

Meta-Analysis of Quality of Life Among Patients With Hepatitis C With or Without Sustained Virological Response

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Conclusion

- Patients with hepatitis C virus who achieved sustained virologic response reported better quality of life across physical, mental, and hepatitis-specific domains
- These findings highlight sustained virologic response as a key determinant of improved patient well-being and underscore the importance of treatment strategies that maximize virologic clearance

Plain Language Summary

- This systematic literature review identified 120 studies to understand how treating hepatitis C affects patients' daily lives
- Nine similar studies met the eligibility criteria for meta-analysis, which compared patients whose treatment cleared the virus with those whose treatment did not
- Patients whose virus was not cleared by the treatment reported feeling worse across many areas of life, including physical health, energy levels, emotional well-being, and hepatitis-related symptoms
- These differences were large enough to be considered clinically meaningful by patients and clinicians, particularly in the physical health and hepatitis-specific distress domains
- Clinically meaningful differences (≥5 points) were observed in general health and hepatitis-related health distress domains
- Overall, among the treated patients, clearance of the virus was associated with better physical, mental, and hepatitis-specific quality of life, underscoring the critical role of effective antiviral therapy in improving patient-reported outcomes

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Introduction

- Hepatitis C virus (HCV) infection is a major global public health concern characterized by liver inflammation, with nearly 50 million people living with chronic HCV worldwide and about 1.0 million new infections occurring annually^{1,2}
- Infections caused by HCV often progress to chronic liver disease and are associated with serious complications such as cirrhosis and hepatocellular carcinoma³
- Chronic HCV infection has a substantial negative impact on health-related quality of life (HRQoL), and treatments leading to sustained virologic response (SVR) are associated with better symptom control and overall health

