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## Review

## Efficacy of Advance Care Planning: A Systematic Review and Meta-Analysis

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## A B S T R A C T

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**Keywords:**

Advance care planning  
end-of-life care  
communication  
advance directives

**Objective:** To systematically review the efficacy of advance care planning (ACP) interventions in different adult patient populations.

**Design:** Systematic review and meta-analyses.

**Data Sources:** Medline/PubMed, Cochrane Central Register of Controlled Trials (1966 to September 2013), and reference lists.

**Study Selection:** Randomized controlled trials that describe original data on the efficacy of ACP interventions in adult populations and were written in English.

**Data Extraction and Synthesis:** Fifty-five studies were identified. Study details were recorded using a predefined data abstraction form. Methodological quality was assessed using the PEDro scale by 2 independent reviewers. Meta-analytic techniques were conducted using a random effects model. Analyses were stratified for type of intervention: 'advance directives' and 'communication.'

**Main Outcomes and Measures:** Primary outcome measures were completion of advance directives and occurrence of end-of-life discussions. Secondary outcomes were concordance between preferences for care and delivered care, knowledge of ACP, end-of-life care preferences, quality of communication, satisfaction with healthcare, decisional conflict, use of healthcare services, and symptoms.

**Results:** Interventions focusing on advance directives as well as interventions that also included communication about end-of-life care increased the completion of advance directives and the occurrence of end-of-life care discussions between patients and healthcare professionals. In addition, interventions that also included communication about ACP, improved concordance between preferences for care and delivered care and may improve other outcomes, such as quality of communication.

**Conclusions:** ACP interventions increase the completion of advance directives, occurrence of discussions about ACP, concordance between preferences for care and delivered care, and are likely to improve other outcomes for patients and their loved ones in different adult populations. Future studies are necessary to reveal the effective elements of ACP and should focus on the best way to implement structured ACP in standard care.

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Advance care planning (ACP) is the process whereby patients, in consultation with healthcare professionals, family members, and other loved ones, make individual decisions about their future

healthcare, to prepare for future medical treatment decisions.<sup>1</sup> In the previous decades, ACP was often seen as synonymous with the completion of advance directives. More recently, ACP is seen as an ongoing process and includes discussions about goals of care, resuscitation and life support, palliative care options, surrogate decision making, and advance directives.<sup>2</sup>

Patients usually want to talk about end-of-life care and are able to discuss their preferences regarding life-sustaining treatments. Discussions about ACP, however, do not occur as frequently as they should.<sup>3</sup> Physicians and patients report different barriers to communication about end-of-life care. Physicians' barriers include lack of time and communication skills, discomfort with emotions

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from the patient, and concerns about the potential to erode hope. Patients are not aware of the relevance of ACP and have the assumption that the physician will initiate ACP discussions when they are needed.<sup>2</sup> Because of the lack of ACP, decisions about life-sustaining treatments are often crisis-oriented, may not be in concordance with patient's preferences for end-of-life care, and may cause distress in loved ones.<sup>4</sup>

The last 2 decades, multiple studies were published about interventions to improve ACP. Initially, these studies were limited to oncology patients, but because of the aging population and increased prevalence of chronic diseases, current research also focusses on interventions to improve ACP in other patient populations with life-limiting diseases.<sup>5</sup> Interventions investigated in early ACP studies, which were mostly limited to the completion of advance directives<sup>6,7</sup> did not improve end-of-life care. A recent study suggests that discussions about ACP can be effective in changing outcomes for patients and their loved ones.<sup>8</sup>

The purpose of the present systematic review is to study the efficacy of ACP interventions in different adult patient populations. The primary outcome measures are completion of advance directives and occurrence of end-of-life discussions. Secondary outcomes are concordance between preferences for care and delivered care, knowledge of ACP, end-of-life care preferences, quality of communication, satisfaction with healthcare, decisional conflict, use of healthcare services, and symptoms. A priori, we hypothesized that ACP interventions increase completion of advance directives as well as occurrence of end-of-life discussions. In addition, we hypothesized that ACP interventions can improve other outcomes, such as quality of communication about end-of-life care, and concordance between preferences for end-of-life care and delivered care.

