

# BMJ Open What is the evidence for efficacy of advance care planning in improving patient outcomes? A systematic review of randomised controlled trials

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## ABSTRACT

**Objectives** To conduct an up-to-date systematic review of all randomised controlled trials assessing efficacy of advance care planning (ACP) in improving patient outcomes, healthcare use/costs and documentation.

**Design** Narrative synthesis conducted for randomised controlled trials. We searched electronic databases (MEDLINE/PubMed, Embase and Cochrane databases) for English-language randomised or cluster randomised controlled trials on 11 May 2020 and updated it on 12 May 2021 using the same search strategy. Two reviewers independently extracted data and assessed methodological quality. Disagreements were resolved by consensus or a third reviewer.

**Results** We reviewed 132 eligible trials published between 1992 and May 2021; 64% were high-quality. We categorised study outcomes as patient (distal and proximal), healthcare use and process outcomes. There was mixed evidence that ACP interventions improved distal patient outcomes including end-of-life care consistent with preferences (25%; 3/12 with improvement), quality of life (0/14 studies), mental health (21%; 4/19) and home deaths (25%; 1/4), or that it reduced healthcare use/costs (18%; 4/22 studies). However, we found more consistent evidence that ACP interventions improve proximal patient outcomes including quality of patient–physician communication (68%; 13/19), preference for comfort care (70%; 16/23), decisional conflict (64%; 9/14) and patient-caregiver congruence in preference (82%; 18/22) and that it improved ACP documentation (a process outcome; 63%; 34/54).

**Conclusion** This review provides the most comprehensive evidence to date regarding the efficacy of ACP on key patient outcomes and healthcare use/costs. Findings suggest a need to rethink the main purpose and outcomes of ACP.

**PROSPERO registration number** CRD42020184080.

## INTRODUCTION

Advance care planning (ACP) is defined as ‘a process that supports adults at any age or stage of health in understanding and sharing their personal values, life goals and preferences regarding future medical care’.<sup>1</sup> ACP empowers individuals to prepare and plan for their end-of-life care if they were to lose

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ A comprehensive literature search dating back to 1992 has been conducted while adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines and adopting a systematic approach for categorising quality of the included randomised controlled trials.
- ⇒ We were also unable to conduct a meta-analysis for the outcomes as the included advance care planning (ACP) interventions as well as measurement of outcomes are heterogeneous.
- ⇒ Our narrative synthesis used a narrow definition of statistical significance ( $p < 0.05$ ) to interpret whether or not ACP improved an outcome which could in turn, ignore promising findings from underpowered trials.

decisional capacity.<sup>2</sup> The primary goal of ACP is generally considered as facilitating end-of-life care consistent with preferences.<sup>3</sup>

Several systematic reviews have examined the efficacy of ACP. These reviews have been mostly narrow in their focus examining specific disease groups, age groups or settings.<sup>3–6</sup> Although important in guiding the implementation of ACP in certain specialties, a comprehensive review of all the evidence published to date is required to drive the field forward. The last systematic review of randomised controlled trials (RCTs) evaluating ACP interventions was published in 2014 and included 55 RCTs.<sup>4</sup> An overview of published systematic reviews assessed outcomes impacted by ACP<sup>7</sup> and a recent scoping review included 69 RCTs published between 2010 and 2020.<sup>8</sup> No review provides an up-to-date synthesis of all the RCTs examining efficacy of ACP on patient outcomes and healthcare use. Given the recent explosive growth in research examining efficacy of ACP interventions, the burgeoning interest in improving end-of-life outcomes for patients and the lack of consensus regarding efficacy

of ACP in improving patient outcomes and reducing healthcare use, some have questioned the value of ACP<sup>9,10</sup> while others have called for redefining the main purpose of ACP<sup>11</sup> or renaming ACP.<sup>12</sup> Therefore, there is a need to systematically review all of the evidence to date to understand which outcomes are most consistently impacted by ACP. This will guide future efforts to improve the implementation of ACP globally.

