A systematic literature review of health-related quality of life, costs and healthcare resource use in primary biliary cholangitis

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Alex Pashley,[1] Elaine A Böing,[2] Peter Serafini,[2] Emma Worthington[1]

[1]*Costello Medical, Cambridge, UK;* [2]*Ipsen, Cambridge, MA, USA*

Presenting author: Elaine A Böing (elaine.boing@ipsen.com)

Background

- Primary biliary cholangitis (PBC) is a rare autoimmune liver disease characterised by progressive cholestasis and biliary fibrosis.[1]
- Symptoms and complications related to PBC, including pruritus, fatigue, bone ache and the need for help with activities of daily living, can negatively impact patients' health-related quality of life (HRQoL).[2,3]
- PBC has a substantial economic and humanistic impact on healthcare systems and society, with PBC-related conditions associated with high healthcare costs and resource use (CRU).[2,4]

Objective

A systematic literature review (SLR) was conducted to identify HRQoL and healthcare CRU studies in PBC.

Methods

- This SLR was conducted in accordance with guidance outlined by the Cochrane Collaboration,[5] Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[6] and National Institute of Health and Care Excellence (NICE).[7]
- Relevant articles were identified through searches of MEDLINE, EMBASE and the Health Technology Assessment (HTA) Database in November 2022.
- In addition, congress proceedings from 2021–2022 (n=8), HTA/health economic websites (n=19), and SLR and HTA bibliographies were hand searched.
- Articles were eligible for inclusion if the studies covered unselected adult patients with PBC and the outcomes reported were relevant to the objectives.
  - Non-English language studies, studies in children/adolescents, in vitro/animal studies and non-original research studies were excluded.
  - Review of abstracts and full-texts against the pre-defined eligibility criteria was performed by two independent reviewers; a third independent reviewer was consulted where necessary.
  - Data from included studies were extracted into a pre-specified extraction table.
- Critical appraisals of included studies were not conducted, in line with NICE requirements.[7]

Results

Summary of included articles

- Of 2,604 records identified, including 1,480 from database searches and 1,124 from supplementary searches, a large number of studies assessing HRQoL (n=63) and CRU (n=33) were identified (**Supplementary Figure 1**).
  - From this, five HRQoL studies reporting EQ-5D utility data and nine CRU studies reporting data from Europe in the last 10 years were prioritised.

HRQoL studies

- The prioritised HRQoL studies are summarised in **Figure 1** and **Table 1**.
  - PBC was the specific disease focus in two HRQoL studies.
- The majority of studies reported a substantial negative impact of PBC on patients' HRQoL. The key drivers of reduced HRQoL, where reported, were pruritus, fatigue, bone ache, and memory and concentration problems.[2,9–11]
- In one study, mean EQ-5D scores were lower in the overall patient population and in patients following liver transplant versus age/gender-adjusted mean United Kingdom (UK) population scores.[9]

CRU studies

- The prioritised CRU studies are summarised in **Figure 2** and **Table 2**.
  - Ursodeoxycholic acid (UDCA) use was reported in five CRU studies.
- A study from the UK reported that:[2]
  - Patients treated with UDCA incurred on average £989 (95% confidence interval [CI]: £722–£1,257) more in annual health service costs than those who were not, reflecting medication and hospital visit costs.
  - Of PBC-related complications, varices (£2,504; 95% CI: £1,311–£3,696) and hepatic encephalopathy (£823; 95% CI: £148–£1,498) had the greatest annual costs.
- Liver transplants were associated with substantial costs where reported, exceeding cirrhosis and cancer-related costs.[2,15]

CONCLUSIONS

- HRQoL and CRU data captured in this SLR provide insight into the substantial impact of PBC on patients' lives, as well as key inputs for cost-utility analyses, including EQ-5D.
- Data on HRQoL and disutility/utility values can be used to elucidate the potential benefit of investigational PBC treatments for patients and healthcare systems.

Figure 1. Characteristics of included studies reporting HRQoL data (n=5)