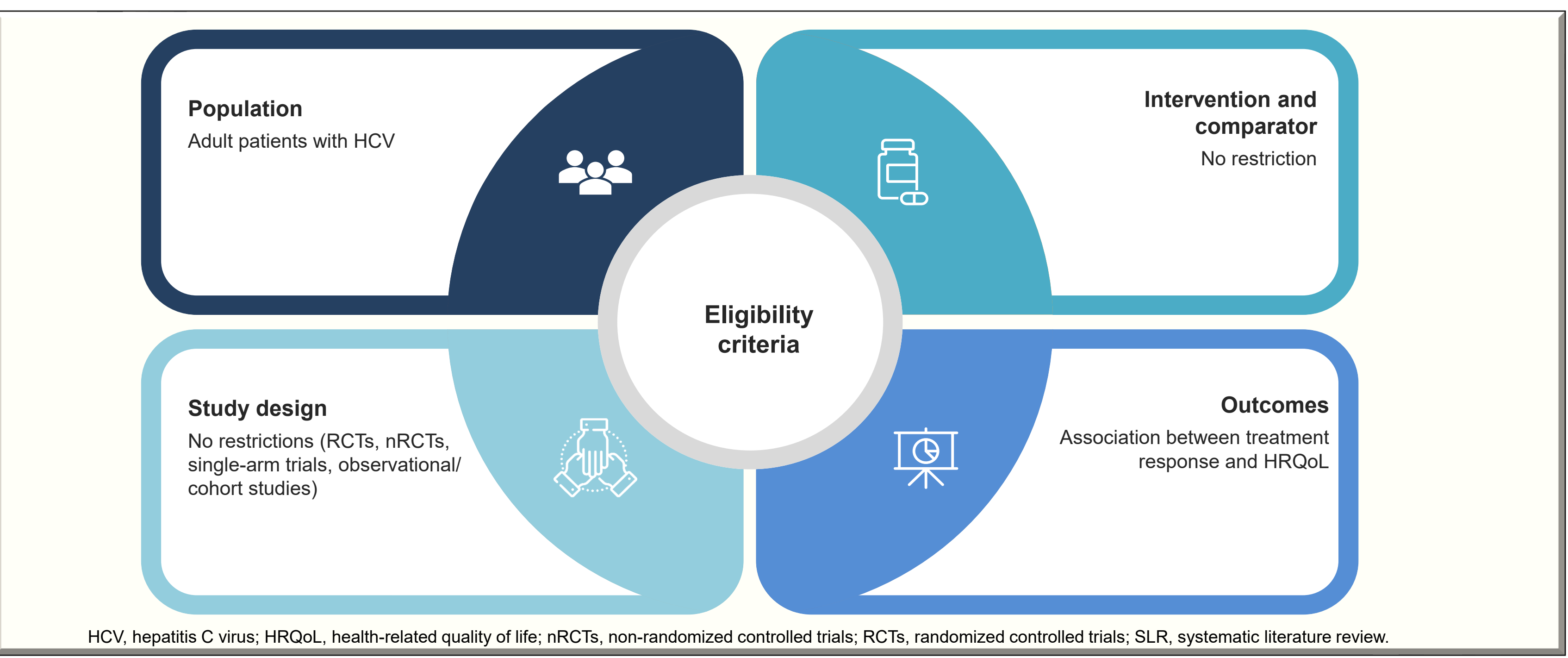
Objective

- To conduct a systematic literature review (SLR) and meta-analysis (MA) evaluating HRQoL differences between patients with HCV infection who achieved SVR and those who did not (non-SVR)

Methodology

- The SLR employed a comprehensive search strategy, combining Emtree subject headings, Medical Subject Headings (MeSH) terms, and free-text keywords to identify relevant studies
- Key biomedical databases, including EMBASE and PubMed, were searched from inception through April 2025 to identify studies reporting HRQoL among patients with HCV who achieved SVR vs non-SVR. The predefined eligibility criteria for study selection are outlined in **Figure 1**

