

Determinants of Health-Related Quality of Life of Patients With Focal Epilepsy: A Systematic Literature Review

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CONCLUSIONS

- This systematic literature review (SLR) identified multiple factors associated with lower health-related quality of life (HRQoL) in patients with focal epilepsy
- Depression and anxiety were among the most significant and frequent determinants of HRQoL change
- Other relevant and frequent determinants of HRQoL change included cognition, anti-seizure medication (ASM) adverse events (AE), seizure freedom, and employment
- A comprehensive understanding of the modifiable determinants of HRQoL is relevant to patient health and well-being and can inform clinical practice and observational/interventional studies

INTRODUCTION

- Epilepsy affects approximately 61.4 per 100,000 people worldwide with ≈61% of cases represented by focal epilepsy^{1,2}
- Focal epilepsy is a debilitating condition that can have significant negative impacts on HRQoL that exceed those observed for general populations^{2,3} and among patients with generalized epilepsy²
- Patients with focal epilepsy can also experience work-related impacts such as absenteeism, presenteeism, or loss of employment⁴
- Several studies have been published on HRQoL in patients with focal epilepsy; however, the main determinants of HRQoL have not been comprehensively examined
- There is a need to study HRQoL in patients with focal epilepsy to derive care plans that maintain their quality of life

References: 1. Beghi E. *Neuro Epidemiology*. 2020;54:185-191. 2. Ioannou P, et al. *Brain Behav*. 2022;12:e2589. 3. Siebenbrodt K, et al. *Neurol Res Pract*. 2023;5:41. 4. Gupta S, et al. *Epilepsia Open*. 2017;2(2):199-213. 5. Page M, et al. *BMJ*. 2021;372:n71. 6. Shakhatreh L, et al. *Epilepsia*. 2023;64(7):1709-1721. 7. Cramer JA, et al. *Epilepsia*. 1996;39(1):81-88.

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OBJECTIVE and METHODS

Objective

- To identify and weight the determinants of HRQoL among patients with focal epilepsy via a systematic literature review

Methods

- The SLR was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines as summarized in **Table 1**⁵
- An electronic search was conducted across Google Scholar and PubMed to identify articles that reported on the association between HRQoL, employment status, and a range of demographic, psychosocial, and epilepsy-related factors and medical comorbidities in patients with focal epilepsy
- Studies were included based upon predetermined criteria (**Table 1**); and consensus screening by two independent reviewers

Table 1. Details of Systematic Literature Review Methodology

Research question	What are the determinants of HRQoL in patients with focal epilepsy?
Databases	► PubMed and Google Scholar
Timeframe	► Full text articles and reviews: January 1, 1900, to February 19, 2023
Inclusion criteria (PICOS criteria followed)	<ul style="list-style-type: none"> ► (P) Patients diagnosed with focal epilepsy, all ages ► (I) Both interventional and non-interventional studies were considered ► (O) Study assessed the HRQoL or disease burden in this population or in their caregivers ► (S) All study designs were evaluated; however, only studies that quantified data via multivariate models (e.g., reporting β-values, adjusted R², magnitude of variance) or univariate analyses (e.g., reporting Pearson or Spearman's correlations, Kendall's Tau statistic) were included
Exclusion criteria	<ul style="list-style-type: none"> ► Studies that only included comparative descriptive data (t-test, Mann-Whitney U Test) ► Not available in English language ► Grouped focal epilepsy data with generalized epilepsy data without distinction ► Studies evaluating changes in HRQoL after resective surgery (comprehensive SLR on this topic recently published⁶)
Data extraction	<ul style="list-style-type: none"> ► Data was extracted from studies with measures of HRQoL for patients with focal epilepsy that also included any variable examined as potentially impacting the outcome (e.g., determinants) ► We accepted all significance levels as determined by study authors, noting there was variability in thresholds chosen and whether multiplicity was accounted for; when the threshold was not specified, P<0.05 was considered significant
Publication date	► No limit
Country	► No restriction