The goal of this study was to conduct a systematic review of published RCTs to provide an up-to-date summary of the efficacy of ACP interventions on patient outcomes. Our aim was to critically review the existing evidence regarding efficacy of ACP interventions to improve *key patient outcomes*, both *distal* (end-of-life care consistent with preferences/goals, quality of life, mental health, place of death) and *proximal* (treatment preferences, quality of patient–physician communication, prognostic awareness, decisional conflict, patient–surrogate congruence in preferences), reduce *healthcare use/costs* and improve *ACP processes* (ACP documentation, do-not-resuscitate orders).

## METHODS

### Patient and public involvement

This research was done without patient involvement. There was no involvement of patients or members of the public in the design, conduct, reporting or dissemination plans of this research.

### Data sources and searches

We performed an electronic search in the MEDLINE/PubMed, Embase and Cochrane databases on 11 May 2020 and updated it on 12 May 2021 using the same search strategy. We searched for the key subject, ‘advance care planning’, using controlled vocabulary thesauruses of each database (eg, Medical Subject Headings), and equivalent free-text terms. When available, we used the filters—humans, randomised controlled studies and English language. There were no restrictions in publication period. Details of the search strategy are in online supplemental table 1. Relevant articles that were identified during review of articles and data extraction but were missed by the electronic search were also included. The protocol was registered in the PROSPERO database in 2020 ([https://www.crd.york.ac.uk/prospERO/display\\_record.php?RecordID=184080](https://www.crd.york.ac.uk/prospERO/display_record.php?RecordID=184080)).

### Study selection

We removed duplicate records using EndNote. To be included in the review, articles had to be in English, published in a journal, have randomised or cluster RCT study design and assessed any of these outcomes: end-of-life care consistent with preferences/goals, quality of life, mental health, place of death, treatment preferences, quality of patient–physician communication, prognostic awareness, decisional conflict, patient–surrogate congruence in preferences, healthcare use/costs, ACP documentation and do-not-resuscitate orders. We excluded studies

where (1) ACP was only a part of a complex intervention, that is, studies on the effect of palliative care interventions; (2) shared decision-making interventions involving current treatment decisions; (3) interventions involving hypothetical scenarios (eg, vignettes) or standardised patients where no decisions or outcomes were assessed for real patients; (4) posters, meetings/conference abstracts and dissertations, and; (5) feasibility of intervention/procedures was the only assessed outcome. We did not exclude studies based on target population (age group, ethnicity, setting). Two reviewers independently screened titles, abstracts and full texts against inclusion criteria using Rayyan.<sup>13</sup> Any study involving a coauthor of this review was independently appraised. Disagreements were resolved by consensus or by a third reviewer.

We did not include caregiver outcomes in this paper; these are presented as a separate manuscript.

### Data extraction and quality assessment

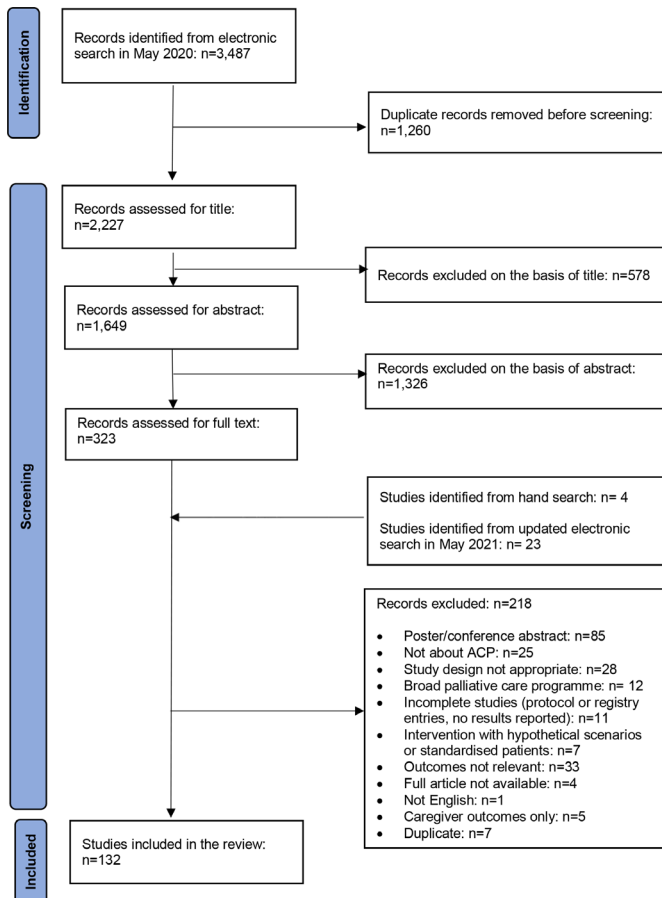
We extracted data on first author, year of publication, aim, study design, setting, eligibility criteria, sample size, patient characteristics, intervention characteristics, control group, outcomes measured and relevant findings. We assessed the methodological quality using the Physiotherapy Evidence-Based Database (PEDro) scale.<sup>14</sup> PEDro scale is a widely used and valid measure to assess methodological quality of clinical trials including non-physiotherapy trials.<sup>4 15–18</sup> PEDro was based on expert consensus and consists of 11 items. The first item assesses external validity of trials and is not scored. Items 2–9 assess internal validity of the trial and items 10–11 assess whether the study provides sufficient statistical information to make their results interpretable. Studies with a PEDro score of  $\geq 6$  were classified as ‘high-quality’, those with a PEDro score of  $< 6$  were classified as ‘low-quality’.<sup>19</sup> Two authors independently scored each RCT, disagreements were resolved by consensus and by a third assessor.

