaching death (>90 days prior to actual date of death vs. <7 days) in our study. The importance and difficulties of early identification of end-of-life patients have been widely recognised (Maas et al., 2013; Mitchell et al., 2018). However, our findings further suggest that foreseeing death at least 90 days preceding the event may potentially be considered a clinically meaningful threshold in terms of end-of-life care planning. We did not observe associations between cancer diagnosis and ACP, which is in line with the Australian national prevalence study (Detering et al., 2019). This could suggest that people who experienced an expected death, regardless of their diagnoses, were given an equal opportunity to discuss and document advance care plans in Australia. We also identified a lower uptake of ACP among female GPs. Further studies are needed to clarify and explain this finding given that prior literature has generally reported a higher level of engagement in communication with patients by female physicians (Roter et al., 2002).

There was an increased uptake of verbal (but not written) plans for GPs who had received palliative care training. Palliative care training could have increased GPs' awareness and confidence in end-of-life conversations and, therefore, increased the frequency of verbal ACP discussions (Clayton et al., 2013). However, there could have been a number of barriers preventing conversion of ACP discussions to formal documentation. Sinclair et al. (2013) indicated that there were different stages of readiness for people to engage in completion of ACD forms, and these could vary based on the dynamic relationship between people's empowerment to engage and the perceived negative consequences of not engaging. Physicians and patients may view ACP discussions as a social process and could feel that it is unnecessary to formally document them (Singer et al., 1998). A common misconception that documentation of advance care plans is only for making specific decisions on future treatments may discourage people's engagement (De Vleminck et al., 2016; Scott et al., 2013). GPs may feel inadequately remunerated for the extra time and effort required to prepare ACD documents (Ding et al., 2019). Completion of legally binding ACD documents requires external witnesses and involves legal issues that GPs and patients could be unfamiliar and uncomfortable with (Carter et al. 2016; Detering

et al. 2019; Fountain et al. 2018; Meeussen, Van den Block, Ehteld, Bossuyt, et al. 2011).

A whole-system approach to the improvement of ACP uptake is required. Important elements of the approach include the availability of training, clinical protocols and appropriate remuneration for GPs, routinising ACP discussions at a certain age or life milestone, improving community education, and standardising the legislative requirements, terminologies and forms across jurisdictions (Batchelor et al., 2019; De Vleminck et al., 2013; Ramsaroop et al., 2007; Rietjens et al., 2017). Written advance care plans are useful guides for healthcare decisions when there are no opportunities to consult with patients and provide a foundation for ongoing discussions and review of care preferences (Meeussen, Van den Block, Ehteld, Bossuyt, et al., 2011). However, it should be noted that completion of a written advance care plan alone is not the sole purpose of ACP initiatives (Mullick et al., 2013; Rietjens et al., 2017). The process of ongoing conversation is more important and can help individuals to clarify their values and goals and ensure care consistent with the patient's most recent wishes. These discussions often provide patients with a sense of control and help maintain trusting relationships with patients, relatives and care providers (Zwakman et al., 2018).

Our study identified that uptake of verbal plans was associated with increased likelihood of death at a private residence. The role of ACP discussions in supporting death within the home environment was demonstrated in a randomised controlled trial in Denmark (Skorstengaard et al., 2019) but not in other trials in Australia (Detering et al., 2010) or the United Kingdom (Johnson et al., 2018). An increased likelihood of death at a private residence was not observed for people who had a written plan in our study, which could be attributable to the small sample size of the study.

This study had a number of strengths and limitations. Using GPs as respondents enabled us to obtain more comprehensive ACP information compared to other care providers and health records. Almost 80% of Australians have a regular GP (The Royal Australian College of General Practitioners, 2019). Patients might feel more comfortable discussing end-of-life issues with their GP because of their long-standing and trusting relationship. Health records may sometimes contain ACP documents, but information about ACP discussions is not usually available from these sources. However, it is also possible that we omitted some information not accessible to GPs, such as details on ACP discussions with their carers/families and other services and documents stored in care settings external to their general practice.

Although our analysis only included 208 reports from 61 GPs, a total of 272 deaths were reported by 63 GPs who participated in the study. The distributions of age and gender of the participating GPs in the study are comparable to the national GP profile in Australia (RACGP, General Practice: Health of the Nation, 2018). Each GP reported an average of 4.3 deceased patients, which is reasonable given that there were close to 36,000 practicing GPs (The Royal Australian College of General Practitioners, 2019) and 160,000 deaths in 2018 (The Australian Institute of Health & Welfare, 2020). Nevertheless, we recommend caution in interpreting and generalising our findings

because the enormous challenges in GP palliative care research made it impossible to recruit a large number of GPs with random sampling.

The challenges in engaging and recruiting GPs in palliative care research have been widely recognised and reported (Barclay et al., 2019; Leysen et al., 2019). For example, a Belgian palliative care study, in which only 65 of them over 4,000 invited GPs completed at least one report, practically articulated the challenges in recruitment of GPs (Leysen et al., 2019). The major barriers for recruitment of GPs we encountered in the study included time limitations, practice managers' intentions to "protect" their GPs from external disruptions, lack of awareness of the significance and benefits of GP-based research, and concerns about data safety and privacy of their patients. Flexible recruitment strategies, perseverance of the research team and strong support from professional communities are required to address these challenges. More importantly, clear messaging around the benefits and value that the study would bring to practitioners and their patients motivated GP participation and retention in the study. More in-person visits to general practice, establishment of closer collaborative relationships with government healthcare agencies and local primary care organisations, and provision of appropriate reimbursement may achieve a higher response from GPs in future research.

## 5 | CONCLUSIONS

General practitioners reported being aware of either verbal or written plans for more than 70% of patients whose death was expected. Our study highlighted the importance of awareness of death for at least three months prior to the event (where clinically possible) and the role of palliative care training for GPs in improving uptake of ACP. In order to increase the uptake of ACP in general practice, we recommend better support to GPs in early identification of patients at end-of-life, training and education associated with palliative care and ACP legislation, appropriate remuneration for GP's time spent on ACP discussions, and establishment of standardised protocols for routine ACP discussions in clinical practice. We identified that the presence of verbal plans was associated with a greater likelihood of death within the home environment, but did not observe this relationship for written plans. Larger pragmatic trials are required to determine the impact of ACP on patients' place of death.

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## AUTHORS CONTRIBUTIONS

*Study concept and design:* Jinfeng Ding, Claire E. Johnson, Angus Cook and Geoffrey Mitchell. *Recruitment of GPs:* Jinfeng Ding, Claire E. Johnson, Angus Cook, David Chua and Sharon Licqurish. *Data collection, cleaning and analysis:* Jinfeng Ding and David Chua.



*Preparation of manuscript:* Jinfeng Ding. *Review of Manuscript:* Claire E. Johnson, David Chua, Sharon Licqurish, Geoffrey Mitchell, Christobel Saunders and Angus Cook.

## ETHICAL STATEMENT

Research ethics approvals for each of the participating states were confirmed by The University of Western Australia (RA/4/20/4232), The University of Queensland (# 2018000185) and Monash University (# 15225). Written consent was obtained from GPs in both quantitative and qualitative data collections. All three ethics committees approved waiver of consent from decedents included in the study and their families. No personalised information was requested, obtained or used at any stage of the study. All data collected in this study were de-identified and reported only at an aggregate level.

## DATA AVAILABILITY STATEMENT

The data that support the findings of the study are available upon reasonable request from the corresponding author.

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#### SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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