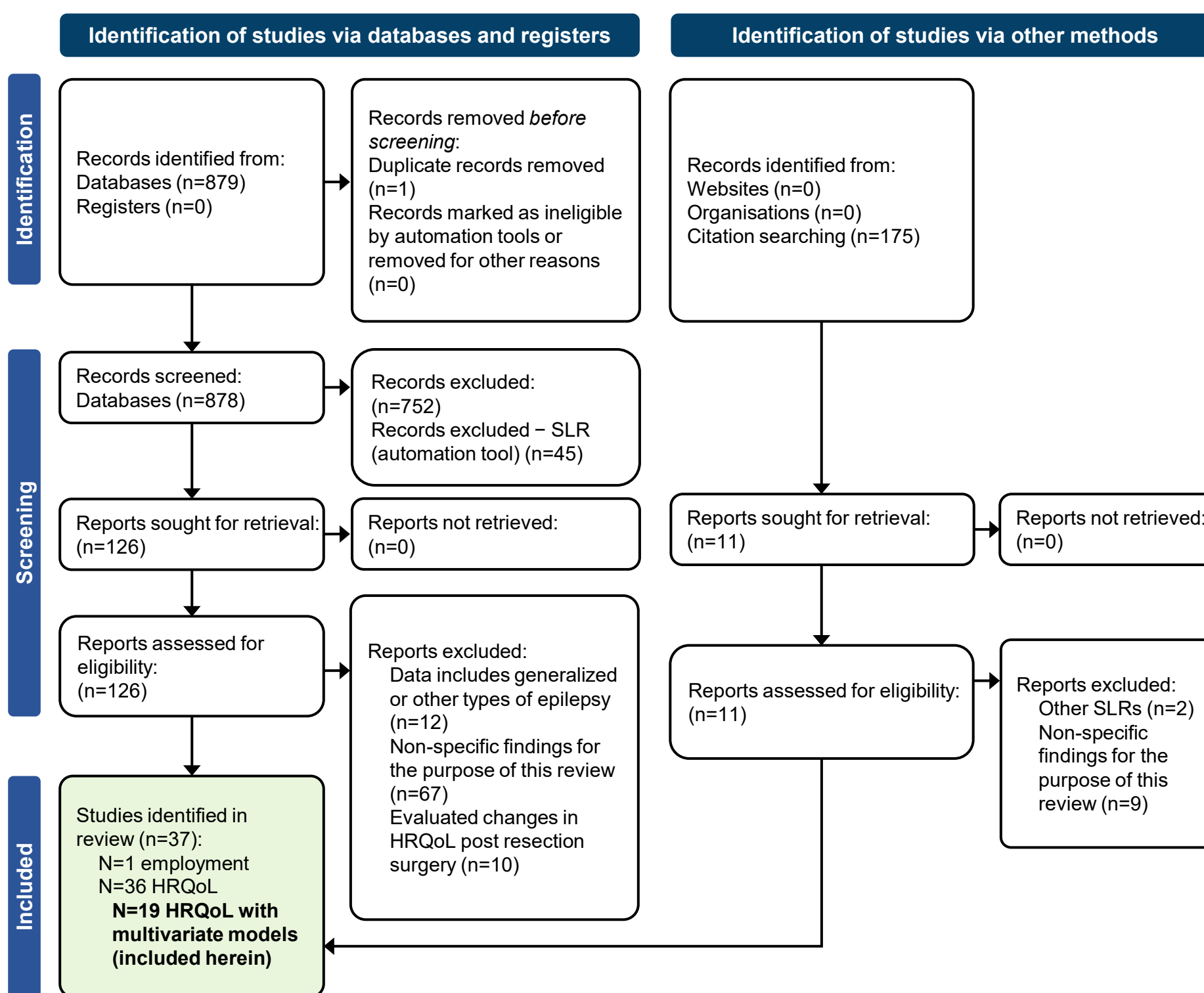
HRQoL, health-related quality of life.