### Data synthesis and analysis

We categorised all RCTs by intervention characteristics, target patient samples and settings. We conducted a narrative synthesis for all RCTs focusing on patient outcomes. We assessed direction of effect and considered differences between arms with  $p < 0.05$  as statistically significant. For each outcome, we conducted a sensitivity analysis after excluding low-quality RCTs.

## RESULTS

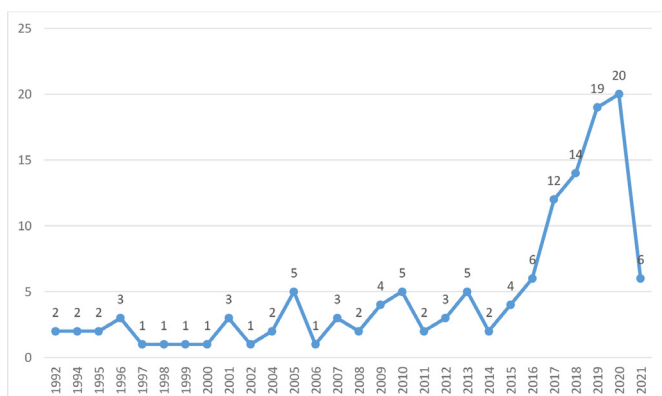
Of the 3487 studies identified in the initial electronic search, 132 were published between 1992 and 12 May 2021 and met eligibility criteria as shown in [figure 1](#). [Figure 2](#) shows the exponential increase in number of RCTs published each year since 2015. Online supplemental table 2 shows the RCTs included and their main characteristics in terms of year published, sample size, intervention and control groups and outcomes.



**Figure 1** Screening and selection process of studies. ACP, advance care planning.

### Quality assessment

Overall, 47 (36%) RCTs were deemed low-quality. Of these 20 (42%) were published before 2010. Median PEDro score was 6 (IQR: 5–7; range: 3–9). The top four methodological shortcomings were lack of blinding of therapists who administered the therapy (127, 96%), blinding of participants (123, 93%), lack of concealed allocation (80, 61%) and blinding of assessors who measured at least one outcome (78, 59%) (online supplemental table 3).



**Figure 2** Number of randomised controlled trials by year.

### Types of ACP interventions evaluated

There was heterogeneity in ACP interventions evaluated—14 (10%) RCTs evaluated advance directives (AD)-only interventions, 79 (60%) evaluated communication between patients/caregivers and providers and 39 (30%) tested a decision aid. Of the 79 communication type ACP intervention, 5 had incorporated a decision aid, and of the 39 (30%) decision aid interventions, 32 were web/computer-based decision aids. Majority of the RCTs evaluating communication-type ACP interventions (55 (70%) of 79) and decision-aid only interventions (31 (79%) of 39) were published after 2010. About half (7 of 14) of the AD-only interventions were published after 2010.

