Health State Utility Values (HSUVs) and Health-Related Quality of Life (HRQoL) in People Living with HIV/AIDS (PLWH): A Systematic Literature Review (SLR)

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INTRODUCTION

- The clinical course of disease for patients living with HIV (PLWH) has improved dramatically after the introduction of antiretroviral therapy (ART) over the past 25 years.[1]

- However, PLWH continues to report lower health-related quality of life (HRQoL) compared to the general population, regardless of whether patients live with controlled and stabilized HIV, socioeconomic status, or accessibility to healthcare.[2,3]

- Understanding health state utility values (HSUVs) and HRQoL post-antiretroviral therapy (post-ART) is important to PLWH, the physicians who manage them and policymakers.

OBJECTIVE

- This study aimed to understand the HSUVs, HRQoL in PLWH and to explore the impact of sociodemographic factors

METHODS

- A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist to identify studies meeting the pre-defined eligibility criteria (Table 1).

- Embase, MEDLINE, and MEDLINE In-Process via Embase.com were searched on November 5th 2021, supplemented by hand-searching of conference proceedings published from 2019-2021.

Table 1. Eligibility criteria

Population	Children/adolescents (≥9 to 17 years) and adults (≥18 years) patients with HIV
Study design	Observational studies (retrospective, prospective, and cross-sectional studies)
Outcomes	Utility outcomes measured using • Indirect methods: EuroQol - 5 Dimensions (EQ-5D) (3 and/or 5-level), Health utility index (HUI), Quality of Wellbeing (QWB), Short form-6D (SF-6D), 36-Item Short Form Health Survey Questionnaire (SF-36) • Direct methods: Standard Gamble (SG); Time trade-off (TTO), Visual Analogue Scale (VAS)
Other criteria	• Studies published from 2000 onwards • Sample size: >100 • Language: English • Geography: no restriction

RESULTS

- A total of 5,085 records were identified. After removing duplicates, 4,136 records were screened, from which 66 studies from 75 publications were included in the review (Figure 1).

Figure 1. PRISMA diagram for study selection
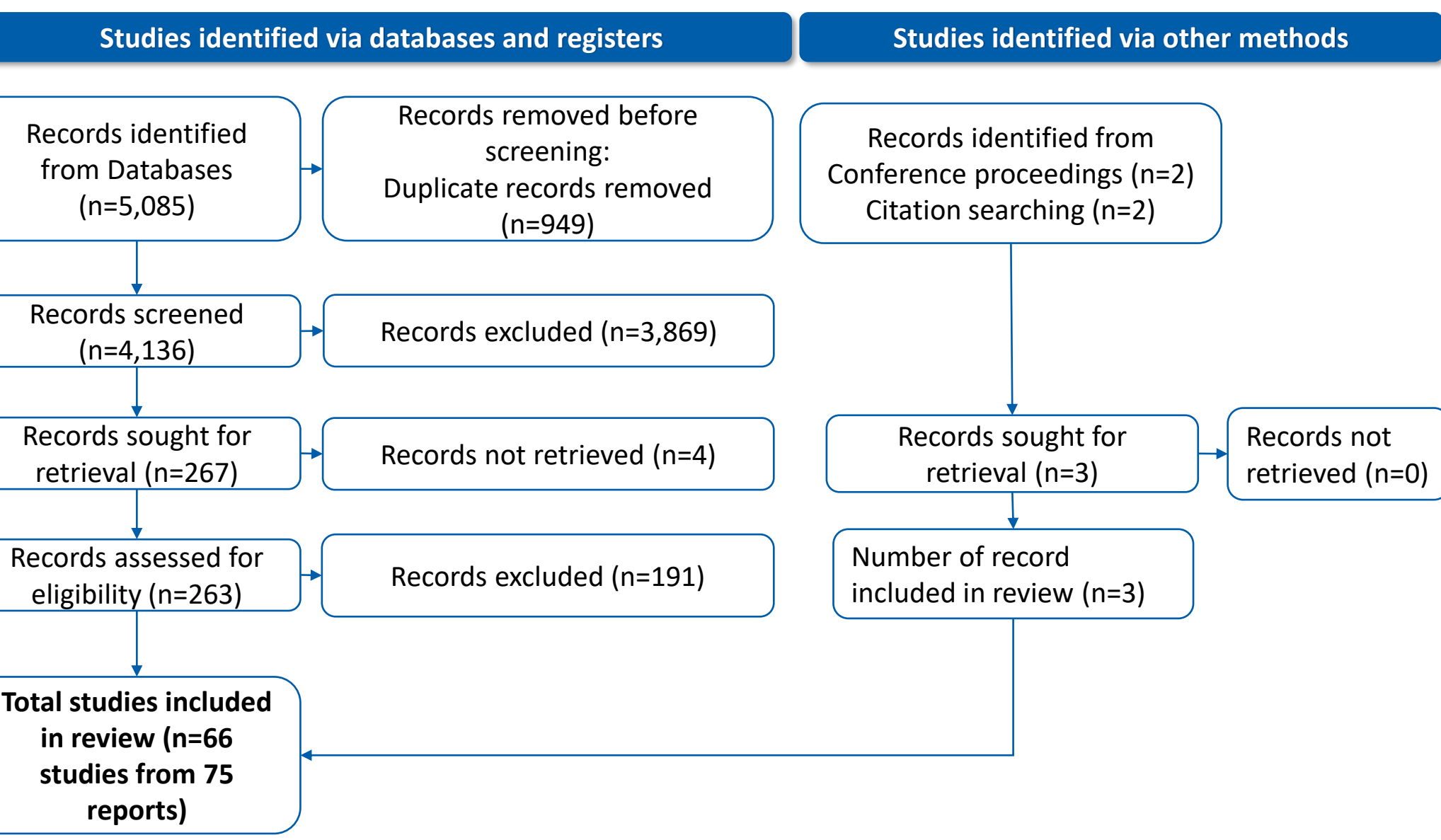
Abbreviations: PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses

