

# Health-Related Quality of Life and Its Drivers for Patients Living With Glioblastoma in Five Key European Countries: a Systematic Review

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## INTRODUCTION

- Glioblastoma is the most prevalent type of brain cancer. It is a rare tumour with a global incidence of less than 10 per 100,000 people and a survival rate of 14–15 months<sup>1</sup>
- Patients with glioblastoma present with a variety of symptoms and signs, such as neurological deficits and epileptic seizures, cognitive problems and neuropsychiatric symptoms of anxiety and depression, caused by the tumour itself, tumour-related treatment, or a combination of these factors<sup>2</sup>
- The complexity of symptoms and problems can have a negative impact on health-related quality of life (HRQoL) – not only that of patients, but also their relatives<sup>3,4</sup>
- Patients with brain tumours are distinct from other populations of patients with cancers due to the complexity of supportive care needs, the trajectory of disease, the very short life expectancy, and the presence of specific symptoms related to neurological deterioration. They therefore need a specific palliative approach<sup>5</sup>

## OBJECTIVES

This systematic literature review (SLR) aimed to identify comprehensive evidence on quality of life (QoL) and its drivers for patients with glioblastoma in Europe.

## METHODS

- Embase® and MEDLINE® databases via Embase.com were systematically searched, in accordance with the Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) guidelines, by pairing relevant keywords to identify English-language studies reporting on the HRQoL of patients with glioblastoma
- Publications were limited to those reporting information on HRQoL among adult patients with glioblastoma that were published in between 2013 and 2023 in Europe (Table 1)
- Two independent reviewers performed initial screening of title and abstract for each record identified by the electronic database search. Two reviewers assessed each potentially relevant full-text record. Any uncertainty regarding the inclusion of a record was reconciled by a third reviewer

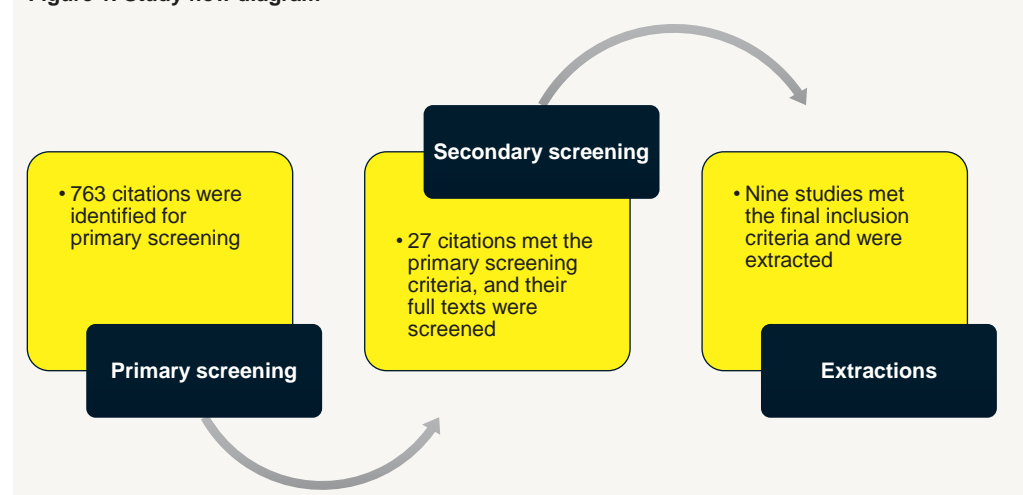
Table 1. Inclusion criteria

Language	English
Timeframe	2013–2023
Population	Adult patients with glioblastoma
Country	UK, France, Germany, Italy, and Spain
Outcomes	QoL scales: European Organisation for Research and Treatment of Cancer 30-item Core Quality of Life questionnaire (EORTC QLQ-C30); SF-36™; EQ-5D™
Intervention and comparator	No restriction

## RESULTS

- A total of 763 records were screened using the predefined population, intervention, comparison, outcomes and study (PICOS)-based criteria; nine studies were identified and included that evaluated the HRQoL of glioblastoma in the five countries (Figure 1)

Figure 1. Study flow diagram



- Out of the nine included studies, three were conducted in Germany, two were conducted in Italy, and one study each was in France, Netherlands, Norway, and Sweden
- Of these, five were prospective cohort studies, two were randomized controlled trials, and one was a retrospective cohort study, and one was a cross-sectional study
- The sample size ranged from ~10 to 300 patients with glioblastoma
- The European Organisation for Research and Treatment of Cancer 30-item Core Quality of Life questionnaire (EORTC QLQ-C30) were the most widely used QoL scale

### Comparative HRQoL data between patients with glioblastoma and the healthy population:

- HRQoL was consistently lower in patients with glioblastoma in both of the SF-36 domains (physical [PCS] and mental [MCS] component summary scores; higher score indicates better HRQoL) than in the healthy population
- The mean PCS and MCS scores of patients with glioblastoma at baseline were 43.2 and 37.2, respectively; for the healthy population, the scores were 45.7 and 50.8, respectively. The mean PCS and MCS scores of patients with glioblastoma at 18 months were 35.5 and 35.4, respectively, while for the healthy population, the corresponding scores were 47.4 and 51.0<sup>5</sup>