Figure 1. Eligibility Criteria of the SLR and Meta-Analysis

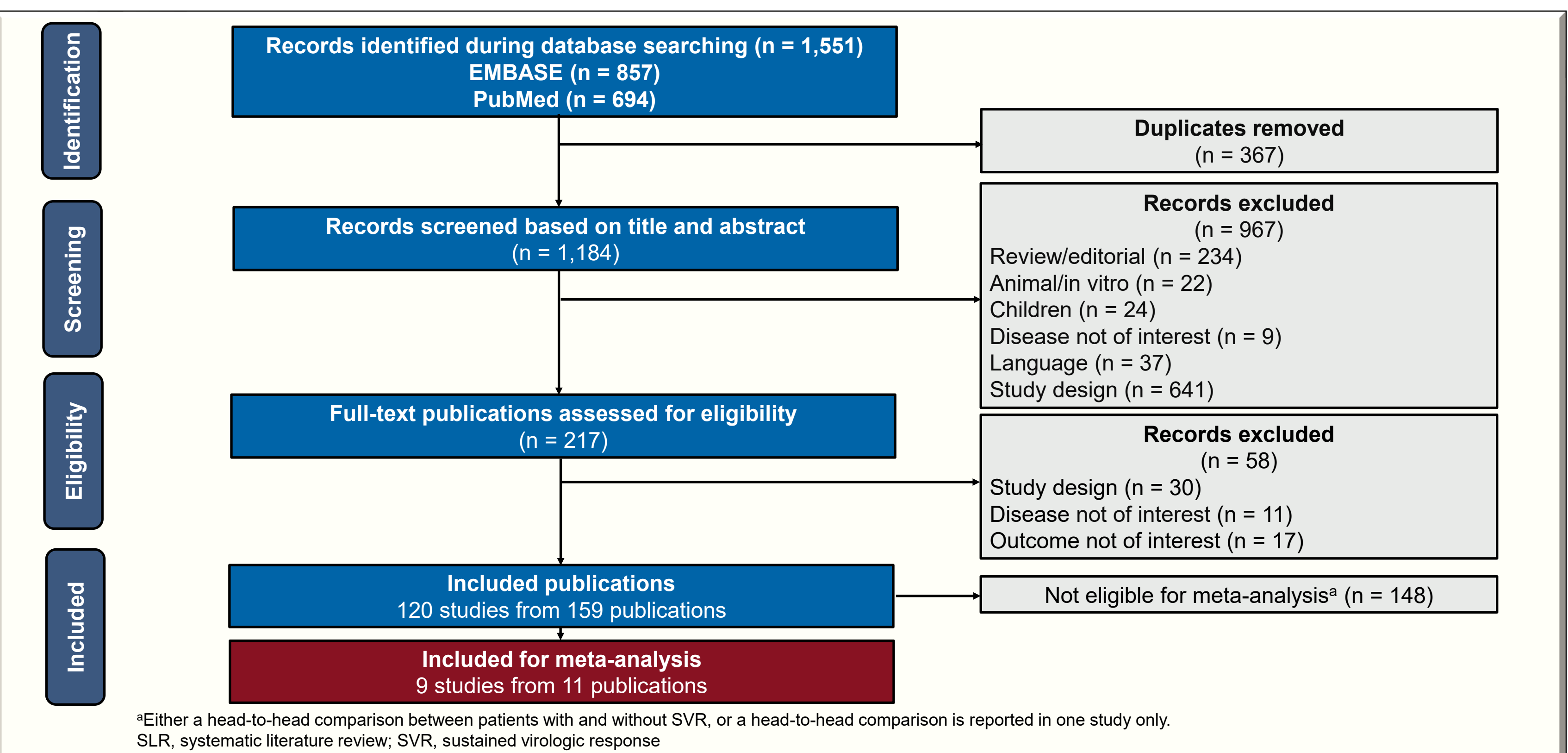


- A two-review and quality control process was followed for data collection and extraction
- Fixed-effects and random-effects models were applied when the number of studies was <5 and ≥5, respectively, to determine the pooled effect estimates, ie, the weighted mean difference from the absolute mean difference or change from baseline using STATA v18.5-SE. Statistical heterogeneity of effect estimates was assessed using the I-squared statistic

Results

- Of 1,551 screened citations, 120 studies investigated the relationship between treatment response and HRQoL, of which nine studies directly comparing HRQoL among SVR and non-SVR groups were eligible for the MA (36-Item Short Form survey [SF-36], n = 7; Hepatitis Quality of Life Questionnaire [HQLQ], n = 2). The Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) diagram describing the flow of citations is presented in **Figure 2**