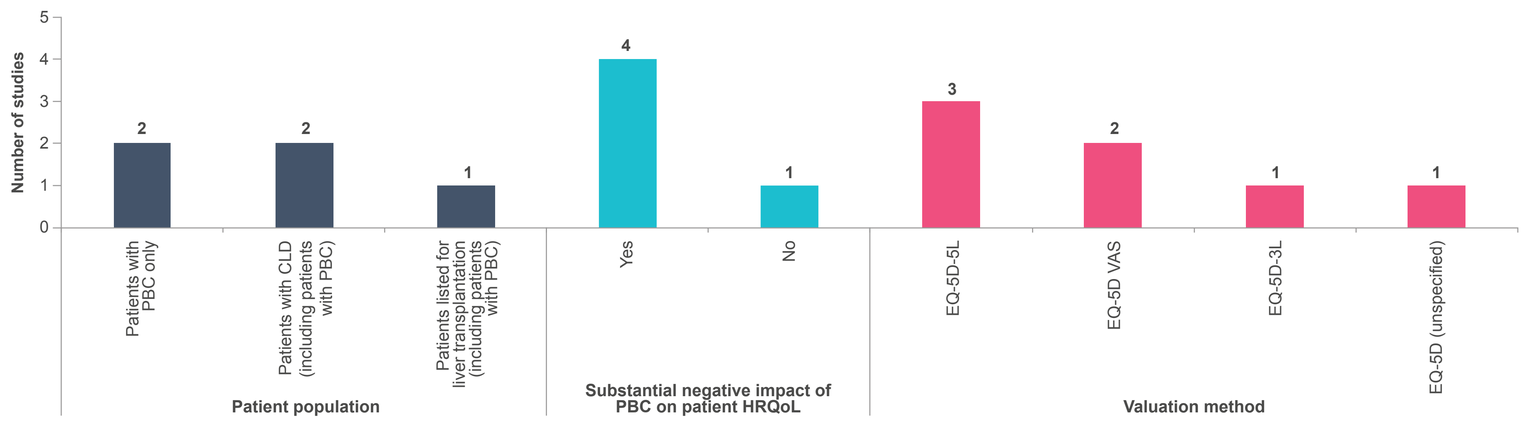

Table 1. Summary of studies reporting HRQoL data

#	Study name	Country	Sample size (number of patients with PBC), N	Health states and AEs	Study conclusion
1	Cortesi 2020[8]	Italy	2,962 (66)	Utility presented for patients with a general PBC state. Utilities not reported for specific AEs	Overall HRQoL status in early stage CLDs was similar to that of the general population
2	Longworth 2003[9]	UK	NR (122)	Patients assessed prior to and post-transplantation	Increase in HRQoL observed post-transplantation for patients with PBC. Mean EQ-5D scores for the patient sample were lower at all time points compared with age/gender-adjusted UK population
3	Rice 2021 (UK-PBC cohort)[2]	UK	1,949 (1,949)	Utility presented for patients with a general PBC state and different combinations of symptoms. Utilities not reported for specific AEs of an intervention	Fatigue, bone ache, and memory and concentration problems had the greatest impact on patient HRQoL. PBC complications had little additional effect on HRQoL
4	Smith 2022[10]	Australia, Canada, France, Germany, Italy, Japan, Poland, Spain, UK, USA	147 (147)	Utility presented for patients with varying severities of pruritus	Pruritus, particularly severe pruritus, had a significant negative impact on HRQoL and health utility
5	Wunsch 2022[11]	Germany, The Netherlands, Poland, UK, and 'other' countries (Austria, Belgium, Denmark, Estonia, France, Ireland, Lithuania, Romania, Spain, Sweden, Switzerland)	1,178 (386)	Utility presented for patients with a general PBC state. Utilities not reported for specific AEs of an intervention	Reported HRQoL was markedly impaired in three liver diseases, particularly in patients with PBC

Figure 2. Characteristics of included studies reporting CRU data (n=9)