RESULTS

Study Selection

- Of a total of 879 studies retrieved, 37 studies were selected (**Figure 1**)
 - 36 studies examined HRQoL outcomes and 1 study examined impact to employment status
- Of the 36 HRQoL studies examined, over half (n=19, 53%) leveraged multivariate analysis (with or without accompanying univariate data) and the remaining 17 studies (47%) utilized a univariate-only approach
- The reported findings herein were limited to the HRQoL studies leveraging multivariate models of analysis (n=19)
 - Additional analysis was conducted since the time of abstract submission; as a result, the results presented herein reflect a refinement of the data originally presented*

Figure 1. PRISMA Diagram for Study Selection



HRQoL, health-related quality of life; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SLR, systematic literature review.

Overview of Studies

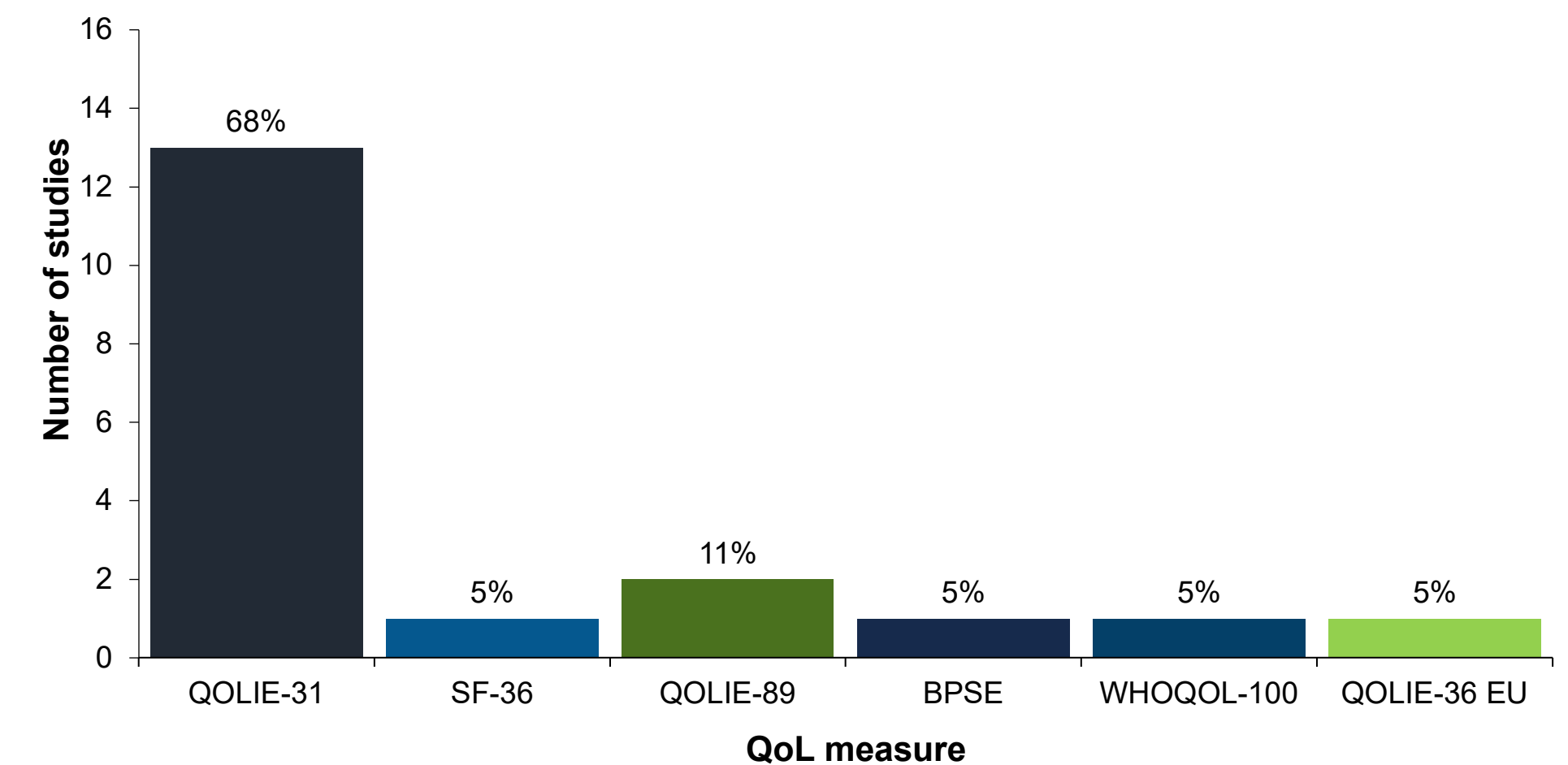
- Of all the selected studies (N=19), the majority were conducted in adults only (n=17)
- Most studies were European based (13/19 [68%]) and the majority of studies used a cross-sectional study design (16/19 [84%])
- The Quality of Life in Epilepsy-31 (QOLIE-31)⁷ was the most frequently used HRQoL measure (13/19 studies [68%]); **Figure 2**
- Temporal lobe epilepsy (TLE) was the most common subset of FE studied