## Methods

### Data Sources and Searches

A computerized literature search was performed in the databases Medline/PubMed and Cochrane Central Register of Controlled Trials from 1966 through September 2013. The following key words were used: ACP; advance directives; end-of-life communication; life-sustaining treatment preferences; end-of-life decision making; and living will. The key words were combined using 'or.' In addition, reference lists of selected articles were searched by hand to identify relevant articles that may have been missed by the initial search strategy.

### Study Selection

Articles had to meet the following criteria to be selected for the review: (1) describe original data; (2) randomized controlled trial; and (3) written in English. Articles about patients younger than 21 years were excluded. In addition, studies about psychiatric advance directives were excluded because these directives were focused on treatment decisions involving mental health instead of physical health.<sup>9</sup> Titles and abstracts were independently screened against inclusion criteria by 2 reviewers (C.H. and M.S.). Disagreements were solved by consensus.

### Data Extraction and Quality Assessment

A predesigned data abstraction form was used to obtain data on study design and relevant results. For each study, first author, journal, year of publication, aim, study design, setting, eligibility criteria, sample size, patient characteristics (sex, age, disease), intervention (description, frequency, delivered by), control group, measurements,

outcome parameters, instruments, response rate, relevant findings, conclusion, and limitations were recorded.

The methodological quality was assessed using the Physiotherapy Evidence-Based Database (PEDro) Scale.<sup>10</sup> The PEDro scale is based largely on the Delphi List and expert consensus. It consists of 11 items: 1 item to score the external validity and 10 items to score the internal validity and statistics. Items scored a 'yes' if the criterion was clearly satisfied. The 'yes' from criteria 2–11 were summed to calculate the PEDro score.<sup>10</sup> Previously, trials with a PEDro score of  $\geq 6$  points were classified as "high-quality trials," whereas trials with a PEDro score  $< 6$  points were classified as "low-quality trials."<sup>11</sup> The methodological quality of the included trials was scored independently by 2 reviewers (C. H. and D.J.). Agreement between the 2 reviewers was 0.89 [95% confidence interval (CI), 0.86–0.93;  $P < .0001$ ] based on the actual PEDro score of each study. Disagreements were solved by consensus. If no consensus could be achieved, a third reviewer (M.S.) was consulted. This was the case for only three PEDro-items (0.5%).

### Data Synthesis and Analysis

Interventions were classified into 2 categories: (1) advance directives: interventions that were limited to the completion of advance directives (durable powers of attorney for healthcare, living wills, and signing limitations of care "code status" forms); and (2) communication: interventions in which one of the components was focused on communication about ACP, in addition to advance directives. A  $\chi^2$  test was used to explore the relationship between the kind of intervention and years of publication (1992–1998 vs 1999–2005, 1999–2005 vs 2006–2012, and 1992–1998 vs 2006–2012). IBM SPSS statistics 21.0 was used for this analysis. Meta-analytic techniques were conducted using a random effects model in RevMan 5. Completion of advance directives, occurrence of discussions about end-of-life care preferences between patient and healthcare professional, and concordance between preferences for end-of-life care and delivered end-of-life care were analyzed as dichotomous outcomes. Pooled odds ratios (OR) with 95% CIs were calculated using a random effects model. If a study included more than 1 intervention group, both intervention groups were included in the analysis. Subgroup of interest was type of intervention (advance directives vs communication). The use of meta-analytic techniques for data-analysis was not possible for other outcome measures such as knowledge of ACP, end-of-life care preferences, quality of communication, satisfaction with healthcare, decisional conflict, use of healthcare services, and symptoms because of variability in definition and measurement. The statistical significance level was set at  $P \leq .05$  for all analysis.

## Results

In total, 26,628 articles were found in the electronic searches. Fifty-six studies were identified (Table 1). These studies included patients with different diseases and were published between 1992 and 2012 (Figure 1). Fifteen studies (26.8%) recruited participants from an inpatient setting; 37 studies (66.1%) from an outpatient setting; and 4 studies (7.1%) from both settings.

### Quality Assessment

Median PEDro score was 5 points (range 2–8 points; Table 2). Thirty-one trials (55.4%) scored  $< 6$  points on the PEDro scale and were classified as "low-quality trials." The most prevalent methodological shortcomings were failure to blind patients ( $n = 55$ , 98.2%), therapists ( $n = 55$ , 98.2%), and/or outcome assessors ( $n = 44$ , 78.6%);

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