### Target patient samples

Target samples included both healthy adults (n=11; 8%) and patients. Among RCTs conducted on patients (n=121), most (51, 39%) targeted a heterogeneous group of patients with various illnesses, followed by 29 (22%) RCTs focusing exclusively on patients with cancer. Only 8 RCTs focused exclusively on dementia, 5 on other mental illnesses, 8 on infectious diseases like HIV, 14 on organ (heart or renal) failures and 6 on advanced respiratory illness. Majority of the RCTs targeted adults (95%), and only 6 (5%) targeted adolescents.

### Settings

RCTs were conducted in a variety of settings, including hospitals (n=71, 54%), communities (n=21, 16%), primary care clinics (n=16, 12%) and nursing homes (n=14, 11%) and 10 (8%) RCTs were conducted in multiple settings, for example, primary care and community, primary care and hospital. Majority were from North America (96; 73%; USA=93, Canada=3) and Europe (16; 12%; UK=3, Netherlands=6, Denmark=2; Spain=2, Belgium=1; Norway=1; multiple countries=1). Only 11 (8%) RCTs were from an Asian country (Taiwan=6, South Korea=2, Hong Kong=1, Japan=1, Singapore=1) and 9 (7%) from Australia.

Online supplementary Table 1 summarises the results of the 132 studies that assessed our key outcomes.

### Patient outcomes: distal

End-of-life care consistent with preferences/goals: 12 published manuscripts assessed end-of-life care consistent with preferences/goals, 2 of which were from the same trial.<sup>20–31</sup> Two (three publications) RCTs were conducted in Asia<sup>20–22</sup> two in Australia,<sup>23 24</sup> two in Europe<sup>25 26</sup> and five in US.<sup>27–31</sup> Only three RCTs showed significant positive findings for this outcome. One of these was conducted among elderly inpatients.<sup>23</sup> The other was conducted with nursing home residents and did not assess the outcome only among deceased residents.<sup>26 31</sup> All three were communication interventions.

There was heterogeneity between studies in how the outcome was assessed. While patients' goals or preferences were elicited through surveys, actual end-of-life care was assessed based on varying combinations of medical records,<sup>20–23 26 28 29 31</sup> bereaved caregiver

reports,<sup>20–22 24 25 27–29</sup> healthcare provider reports<sup>25 29 31</sup> and patient assessment of their care.<sup>30</sup>

Three RCTs examining this outcome were low-quality; after excluding these only one RCT conducted among elderly inpatients showed significant positive findings for this outcome.<sup>23</sup>

Quality of life: 14 RCTs assessed quality of life; none showed improvement in quality of life.<sup>20 21 25 32–42</sup> One RCT conducted with adolescents with HIV showed that spiritual well-being declined in the intervention group.<sup>32</sup> Included RCTs assessed this outcomes among heterogeneous groups of patients with serious illness,<sup>25 33 34</sup> those with advanced cancer,<sup>21 32 35–38</sup> advanced heart failure,<sup>20</sup> chronic severe respiratory disease,<sup>39</sup> advanced renal disease,<sup>40</sup> dementia,<sup>41</sup> HIV<sup>32</sup> and nursing home residents.<sup>42</sup>

Mental health: Of the 19 RCTs evaluating mental health outcomes,<sup>20 21 27 30 34 43–56</sup> only 4 (21%) showed improvement in mental health. Three of these RCTs evaluated a communication intervention.<sup>21 27 43</sup> Of these, two RCTs evaluated a dynamic ACP intervention involving multiple communication sessions with target patients by non-physician ACP facilitators<sup>21 43</sup> and one RCT evaluated a physician-led ACP discussion.<sup>27</sup> One RCT evaluated an online decision aid in patients with advanced cancer that examined the outcome immediately post-intervention.<sup>44</sup> Only one RCT in patients with advanced cancer reported that ACP intervention increased distress.<sup>45</sup>

Seven RCTs evaluating this outcome were low quality; after excluding these only three showed significant positive improvement in mental health.<sup>21 27 43</sup>

Place of death: Four RCTs assessed place of death as an outcome<sup>24 25 52 57</sup>; only one high-quality RCT<sup>25</sup> conducted in Denmark involving physician-led ACP discussions with terminally ill patients having lung, heart and cancer disease found that the intervention increased home deaths. The study did not find any difference between arms in terms of place of death consistent with preference.