STUDY CHARACTERISTICS

- Most studies (n=47) were cross-sectional in design and majority of studies were conducted in Europe (n=18), followed by Asia (n=17), Africa (n=13), North American (n=13), South America (n=4) and multi-regional (n=1).

- EQ-5D (n=37) and SF-36 (n=26) were the most used instrument, whilst SG, SF-6D, and HUI-3 were used in one study each.

- Forty-seven studies reported the utility scores/HRQoL for patients with HIV where the disease was either subcategorized into different or combined disease stages. Whilst, nineteen studies explored the role of age, gender, socioeconomic status, duration of disease and route of transmission to report the patient's utility score.

EQ-5D SCORES

- The EQ-5D scores consist of five dimensions of quality of life and an optional visual analogue scale to self-rate overall health.

- The EQ-VAS and EQ-5D mean scores in high-income countries ranged from 61.7-84.3 and 0.74-0.912, respectively. The EQ-5D mean score was 0.56-0.89 in middle-income countries, while in low-income countries, one study reported a mean of 0.253 and 0.472 according to the UK and Zimbabwean tariffs, respectively and another reported a median of 0.94 (Table 2).

Table 2. EQ-5D scores for PLWH

	Number of studies	Countries	EQ-5D scale	Mean Score
High-income countries	7	Canada; Germany; Spain; UK	EQ-5D-3L	0.74 – 0.912 Median: 0.8
		Spain; UK	EQ-5D-5L	4.51 (on a scale of 5 points) Median: 0.922
		Italy	EQ-5D-NS	0.87
Upper-middle income countries	4	Brazil; Thailand	EQ-5D-3L	0.56 – 0.88
		Colombia	EQ-5D-5L	0.85
Lower-middle income countries*	6	Zimbabwe	EQ-5D-3L	0.77
		Indonesia; Nigeria; Vietnam	EQ-5D-5L	0.65 – 0.89 Median: 1
Low-income countries	2	Malawi	EQ-5D-3L	Zimbabwean tariff: 0.472 UK tariff: 0.253
		Ethiopia	EQ-5D-5L	Median: 0.94

Abbreviations: 3L: 3 levels; 5L: 5 levels; EQ-5D: EuroQol – 5 Dimensions; HIV/AIDS: human immunodeficiency virus/acquired immunodeficiency syndrome; NS: not specified; UK: United Kingdom
* The only study conducted in Pakistan reported a mean EQ-5D score of 0.388 for PLWH
Note: Six studies compared the EQ-5D scores for PLWH vs the general population; all except one reported significantly lower scores for PLWH than the general population, with a mean difference ranging from 0.01-0.08.

- Studies reporting EQ-5D scores according to different sociodemographic factors suggested that old age, female gender, unemployment, lower education and income level are associated with lower utilities. Alternatively, prolonged disease and treatment duration had no impact on utilities (Figure 2).

Figure 2. Mean EQ-5D utility index score range in PLWH for different sociodemographic factors

Mean EQ-5D utility index ranged from 0 to 1 with higher scores corresponding to better HRQoL

SF-36 SCORES

- The SF-36 questionnaire is a generic tool which relies on patient self-reporting. In 15 studies that used the SF-36 questionnaire, the mean range for the physical component score (PCS) was 41.8-71.11 in high-/middle-income countries and 75.1-81.51 in low-income countries.