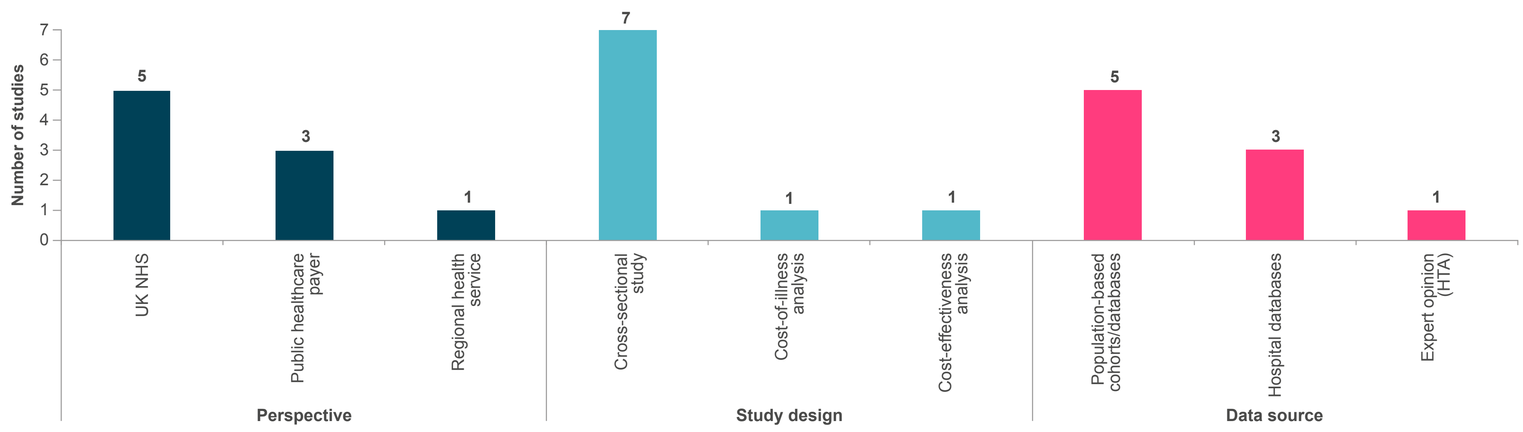

Table 2. Summary of studies reporting CRU data

#	Study name	Country	Valuation methods	Study conclusion
1	Abbas 2022[12]	UK	Cross-sectional study including parameters relating to diagnosis, treatment pathways, symptoms, risk stratification and clinical endpoints	Significant gaps in clinical care across the UK PBC population identified
2	Carbone 2013 (UK-PBC cohort)[13]	UK	Cross-sectional study collecting data on resource use at enrolment	No relevant conclusions drawn related to resource use in PBC
3	Dyson 2016[14]	UK	Valuation of resource use data not reported; key outcome was PBC-40 QoL questionnaire	No relevant conclusions drawn related to resource use in PBC
4	Gerussi 2021[15]	Italy	Cost-of-illness analysis	PBC carries significant direct costs, mainly derived from the management of cirrhosis and the cost of liver transplantation. Education programs aiming to improve the monitoring of PBC patients and referral of cases needing second-line therapies should be implemented
5	González Furelos 2021[16]	Spain	Annual cost per patient calculated from financial data extracted from a hospital management system	OCA has a high cost compared with UDCA monotherapy
6	NICE 2017[17]	UK	Markov transition state model; health state cost and resource use data obtained from a previous NICE submission and expert opinion	No relevant conclusions drawn related to resource use in PBC
7	Rice 2021[2]	UK	PBC-related resource use requested via questionnaires	Fatigue, bone ache, and memory and concentration problems have the greatest impact on patient HRQoL but are associated with low health service costs. PBC complications have little additional effect on HRQoL, but are associated with significant health service costs, except for ascites
8	Sara 2021[18]	Spain	Information obtained from a single hospital Gastrointestinal Department via electronic medical records and the Pharmacy Department management software	OCA has a high cost per patient, but considering the small number of patients requiring it, it accounted for 3% of the pharmaceutical expenditure of the Gastrointestinal Department in 2019
9	Sebode 2020[19]	Germany	Population-based cohort study	Prescribed real-life medication for patients with PBC in Germany deviated from current and former treatment guidelines. Only about 80% of patients with PBC were treated with UDCA. Increasing age was associated with lack of treatment; around 50% of female patients older than 60 years with PBC were treated with UDCA

Abbreviations

AE: adverse event; CI: confidence interval; CLD: chronic liver disease; CRU: costs and resource use; (HR)QoL: (health-related) quality of life; HTA: health technology assessment; HTAD: Health Technology Assessment Database; NHS: National Health Service; NICE: National Institute of Health and Care Excellence; NR: not reported; OCA: obeticholic acid; PBC: primary biliary cholangitis; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SLR: systematic literature review; UDCA: ursodeoxycholic acid; UK: United Kingdom; USA: United States of America; VAS: visual analogue scale.

References

1. Lindor KD *et al.* Hepatol 2019;69:394–419; **2.** Rice S *et al.* Clin Gastroenterol Hepatol 2021;19:768–776; **3.** Selmi C *et al.* Hepatol. 2007;46:1836–1843; **4.** Galoosian A *et al.* Gastroenterol. 2019;156(6):S-1322–S-1323; **5.** Higgins J *et al.* Cochrane Handbook for Systematic Reviews of Interventions. 2019; **6.** Page M *et al.* BMJ 2021;372:n71; **7.** NICE. Process and methods [PMG24]. Last updated: 10 February 2022. Available at https://www.nice.org.uk/process/pmg24/resources/single-technology-appraisal-and-highly-specialised-technologies-evaluation-user-guide-for-company-evidence-submission-appendices-10956190861/chapter/instructions-for-companies. Last accessed: May 2023; **8.** Cortesi PA *et al.* Liver Int 2020;40:2630–2642; **9.** Longworth L *et al.* Liver Transpl 2003;9(12):1295–1307; **10.** Smith H *et al.* J Hepatol 2022;77:S327–S328; **11.** Wunsch E *et al.* Liver Int 2023;43:381–392; **12.** Abbas N *et al.* J Hepatol 2022;21:1561–1570.e13; **13.** Carbone M *et al.* Gastroenterol 2013;144:560–569; **14.** Dyson JK *et al.* Aliment Pharmacol Ther 2016;44:1039–1050; **15.** Gerussi A *et al.* Dig Liver Dis 2021;53:1167–1170; **16.** González Furelos T *et al.* Eur J Clin Pharm 2021;23(4):239–243; **17.** NICE. Obeticholic acid for treating primary biliary cholangitis [TA443]. Published: 26 April 2017. Available at: https://www.nice.org.uk/guidance/ta443/. Last accessed May 2023; **18.** Sara HR *et al.* Eur J Clin Pharm 2021;23(2):83–88; **19.** Sebode M *et al.* Z Gastroenterol 2020;58:431–438.

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