### Patient outcomes: proximal

Quality of patient–physician communication: Of the 19 RCTs assessing quality of communication,<sup>24 30 37 38 48 53 55 58–69</sup> 13 (68%) showed significant improvement in the outcome.<sup>24 30 37 38 48 53 58–64</sup> Seven of these were deemed high-quality.<sup>24 37 53 58 59 61 64</sup> Seven RCTs evaluated a form of pre-consultation primer targeting either only patients or both patients and physicians.<sup>30 37 38 53 60–62</sup> One RCT evaluated physician training and physician-led ACP discussions.<sup>59</sup> Remaining involved ACP discussions by non-physician providers.<sup>24 48 63 64</sup> One RCT examined level of shared decision-making between nursing home residents and staff.<sup>58</sup>

The included RCTs assessed quality of patient–physician communication in different ways. These included patient reports about whether or not their physician discussed their patients' preferences, emotions or prognosis,<sup>24 30 37 48 61 64</sup> objective assessments of audio-recorded communication including prognosis-related questions by patients,<sup>38 53 60</sup> objective assessment of shared

decision-making<sup>58</sup> and medical record documentation of patients' preferences, goals, values, prognosis understanding and end-of-life planning.<sup>59</sup>

Eight RCTs assessing this outcome were low-quality; after exclusion seven RCTs still showed significantly improved quality of patient–physician communication.<sup>24 37 58 59 61 64</sup>

Treatment preference: 23 RCTs evaluated the effect of ACP on treatment preference/goals/values.<sup>26 28 33 50 70–88</sup> Majority (16, 70%) found that the intervention increases a preference for comfort care<sup>33 70–81 86–88</sup>; 11 of these were high-quality. Among the RCTs that showed significant increase in preference for comfort care, most (13 of 18) involved a decision aid, and three involved re-framing treatment options within the AD form.<sup>33 75 80</sup> Of the five RCTs that did not find any effect of ACP intervention on treatment preferences, four included information or education only interventions.<sup>82–85</sup> One RCT involved trained facilitator-led discussions and reported a lower preference for aggressive care in the intervention arm, but results were not statistically significant.<sup>28</sup>

Of the 23 RCTs, 8 were low-quality. Even after removing these, 11 RCTs showed increased preference for comfort care.<sup>72–77 79 86–88</sup>

Decisional conflict: 14 RCTs assessed decisional conflict.<sup>20 33 45 50 56 63 67 77 84 89–93</sup> Of these 9 (64%) showed that ACP reduced decisional conflict. These included facilitated ACP discussions<sup>20 56 63 67 89–91</sup> and decision aids.<sup>77 84</sup> Of the five RCTs that did not influence decisional conflict—one was an AD only intervention<sup>33</sup> and one involved informational video.<sup>45</sup> One RCT involving web decision aid had a small but non-significant effect.<sup>92</sup> Two RCTs involving a one-time ACP intervention by a non-physician facilitator found no effect of intervention on decisional conflict at a longer patient follow-up period of 7 weeks and 6 months.<sup>50 93</sup>

Of the 14 RCTs, only 2 were low-quality. Even after removing these, seven high quality RCTs showed significant reduction in decisional conflict.<sup>20 56 67 77 89–91</sup>

Prognostic awareness: This outcome was assessed by only three RCTs.<sup>20 94 95</sup> Two studies conducted in patients with advanced cancer (based on the same trial) reported a positive effect.<sup>94 95</sup> Another study in patients who had heart failure,<sup>20</sup> a disease with a less certain trajectory, did not find any influence of ACP intervention on prognostic awareness. All three RCTs were high-quality.

