

# A survey study: Anesthesia in elderly patients across Europe

To the Editor,

Aging is a complex physiological and dynamic process. Average life expectancy is increasing according to the World Health Organization. The worldwide population older than 80 years is expected to grow from 125 million by almost 3.5-fold to 434 million by 2050.<sup>1,2</sup> This elderly population is routinely treated with anesthesia but little was known about the peri-interventional mortality rates and outcome in these patients in Europe. Thus, we carried out the Peri-interventional Outcome Study in the Elderly (POSE), a prospective, observational, multicentre cohort study across Europe.<sup>3</sup> We assessed patients aged 80 years and older who underwent elective or emergency surgery or had nonsurgical intervention, either as an in- or outpatients. The primary endpoint was the incidence of peri-interventional all-cause mortality rate on Day 30. Secondary endpoints consisted of an array of postinterventional major complications and cognitive and functional outcomes up to Day 30. The study was registered at [www.clinicaltrials.gov](http://www.clinicaltrials.gov) (NCT03152734) and took place in 177 centers across 20 different countries. Besides limited funding for data management, statistics and meetings as an European Society of Anesthesiology and Intensive Care (ESAIC) Research Group, there was no reimbursement for the efforts of the participating centers. Nevertheless, the study was a great success with 9497 included patients. Within the POSE study, we decided to make a survey with 13 questions and subquestions and send a link to all participating centers.<sup>4</sup> The aim was to evaluate the quality of study organization and the study design and whether it was feasible to implement the preoperative tests, the patient recruitment and study conduction within the clinical routine. All data are presented in Table 1.

According to the responses received from 104 centers, most participants learned about the study from colleagues (54%) (Table 1). Some participants were directly invited by the investigators (31%), or learned about the study during educational meetings (21%). The principal motivations of people taking part in the study were the relevance of the study objective and a clinical interest in geriatric anesthesia (53%). Study design and the absence of a minimum number of patients enrolled in the trial from any individual center (27%), as well as flexibility in a center's recruitment window (40%), were also important factors for the decision to participate. Co-author and collaboration recognition policy, easy measurement tools, and a short duration of follow up were also noted as important factors (49%). At the beginning of the study, it was planned to give

everybody who had recruited  $\geq 75$  patients, as well as the steering committee members and the national coordinators, the possibility to become a co-author. However, at the end it was not possible to name more than 100 co-authors according to the journal policies of several higher impact journals.

As a result of the survey, researchers needed 15–30 min to complete the baseline preinterventional assessment (65%),  $\leq 15$  min for the second visit on the intervention day (46%), and  $\leq 15$  min for follow-up Day 30 in hospital (49%) or the telephone check-up, respectively (67%).

Five centers from 104 (4.8%) registered for the study and did not subsequently recruit any patients to the trial. The most frequent reason was lack of time, or funding, or difficulties accessing an ethics committee approval process.

More than half of the respondents found the study design, inclusion and exclusion criteria (57%), registration process, and study protocol to be clearly explained and easy to understand (51%). Patient recruitment did not pose any particular problems. All the tests were easy to apply, and compliance with European Union general data protection regulations was easy.

The POSE website ([www.pose-trial.org](http://www.pose-trial.org)) was a useful resource for study investigators (59%). Data insertion in OpenClinica database was felt to have worked not so well (46%), as they had to record data first on paper-based case report form, which then was upload to the electronic database. Future projects may be more successful if they use, for example, tablets directly for data collection. Before the results of the study were published, investigators did not believe they had made changes in their clinical practice. Around 60% of the centers mentioned that their participation in the POSE study did not induce any change in their clinical practice or policy. However, 22% have increased their cognitive testing of elderly patients, 9% have increased using frailty testing, 8% started to use advanced monitoring, and 2% made other changes. Many investigators agreed that they would work again with the same study group to do similar work in future (60%). For them it would be interesting to participate in an observational study in the same area (56%) and also to take part in an interventional study (54%). Forty-two percent of centers showed their enthusiasm for the longest duration recruitment window of 12 months. Investigators think that delirium, which was not assessed in POSE as well cerebral oxygenation, polymedication and dementia, postoperative cognitive disease, ventilatory management, and the

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TABLE 1 Survey questions with participant answers, researchers number who replied and their demography.

