Patient Reported Symptoms, Functioning, and Quality of Life (QoL) in Patients Treated With Chimeric Antigen Receptor T Cells for Hematologic Malignancy: A Systematic Review and Meta Analysis

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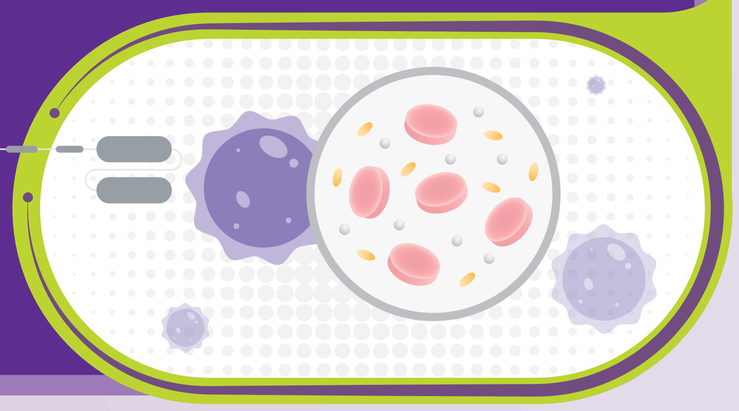


BACKGROUND

- **Chimeric antigen receptor (CAR)-T cell therapy** is a new treatment that shows promise for individuals with hematological malignancies.
- **Car-T cell therapy** involves removing a patient's T cells, genetically modifying them to express a chimeric antigen receptor targeting a specific tumor antigen, expanding them and reinfusing them into the patient (June & Sadelain, 2018). Cancer cells are recognized and destroyed by the patient's own immune system, a significant departure from traditional chemotherapy and radiation.
- **Patient-reported outcomes (PRO)** have become a vital tool for measuring the quality of life in patients. Being a novel treatment, CAR-T cell therapy lacks enough patient-reported experience exploration. So, we conducted a systematic literature review to explore the PRO experience in patients receiving CAR-T cell therapy for hematologic malignancies.

OBJECTIVE

- The aim of our study was to conduct a systematic literature review to explore the PRO experience in patients receiving CAR-T cell therapy for hematologic malignancies.

METHODOLOGY

- Statistical Analysis: Statistical analyses were performed using the **R 4.4.2 version** and **Review manager 5.3 (Revman software)**. Single-arm meta-analysis performed in R studio and direct comparisons were performed in review manager 5.3.