Patient–caregiver congruence in preference: 22 RCTs examined patient–surrogate congruence in preferences.<sup>56 63 64 67 78 89–91 93 96–108</sup> Majority of the studies (18; 82%)<sup>56 63 64 67 78 89–91 93 96–104</sup> showed a significant improvement in congruence and 15 of these were high-quality, 16 were communication interventions<sup>56 63 64 67 89–91 93 97–104</sup> and 2 were decision aids.<sup>78 96</sup>

Of the 22 RCTs, 7 were low-quality; after excluding these 15 still showed significant improvement in this outcome.<sup>56 64 67 78 89–91 93 96–99 102–104</sup>

## Healthcare use/costs

This outcome was assessed by 22 RCTs.<sup>24 25 33–35 37 41 42 54 57 66 68 69 109–117</sup> Of these four (18%) RCTs<sup>68 109–111</sup> showed significantly reduced healthcare use/costs. All four were communication interventions. Only two explicitly examined healthcare costs.<sup>110 111</sup> One of these<sup>111</sup> implemented a dynamic intervention involving multiple ACP follow-ups with patients with advanced cancer. The study did not find any impact on total healthcare costs but reported reduced healthcare costs during the last 30 days of life. The other<sup>110</sup> was implemented in nursing home residents and involved a follow-up of participants 1 year later to update their directives. The study reported fewer hospitalisations and lower costs among intervention compared with control residents over an 18-month follow-up period. Both RCTs found corresponding reductions in other outcomes as well. Molloy *et al* reported fewer hospitalisations<sup>110</sup> and Patel *et al* reported greater hospice use, fewer emergency department visits and fewer hospitalisations in the last 30 days of life.<sup>111</sup>

Two RCTs conducted in specific settings/patient groups found evidence of reduced hospitalisations as a result of ACP. One of these involved preoperative anaesthesiologist-led ACP discussions.<sup>68</sup> The other targeted patients with psychotic illness or non-psychotic bipolar disorder and found reductions in compulsory admissions over a 15-month follow-up period.<sup>109</sup>

Eight RCTs assessing these outcomes were low-quality, after excluding these only three RCTs showed significant reduction in healthcare use/costs.<sup>68 109 111</sup>

## ACP processes

Documentation of ACP/AD: 54 RCTs evaluated documentation of ACP or AD.<sup>24 29–31 35 40–43 59 61 64 68 71 74 81 82 86 91 101 110–112 118–148</sup> Of the 34 (63%) showing a positive and significant effect of the intervention on documentation, 20 were high-quality, 24 (71%) were communication interventions<sup>24 30 31 35 41 42 59 64 68 91 101 111 112 118–128</sup>, including 1 with a decision aid component,<sup>118</sup> 8 were decision aids only<sup>82 86 129–134</sup> and 2 were AD-only interventions.<sup>43 135</sup>

Twenty-one RCTs were low-quality; after removing these, 20 RCTs showed significant improvement in documentation of ACP/AD.<sup>24 35 39 41 43 59 68 77 91 111 112 118 119 122 128–130 134 135 149</sup>

DNR orders: None of the five RCTs that explored the effect of ACP on do-not-resuscitate (DNR) orders found a significant association.<sup>52 69 131 150 151</sup>

## DISCUSSION

### Main findings

Our systematic review, the largest to date, provides an up-to-date summary of all RCTs evaluating the effect of ACP interventions on patient outcomes. We reviewed 132 RCTs that were heterogeneous in terms of types of ACP interventions, outcomes, patient populations and settings. Majority of the included RCTs were conducted in USA and were communication interventions. We found

no evidence of the effect of ACP interventions on patient quality of life. There was mixed evidence regarding the effect of ACP interventions on other patient distal outcomes assessed including end-of-life care consistent with preferences/goals, mental health and place of death and on healthcare use/costs. Notably, we found more consistent and positive evidence of effect of ACP on the patient proximal outcomes including quality of patient–physician communication, treatment preference, decisional conflict and patient–caregiver congruence in preference, and on documentation of ACP/AD (a process outcome). Results were similar even after excluding low-quality RCTs.

Provision of end-of-life care consistent with preferences/goals has been considered a key priority by the National Academy of Medicine<sup>152</sup> and rated as the most important goal of ACP.<sup>153 154</sup> Yet, only 12 of the 132 RCTs assessed this outcome and only 3 showed positive findings. These three RCTs were conducted in imminently dying patients such as hospitalised elderly and those in a nursing home.<sup>23 26 31</sup> However, only one RCT analysed this outcome exclusively among deceased patients and was a high-quality RCT.<sup>13</sup> Previous literature has highlighted the numerous barriers to provision of end-of-life care consistent with preferences/goals. These include lack of appropriate legislative framework, involvement of surrogates, physician training and involvement and accessibility of ACP documents in medical records.<sup>8</sup> Our previous work has also shown that preferences for end-of-life care change over time even among seriously ill patients.<sup>155–157</sup> The role of projection bias,<sup>158</sup> hot–cold empathy gap<sup>159</sup> and end of history illusion<sup>160</sup> in influencing this change has been examined. Methodological constraints to measurement of this outcome have been described.<sup>161</sup> Our results also highlight the heterogeneity in measurement of this outcome across the included studies. Given the numerous challenges in implementation of ACP, the instability in patient preferences, and lack of a standardised method for measuring this outcome, our results are not surprising. Clearly, asking people to anticipate their future end-of-life care and providing them care consistent with their preferences, is not a feasible goal for ACP.