Determinants of HRQoL Decline in Patients With Focal Epilepsy

- The studies examined a wide range of demographic and clinical variables (n=28): demographic factors (sex, age, driving, education, and employment), clinical characteristics (laterality of temporal lobe epilepsy, surgery [yes/no], presence of general tonic-clonic seizures, presence of aura, and having HS), epilepsy-related factors (age of onset, disease duration [positive/negative correlation], seizure frequency and freedom, time between seizures, number of ASMs used, efficacy of ASMs, ASM severity/AE burden), comorbidities (presence of comorbidities, depression, anxiety, and psychiatric disorders), cognition (cognitive function/measures, memory, and intelligence level), and executive function
- Unique issues (n=5) were also explored in individual studies such as sleep, temperament, psychosocial function, religion/spirituality, and patient-perceived change

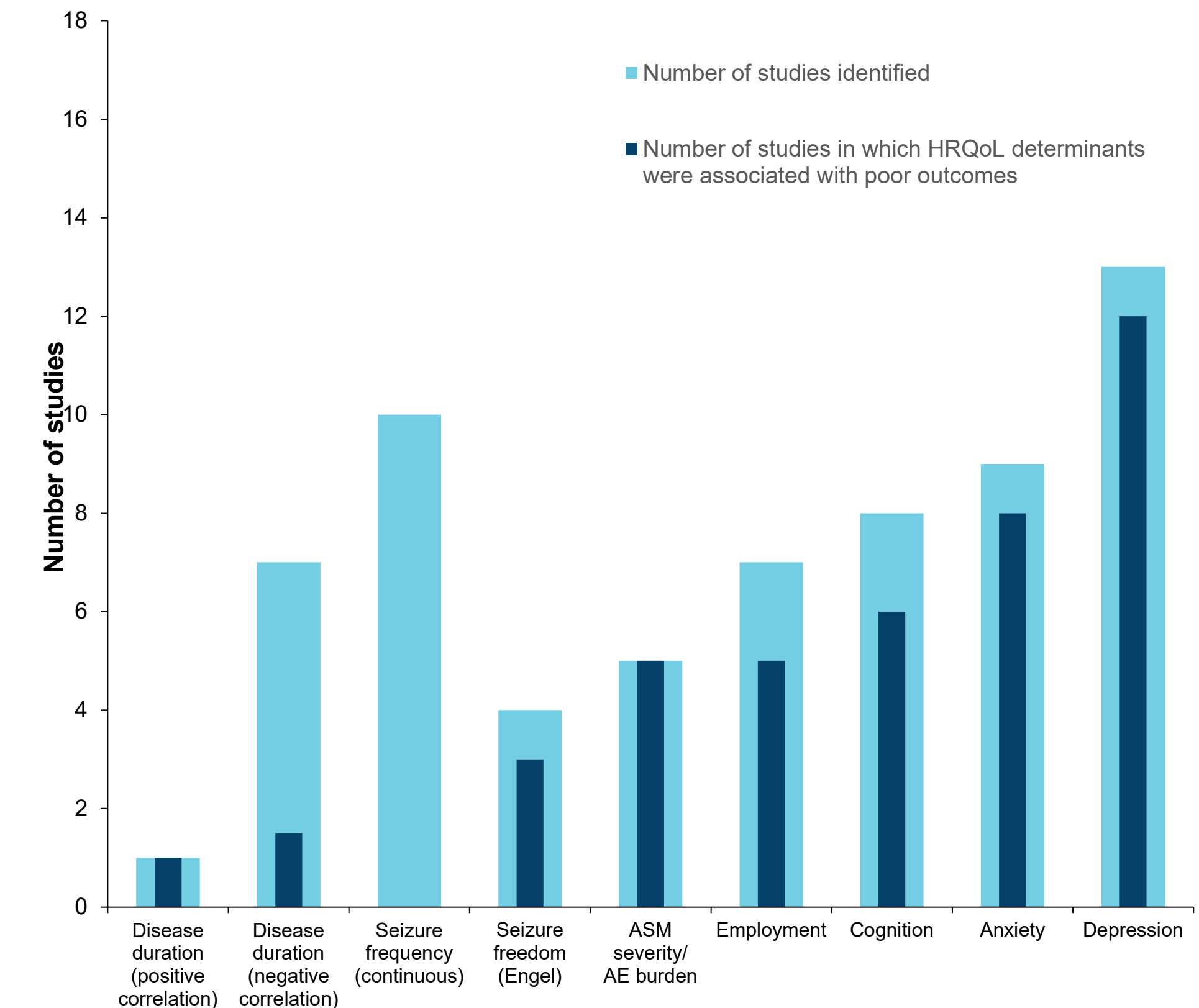
- The most commonly examined variables (in adjusted models) included depression (n=13/19 studies [68%]), number of ASMs (n=11/19 [58%]), seizure frequency (as continuous number; n=10/19 [53%]), anxiety (n=9/19 [47%]), duration of disease (n=8/19, [42%]), and cognition (n=8/19 [42%]) (**Figure 3**)