### HRQoL in patients with glioblastoma only (without control group):

- **EORTC QLQ-C30:** Across studies providing data for patients with glioblastoma, the mean EORTC QLQ-C30 global health status score ranged from 49.8 to 64.9<sup>7,8,9</sup>, as shown in Figure 4. An Italian study (2013–2015) reported that improvement in mean EORTC QLQ-C30 score at baseline and at 9 months after radiotherapy was 64.9 and 67.3, respectively, as shown in Figure 3
- **SF-36:** Of these nine studies, one prospective cohort study conducted in Sweden reported mean SF-36 PCS and MCS score were 43.2 and 37.2, respectively.<sup>6</sup> There was an improvement in the PCS and MCS scores, for patients receiving surgery and chemotherapy, at 12 months as compared to baseline was 43.9 and 44.3, respectively, while a decrease in PCS and MCS scores was observed at 18 months as compared to baseline was 35.5 and 35.4, respectively, as shown in Figure 5

### Factors associated with health-related quality of life:

- Using EORTC QLQ-C30, elderly patients reported significantly lower global health (mean elderly versus younger patients: 50.8 vs 60.5;  $p = 0.003$ ), worse physical (56.8 vs 73.3;  $p < 0.001$ ) and lower cognitive functioning (51.1 vs 63.2;  $p = 0.002$ ), worse fatigue (52.5 vs 43.5;  $p = 0.042$ ), and worse motor dysfunction (34.9 vs 23.6;  $p = 0.030$ )
- Female patients had a clinically relevant decrease in score for physical functioning at baseline compared with male patients (67.9 vs 81.2)
- Karnofsky Performance Scale (KPS) score was consistently associated with HRQoL regarding all functioning scales (physical functioning,  $p < 0.0001$ ; emotional functioning,  $p < 0.0001$ ; cognitive functioning,  $p < 0.0001$ ; social functioning,  $p < 0.0001$ )

Figure 3. EORTC QLQ-C30 component scores at baseline and 9 months

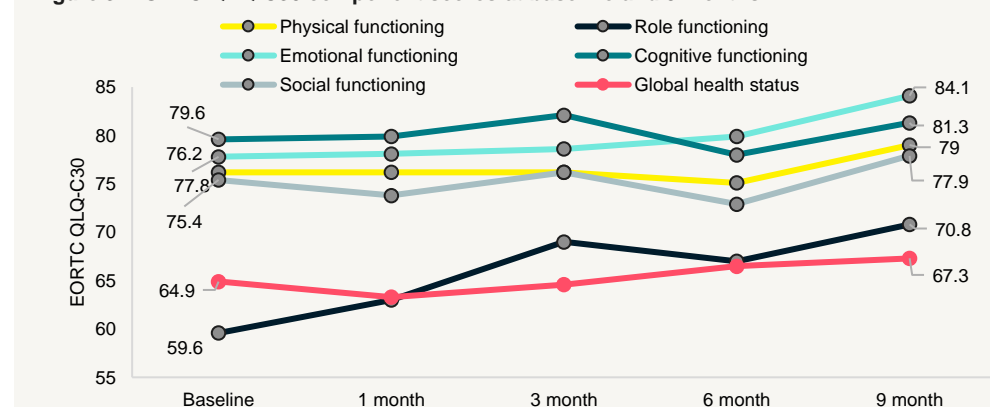


Figure 4. EORTC QLQ-C30 scale scores for different countries

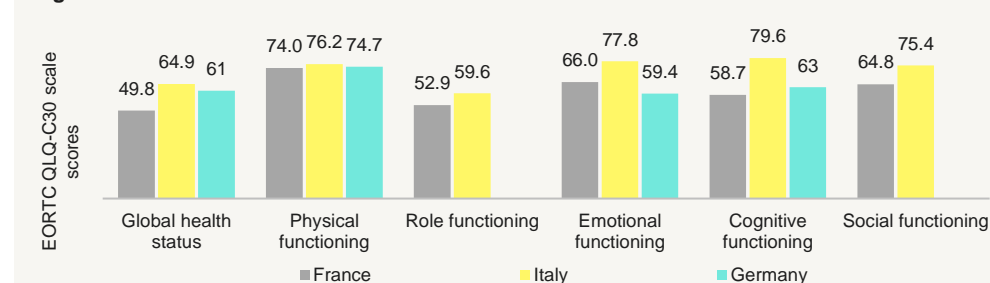
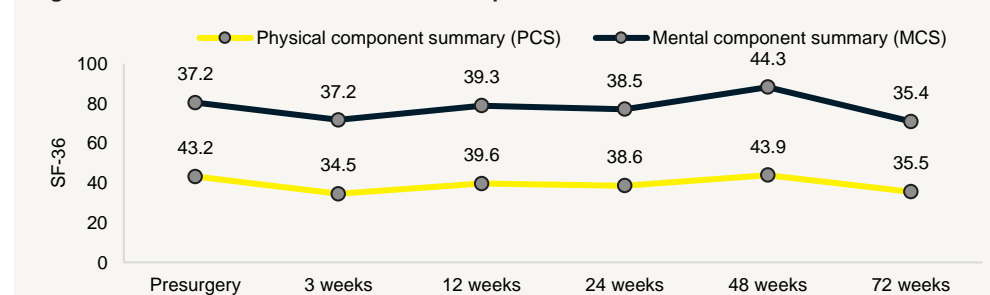


Figure 5. SF-36 scale scores at different time points



## CONCLUSIONS

- Glioblastoma is a highly prevalent type of brain cancer and has a significant impact on the overall QoL of patients
- Health-related quality of life (HRQoL) was lower in patients with glioblastoma than in the healthy population
- Age, gender, KPS score, and associated infections and comorbidities were key factors that influence overall QoL

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