In terms of patient health outcomes, we found no study that had significantly improved patients' quality of life. Improving quality of life of patients requires other components of supportive/palliative care such as symptom management. It is thus unlikely that standalone ACP interventions will impact patients' overall quality of life. The evidence regarding efficacy of ACP on mental health was mixed. Most studies reported non-significant findings concluding that ACP had at least no detrimental effect on mental health.<sup>20 30 34 46–56</sup> Two of the four studies reporting positive improvements in mental health involved multiple sessions with non-physician ACP facilitators.<sup>21 43</sup> Future research could explicitly examine the 'dose' effect of ACP, that is, whether implementing ACP as a dynamic intervention with multiple ACP sessions over

the course of patients' trajectory will have a positive effect on patients' mental health.

Place of death is often considered an indicator of quality end-of-life care.<sup>162 163</sup> It is based on the assumption that home deaths are less intrusive and are associated with lower healthcare costs.<sup>164 165</sup> However, not all patients prefer a home death<sup>155 157 166</sup> and home deaths may not be feasible to achieve in many instances due to practical constraints.<sup>167 168</sup> Therefore, it was not surprising that we did not find a consistent impact of ACP on this outcome.

We found strong evidence that ACP interventions improve communication between patients and physicians. Quality of communication is a multidimensional construct captured through patient-reports, objective assessments using audio-recorded consultation and medical records documentation. Our review found that it can be improved through ACP interventions targeting either patients alone or both patients and physicians,<sup>30 37 38 53 60–62</sup> physicians only,<sup>59</sup> and facilitated ACP discussions by non-physicians.<sup>24 48 63 64</sup> Such communication addresses patients' negative emotions, improves understanding of illness trajectory and prognosis, allows communication of preferences/goals and improves patients' trust in their physician.<sup>169</sup> Improved communication is likely the reason why patients, surrogates and physicians desire ACP. International bodies have also emphasised the importance of patient–physician communication.<sup>170</sup>

Our review shows that interventions that simply provide information or education to patients are unlikely to change treatment preferences<sup>33 45</sup>; a more detailed discussion about treatment options, their pros and cons, prognosis, patient values and goals may be required. We also found that a decision aid may be helpful in reducing decision conflict by allowing information to be provided in a systematic and balanced way<sup>77 84</sup> and may even increase ACP/AD documentation. Future studies can examine the use of decision aids integrated with physician training, surrogate involvement and other healthcare system changes on influencing the multiple patient outcomes.

Only two studies examined prognostic awareness as an outcome. Prognostic awareness is an important component of preparedness for end-of-life and can be a focus for future ACP studies among seriously ill patients. However, it may be difficult to achieve for patients with an unpredictable disease trajectory, and may be biased by patients' hope and optimism for future.<sup>171</sup>

Another important aspect of end-of-life preparedness is nominating a surrogate decision-maker and discussing end-of-life care goals and preferences with the surrogate. Our review provides strong evidence that ACP facilitates congruence in preferences between patients and their surrogate, with interventions primarily involving communication. This is an important outcome for ACP representing occurrence of patient–surrogate conversations about end-of-life care, thereby enabling a shared understanding of what matters most to patients, and preparation for the difficult decisions at the end of life.

Although cost-saving is not the primary goal of ACP, the argument for cost saving along with an improvement in patient health outcomes strengthens a policymaker's case for funding and implementing ACP interventions. We found mixed evidence of the effect of ACP on healthcare cost savings with only two RCTs showing significant reductions in healthcare costs.<sup>110 111</sup> These studies were conducted either with nursing home patients<sup>110</sup> or involved a dynamic ACP intervention focusing on patients with advanced cancer.<sup>111</sup> No study took a societal perspective on healthcare costs or calculated the net cost savings as a result of ACP. Future studies can aim to address this gap in order to build a strong argument for continued resource allocation for ACP programmes.