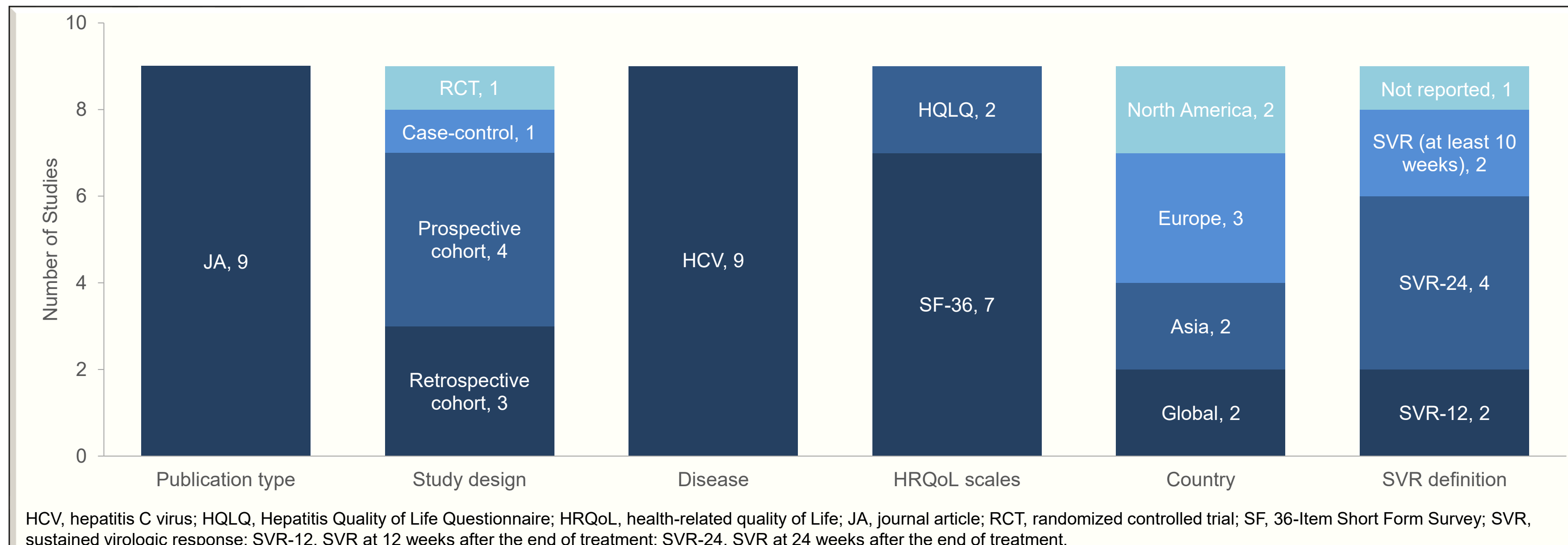
Figure 2. Flow of Studies in the SLR



Results

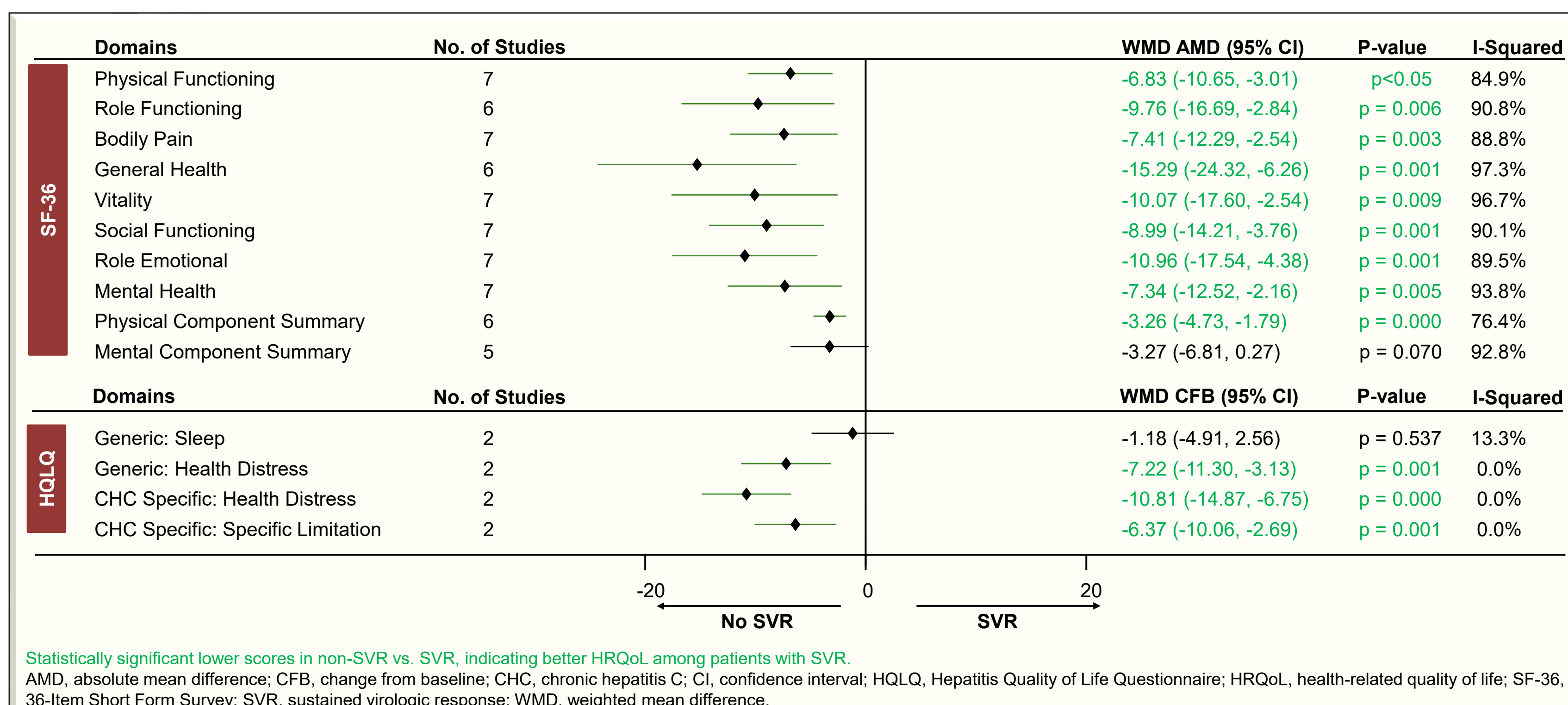
- All nine studies were published in peer-reviewed journals and included an HCV-infected population, with sample sizes ranging from 138 to 10,298 patients. The study design of the majority of studies was cohort (prospective, n = 4; retrospective, n = 3). Most studies assessed SVR at 24 weeks after completion of therapy (n = 4; **Figure 3**)