 - Depression, anxiety, and cognition were significant contributors to HRQoL when these were studied (12/13 [92%], 8/9 [89%], and 6/8 [75%], respectively)
 - In addition, several less frequent but impactful determinants of HRQoL were identified in adjusted models including ASM severity/AE burden (5/5 studies), attainment of seizure freedom (dichotomized by Engel class I [absence] vs II, III, and IV [presence]; 3/4 studies), and employment (5/7 studies)

Figure 2. Most Commonly Used HRQoL Measurements



BPSE, Bonner Psychosoziale Skalen für Epilepsie; HRQoL, health-related quality of life; QOLIE-31, Quality of Life in Epilepsy Inventory 31; QOLIE-36 EU, Quality of Life in Epilepsy Inventory 36 European Union; QOLIE-89, Quality of Life in Epilepsy Inventory 89; SF-36, 36-Item Short Form Survey; WHOQOL-100, The World Health Organization Quality of Life.

Figure 3. Impactful Determinants Often Studied and/or Determinants Less Often Studied but Commonly Associated With Poor HRQoL in Patients With Focal Epilepsy



AE, adverse event; ASM, anti-seizure medication; HRQoL, health-related quality of life.
^a Includes 1 study where psychosocial adjustment (which included employment as one component) was associated with HRQoL.
^b Cognition includes cognitive function/measures, memory, and executive function.