Questions	Answers	Centers N	Demography of respondents
How did you hear about the POSE study initially?	From colleagues 54%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	Direct invitation form POSE team 31%		
	From educational meeting 21%		
The following factors may have influenced your decision to participate in the POSE study	The relevance of the study objective and a clinical interest in geriatric anesthesia 53%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	Study design and the absence of a minimum number of patients enrolled in the trial from any individual center 27%		
	Flexibility in a center's recruitment window 40%		
	Co-author and collaboration recognition policy, easy measurement tools, and short duration of follow-up 49%		
Please estimate the average duration of each of the visit with the study subjects	Researchers needed 15–30 min to complete the baseline preinterventional assessment 65%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	≤15 min for the second visit on the intervention day 46%		
	≤15 min for follow-up Day 30 in hospital 49%		
	≤15 min for follow-up Day 30 telephone check up 67%		
Did you register your center with POSE and subsequently not recruit any patients to the trial?	Yes 4.81%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	No 95.19%		
With regard to study execution, please rate each of the following statements according to your level of agreement or disagreement	The study was clearly explained 57%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	Registration process was clearly explained and easy to understand 51%		
Did any aspects of the study design, recruitment and administration work particularly well?	POSE website was a useful resource for study investigators 59%	102	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, and Turkey
	Data insertion in Open Clinica database was felt not to work well 46%		
Did participation in the POSE trial cause you or your department to make	Participation in the POSE study did not induce any change in clinical practice or policy	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, and Turkey
	Increased use of cognitive testing 22%		
	Increased use of frailty testing 9%		
	Started to use advanced monitoring 8%		

TABLE 1 (Continued)

Questions	Answers	Centers N	Demography of respondents
changes in clinical practice or policy?	60%	104	Serbia, Spain, Switzerland, Turkey and two unknown
In relation to future studies in this area, please rate the following statements	I would like to work with POSE group again 60%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown
	I would be interested in participating in an observational study in this area 56%		
	I would be interested in participating in an interventional study in this area 54%		
What is the longest duration recruitment window that your participating center could manage	12 months 42%	104	Austria, Belgium, Denmark, France, Georgia, Germany, Greece, Israel, Macedonia, Portugal, Romania, Russia, Serbia, Spain, Switzerland, Turkey, and two unknown.

Abbreviation: POSE, Peri-interventional Outcome Study in the Elderly.

influence of different anesthetic regimes and drugs on morbidity and mortality need to be investigated in future studies of elderly patients.

POSE was an important research project as several national societies and associations have endorsed this ESAIC-led clinical trial. The data were novel as we received the information on anesthesia management in the elderly group of patients and the morbidity and mortality across Europe and predicting factors for poor outcome with such a huge sample size. This study has provided very important information for the future improvement of the treatment of the elderly population. The primary analysis has already been published and several secondary analyses are following based on the huge database.

This survey gives us some knowledge about investigators themselves. Additionally, it provides opinions of participating researchers about study design, recruitment, management, changes in the clinical practice after taking part in the study, interest in the field, and participation wish in future projects. Also, the information we received from the survey may help other investigators to design an international clinical trial. The fact that participants made changes to their clinical practice on the basis of being involved in POSE study suggests progress made in the field.

#### AUTHOR CONTRIBUTIONS

**Tamar Macharadze:** Investigation; writing—original draft; writing—review and editing; supervision. **Peter Lee:** Investigation; writing—review and editing. **Mark Coburn:** Conceptualization; methodology; writing—review and editing. **Ana Kowark:** Conceptualization; writing—review and editing; methodology; supervision.

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#### POSE-Study Group

All co-authors are presented in Supporting Information S1: Data 1.

**CONFLICT OF INTEREST STATEMENT**


The authors declare no conflict of interest.

**DATA AVAILABILITY STATEMENT**

The data sets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

**TRANSPARENCY STATEMENT**

Dr. Tamar Macharadze affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained.

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**SUPPORTING INFORMATION**

Additional supporting information can be found online in the Supporting Information section at the end of this article.