Overall, ACP/AD documentation (a process outcome) was more commonly assessed and reported than many patient distal and proximal outcomes. This might be because of challenges in measurement of these outcomes. For instance, measurement of patient-reported outcomes requires patient surveys, while other outcomes like patients' place of death and healthcare use/cost require patient follow-up, and extraction of that information from medical records or bereaved caregivers' report. Challenges in measurement of end-of-life care consistent with preferences have also been discussed above.

Our results have implications regarding future ACP policies, practice and research. We highlight that ACP has a more consistent and positive impact on many patient proximal outcomes including quality of patient–physician communication, decisional conflict and caregiver–patient congruence in preferences, compared with patient distal outcomes. Results indicate that while ACP may not necessarily change patient's end-of-life trajectory or their end-of-life care, nor does it facilitate end-of-life care consistent with their preferences, it does positively influence their interactions with the healthcare system and with their caregivers. Given that many seriously ill patients and their caregivers do not understand enough about their (patients') illness and are ill-prepared to make in-the-moment end-of-life decisions,<sup>172 173</sup> ACP's impact on improving communication cannot be considered trivial. ACP should thus not be considered a magic bullet for improving patient's end-of-life care and reducing end of life healthcare costs, but instead should be considered as a means of facilitating a shared understanding between patients, surrogates and healthcare providers of what matters most to patients, preparing patients and caregivers for the difficult end-of-life decision-making, improving their communication with each other and with their healthcare providers, thereby humanising our healthcare systems.

We therefore suggest that ACP should be renamed as 'advance care *preparation*' rather than 'advance care *planning*'. Renaming ACP would allow researchers to focus on outcomes better suited for evaluating the impact of ACP. Given the challenges in achieving end-of-life care consistent with preferences, it is not a feasible goal for ACP. In some cases, for instance, when a seriously ill patient has

consistently expressed a preference for same treatment, efforts to provide end-of-life care consistent with documented preferences could be desirable. However, for the vast majority, ACP should be considered a means of preparation for end-of-life care.

### Strengths/limitations of review

Strengths of our review include a comprehensive literature search dating back to 1992, thereby providing the most comprehensive evidence to date regarding the efficacy of ACP on key patient outcomes. The review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines and follows a systematic approach for categorising quality of the included RCTs (PEDro).

Our review has limitations. First, we focused only on published literature. Second, we could not assess the comprehensiveness and fidelity of implementation of ACP. This was mostly not reported within the studies. There is also currently an absence of benchmarks or minimum standards for implementing ACP against which a comparison can be made. Third, the included ACP interventions, target patients, settings as well as measurement of outcomes were heterogeneous. Therefore, we did not compare effect sizes across studies or conduct a meta-analysis. Fourth, there were limitations in studies included. Thirty-six per cent of the studies included were deemed as low-quality. This may have affected the interpretation of results in this review. Lastly, our narrative synthesis used a narrow definition of statistical significance ( $p < 0.05$ ) to interpret whether or not ACP improved an outcome. This definition ignores promising findings from underpowered trials.

### What this review adds?

This systematic review provides the most comprehensive evidence to date regarding the efficacy of ACP on key patient outcomes. Although we found no evidence of effect of ACP on patient quality of life, and mixed evidence of its effect on end-of-life care consistent with preferences/goals, patient mental health and healthcare use/costs, our results showed that ACP had a largely positive influence on improving quality of patient–physician communication, reducing decisional conflict and improving congruence in preferences between patients and caregivers. This suggests that we need to rethink ACP as an intervention to improve patients’ experience with the healthcare system, to enable their voices to be heard by physicians and caregivers and to facilitate ‘preparing’ rather than ‘planning’ for the end-of-life. Considering and renaming ACP as ‘advance care *preparation*’ rather than ‘advance care *planning*’ can enable researchers to focus on these proximal patient outcomes, and design other outcomes which may be better suited for evaluating the impact of ACP.

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