Figure 1: PRISMA Chart

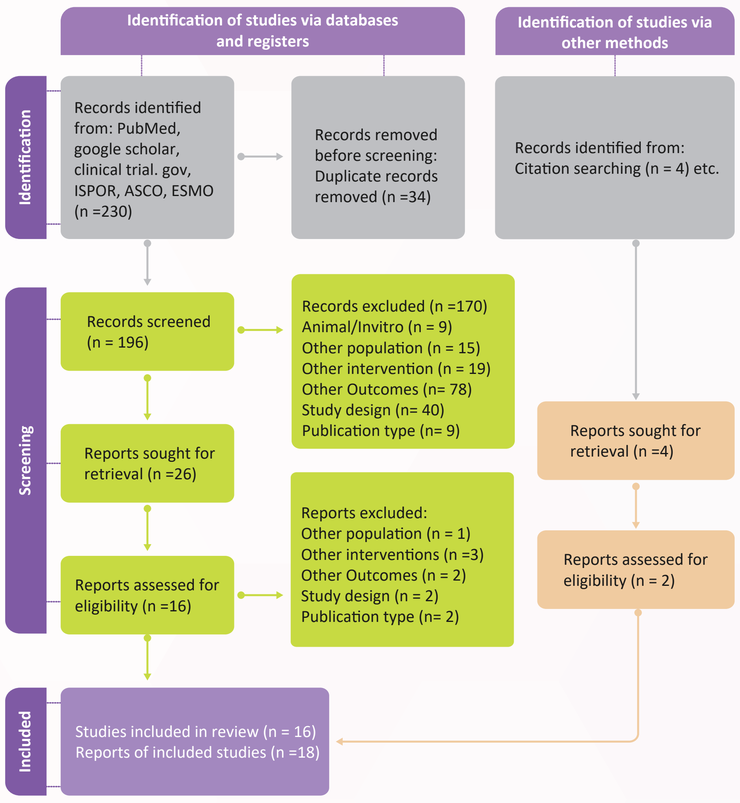


Figure 2: Study reported PROs, and study locations

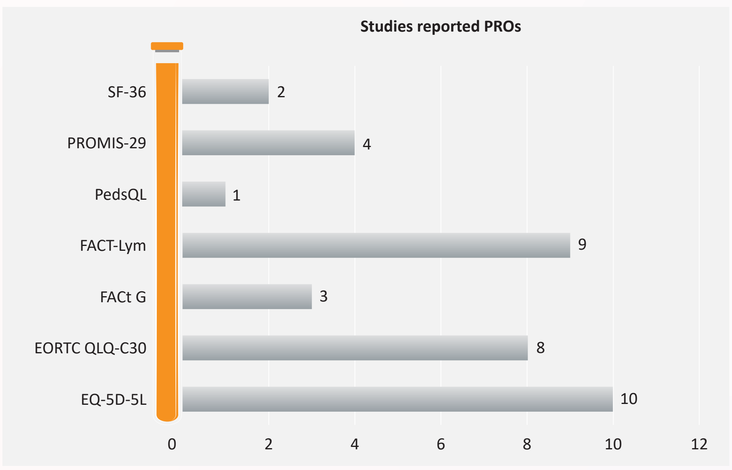
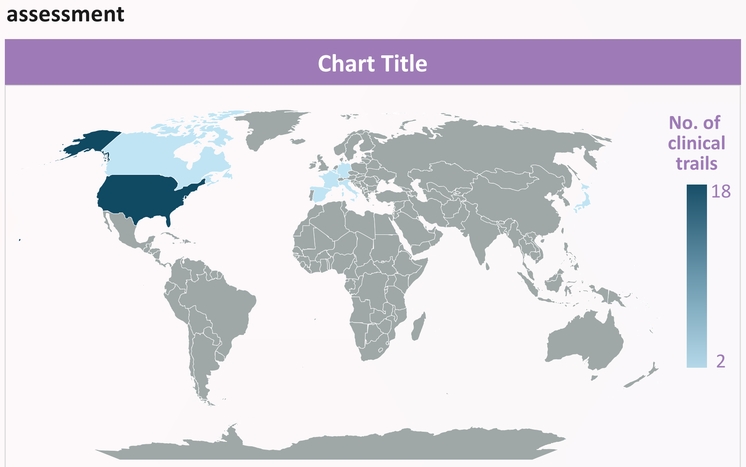


Figure 3: Countries with clinical trial for Car-T cell quality of life assessment

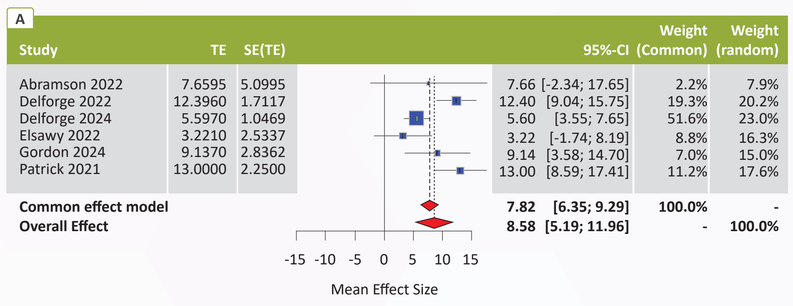


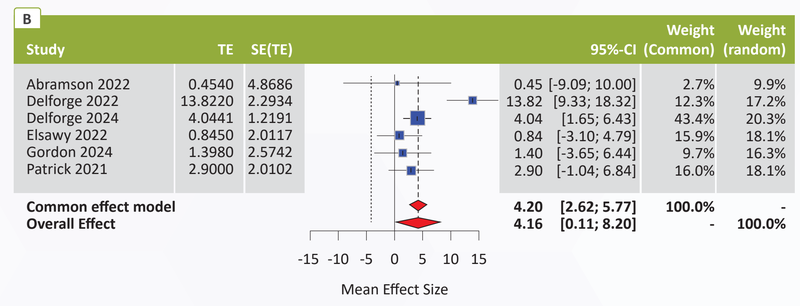
Country	France	United States	Canada	Germany	Belgium	Italy	Japan	Spain
No of clinical trials	2	18	2	2	2	2	2	2