- SF-36 mean range for the mental component score (MCS) was 43.1-63.8 in high-/middle-income countries and 73.19-81.56 in low-income countries.

- SF-36 scores were also lower in patients with HIV compared to general population.

- SF-36 scores according to different sociodemographic factors suggest that being employed, educated and having higher household income are associated with better QOL in PLWH, irrespective of the income level of the country (Table 3).
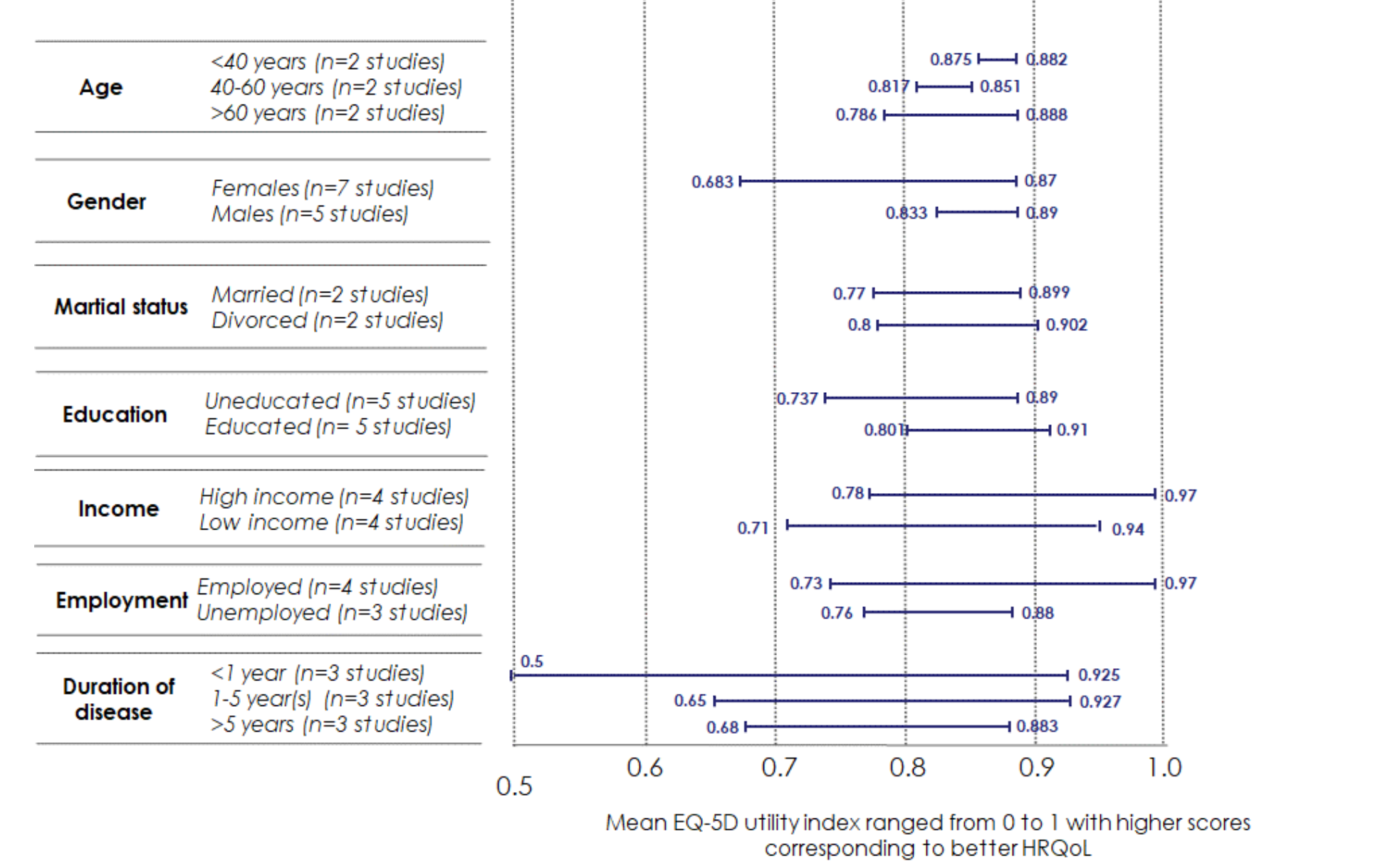
Table 3. Description of summary components of the SF-36 scores in terms of the mean for different sociodemographic factors among PLWH