Figure 3. Study Characteristics



- Treatments evaluated across included studies were interferon + ribavirin (n = 3), interferon ± ribavirin (n = 2), NS3/4A protease inhibitor + interferon + ribavirin (n = 2), direct-acting antivirals ± ribavirin (n = 1), and antiviral drugs (not specified, n = 1)
- Variation in defining SVR was observed across included studies, with the criteria used to define SVR as follows:
 - Undetectable HCV RNA (n = 4)
 - HCV RNA level <15 IU/mL (n = 1)⁴
 - An HCV polymerase chain reaction (PCR) assay result below the limit of detection or viral load ≤50 IU/mL and/or qualitatively negative (n = 1)⁵
 - Negative serum HCV RNA by branched chain signal amplification assay (VERSANT HCV RNA 3.0 Quantitative Assay, Chiron Corporation, Tarrytown, NJ, USA) with a sensitivity of 3,200 copies/mL and reverse transcription-nested PCR with a sensitivity of 100 copies/mL (n = 1)⁶
 - Not defined (n = 2)^{7,8}
- Compared with SVR patients, non-SVR patients had statistically significantly lower scores on all eight SF-36 domains, indicating worse HRQoL. Lower scores on the physical component summary (PCS) and mental component summary domains reflected poor HRQoL among non-SVR patients, with statistical significance achieved only in the PCS domain (**Figure 4**). Statistical heterogeneity was low and high in pooled estimates for HQLQ and SF-36 domains, respectively
- Further, non-SVR patients reported statistically significantly lower scores on hepatitis-specific domains of the HQLQ, such as health distress and limitations, compared with SVR patients, indicating better HRQoL among SVR patients (**Figure 4**)
- Clinically meaningful differences of ≥5 were observed in the SF-36 general health and hepatitis-specific health distress domains

Figure 4. Forest Plot of Meta-Analysis Comparing HRQoL Between Patients Who Achieved SVR vs. Those Who Did Not (non-SVR) Across the SF-36 and HQLQ Domains



Statistically significant lower scores in non-SVR vs. SVR, indicating better HRQoL among patients with SVR. AMD, absolute mean difference; CFB, change from baseline; CHC, chronic hepatitis C; CI, confidence interval; HQLQ, Hepatitis Quality of Life Questionnaire; HRQoL, health-related quality of life; SF-36, 36-Item Short Form Survey; SVR, sustained virologic response; WMD, weighted mean difference.

Limitations

- The limited number of studies contributing to the pooled estimate reduces the overall generalizability of the findings
- Considerable variability across studies in SVR definitions and treatment regimens introduces heterogeneity that may affect the comparability and interpretation of the pooled results