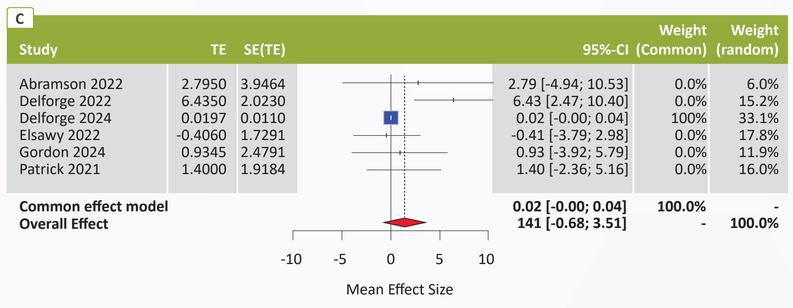
RESULT

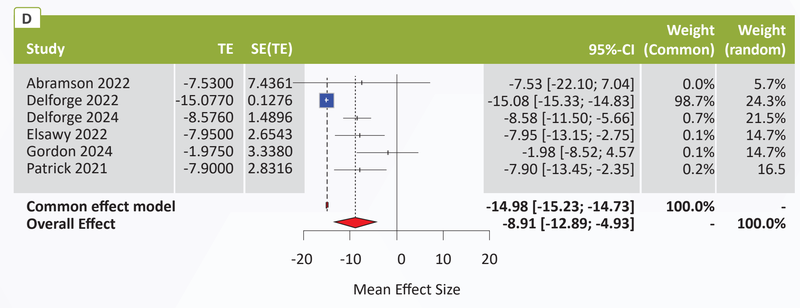
Effect of Car-T cell on HRQoL, Physical, cognitive and fatigue pain

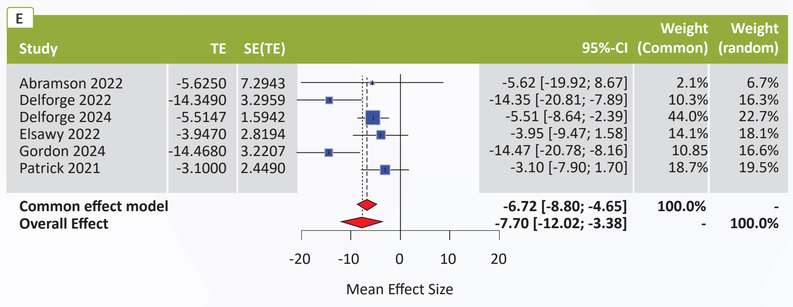
Figure 4: Mean effect size and 95% CI estimation of change from baseline at 6 months for (A) GHQoL, (B) Physical Health, (C) Congnitive health (D) Fatigue (E) Pain and (F) EQ-5D-5L VAS











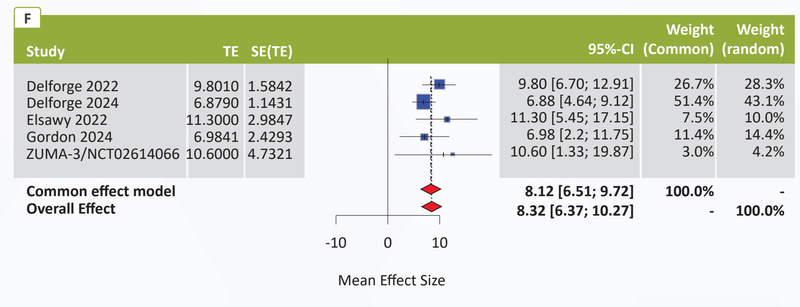


Table 1. Estimation of proportion of improvemet and 95% CI after 6 months post treatment of Car-T cell theapy

Quality of life Improvement Parameters	Proportion, 95% CI	P value	Heterogeneity
GH-QoL	33%, 95% CI[0.09-0.69]	P < 0.01	90%
Cognitive Function	28%, 95% CI[0.17-0.43]	P < 0.01	82%
Pain Improvement	36%, 95% CI[0.24-0.50]	P < 0.01	81%
Physical Health	30%, 95% CI[0.14-0.54]	P < 0.01	93%
Figue Improvement	28%, 95% CI[0.17-0.43]	P < 0.01	82%
EQ-5D-5L_HUL	38%, 95% CI[0.22-0.57]	P < 0.01	89%

Table 2. Mean change of Quality of life from baseline to 6 months between Car-t cell therapy and SOC

Quality of life Improvement Parameters	Proportion, 95% CI	P value	Heterogeneity
GH-QoL	0.60, 95% CI[0.38-0.82]	P=0.42	0%
Cognitive Function	0.40, 95%[0.19-0.62]	P= 0.63	0%
Fatigue	-27, 95% CI[0.91-0.37]	P=0.001	85%
Pain	0.00, 95% CI[0.34-0.34]	P=0.14	50%
Physical Health	0.47, 95% CI[0.25-0.68]	P=0.37	0%

CONCLUSION

Car-T cell therapy has emerged as a groundbreaking approach in the treatment of hematologic malignancies, offering the potential for durable remissions and improved outcomes for patients with relapsed or refractory diseases. Considering the findings of this research, it is also concluded that Car-T cells possess the potential to improve the quality of life of hematological patients. It is capable of reducing pain and fatigue, and improving their physical and cognitive health.

Reference

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