	Study population	Number of studies	Country or countries	PCS (Mean)	MCS (Mean)
HIC	Overall	9	Canada; Germany; the Netherlands; USA	41.8 – 57.45	43.1 – 63.28
	Gender	4	Germany; France; USA	Males: 43.0 – 51.2 Females: 45.7 – 48.6	Males: 45.7 – 49.1 Females: 43.0 – 44.0
	Age	2	Germany; UK and Ireland	>50 years: 45.7 – 75.9	>50 years: 43.0 – 75.9
	Socioeconomic status				
	Marital status	1	Germany	Married/relationship: 46.6 Unmarried/divorced/widowed: 45.3	Married/relationship: 46.3 Unmarried/divorced/widowed: 43.8
	Education	1	Germany	University/college: 51.7 No education: 44.5	University/college: 46.7 No education: 42.8
UMIC	Overall	2	China	59.9 – 71.11	56.9 – 63.8
	Gender	2	China; Brazil	Males: 52.3 – 67.2 Females: 49.4 – 63.5	Males: 47.9 – 62.3 Females: 43.4 – 58.3
	Duration of HIV/AID0S	1	South Africa	After 4 months of ART: 53	After 4 months of ART: 51
	Socioeconomic status				
	Marital status	1	China	Married/relationship: 66.8 Unmarried/divorced/widowed: 59.1	Married/relationship: 62.6 Unmarried/divorced/widowed: 55.5
	Income	1	China	<1000 Yuan: 59.9 1000-2000 Yuan: 69.7 >2000 Yuan: 74.9	<1000 Yuan: 58.2 1000-2000 Yuan: 63.5 >2000 Yuan: 67.1
	Employment	1	China	Student/housework/unemployed: 59.4 Peasant/herder/fisherman: 71.6 Informal employees: 71.7 Formal employees: 68.5	Student/housework/unemployed: 57.3 Peasant/herder/fisherman: 65.1 Informal employees: 65.7 Formal employees: 63.4
	Education	1	China	Primary/middle school: 63.2 High school: 67.4 Junior college and higher: 71.3	Primary/middle school: 60.2 High school: 62.6 Junior college and higher: 64.9
	Infection via different routes of transmission	1	China	IDU: 49.8 Heterosexual: 67.1 LGBTQ contact: 69.9	IDU: 49.3 Heterosexual: 62.2 LGBTQ contact: 63.8
LMIC	Overall	2	Indonesia; Iran¶	47.5	48.4
LIC	Overall	2	Ethiopia; Malawi	75.1 – 81.51	73.19 – 81.56
	Gender	2	Burkina Faso; Ethiopia	Males: 60.1 – 81.2 Females: 60.0 – 77.1	Males: 43.8 – 76.2 Females: 43.0 – 73.6
	Age	1	Ethiopia	≤35 years: 79.1 >35 years: 78.2	≤35 years: 74.1 >35 years: 76.3
	Duration of HIV/AIDS	1	Burkina Faso	Baseline: 45.4 After 12 months: 60	Baseline: 42.2 After 12 months: 43.9
	Socioeconomic status				
	Marital status	1	Ethiopia	Married/relationship: 82.8 Unmarried/divorced/widowed: 79.2	Married/relationship: 78.0 Unmarried/divorced/widowed: 75.2
	Employment	1	Ethiopia	Employed: 80.9 Unemployed: 76.7	Employed: 77.4 Unemployed: 73.4
	Education	1	Ethiopia	Secondary school education: 72.54 No education: 75.16	Secondary school education: 79.69 No education: 75.16

Abbreviations: HIC: high-income countries; HIV/AIDS: human immunodeficiency virus/acquired immunodeficiency syndrome; IDU: intravenous drug use; LIC: low-income countries; LGBTQ: lesbian, gay, bisexual, transgender, queer; LMIC: lower middle-income countries; MCS: mental component score; PCS: physical component score; UK: United Kingdom; UMIC: upper middle-income countries USA: United States of America
¶Study from Iran only reported a total score of 94.85

CONCLUSIONS

- The HRQoL was mainly influenced by the patients' age, gender, household income, education, and employment status. Most published evidence reported that patients with HIV had reduced QoL compared to the general population, irrespective of the country's income status. Despite clinically meaningful improvement associated with ART launch, the enduring poor QOL in PLWHA emphasizes the importance of further development and evaluation of therapeutic and preventive HIV-related intervention to improve the patients' well-being.

- Previously published reviews of the same domain provided data until 2013. However, this review provides the current utility data and generic HRQoL of patients with HIV across the globe during the ART era that can help clinicians and policy modelers improve the patients' quality of life.

- There is a large variability in the utility values due to differences in study cohort and country, which make it challenging to compare QoL across regions or countries. However, the country-specific evidence of health utility collected in this review will be helpful for country-specific economic evaluations and policy models.

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DISCLOSURES