

Abeer Al Rabayah^{1,2} Sibylle Puntscher², Fatima Al Sayah³, Elly Stolk⁴, Judit Simon⁵, Mike Drummond⁶, Uwe Siebert^{2,7,8}

¹King Hussein Cancer Center, ²Institute of Public Health, Medical Decision Making and Health Technology Assessment, UMIT TIROL - University for Health Sciences and Technology, Hall in Tirol, Austria, ³Alberta PROMs & EQ-5D Research & Support Unit (APERSU), School of Public Health, University of Alberta, Edmonton, AB, Canada, ⁴EuroQol Research Foundation, Rotterdam, Netherland, ⁵Department of Health Economics, Center for Public Health, Medical University of Vienna, Vienna, Austria, ⁶Centre for Health Economics, York, United Kingdom, ⁷ONCOTYROL - Center for Personalized Cancer Medicine, Innsbruck, Austria, ⁸Harvard T.H. Chan School of Public Health and Harvard Medical School, Boston, MA, USA


Objectives

- EQ-5D is the most commonly used preference-based measure for health-related quality of life.
- There is limited evidence about the use of EQ-5D in the Middle East and North Africa (MENA) region.
- This study aimed to systematically review, summarize, and synthesize all published literature on the use of EQ-5D in the MENA region.

Methods










- A systematic literature review was conducted up to December 2022 with open start date. The study was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines¹. (Figure 1)
- Studies using any version of EQ-5D in adults or youth in the MENA region were included. Pilot studies, guidelines, study protocols, reviews were excluded. Four main databases were searched: PubMed, EQ-5D in PubMed Cochrane, PsycINFO, and CINAHL. Language was limited to English, French and Arabic.
- Key aspects of EQ-5D use were tool version study design, clinical area, population type, and reference value set used, mode of administration (MoA) and type of EQ-5D data reported. Title/abstract screening was conducted independently by two reviewers to assess eligibility for inclusion.

Blinded screening (Abstract/title, full text)
Data extraction using standardized form.



The diagram shows a large blue arrow pointing from the left to the right. To the right of the arrow is a green silhouette of a person, representing the researcher or reviewer.



Results

Identification of studies via databases and registers

```

graph LR
    A[Records identified from:  
PubMed (n=8,196)  
Cochrane central (n=3,602)  
CINAHL (n=1,810)  
PsycINFO (n=2,639)  
EQ-5D in PubMed (n=693)] --> B[Records removed before screening:  
Duplicate records removed (n=1,374)]
  
```

Records identified from:
PubMed (n=8,196)
Cochrane central (n=3,602)
CINAHL (n=1,810)
PsycINFO (n=2,639)
EQ-5D in PubMed (n=693)

Records removed *before* screening:
Duplicate records removed (n=1,374)

```

graph LR
    A[Records screened  
(n=15,566)] --> B[Records excluded  
(n=15,400)]
  
```

```
graph TD; A[Reports sought for retrieval  
(n=167)] --> B[Reports not retrieved  
(n=2)];
```

```

graph TD
    A[Reports assessed for eligibility  
(n=165)] --> B[Reports excluded: 48  
Not MENA country  
(n=5), Economic evaluation  
with utility input from]
  
```

	literature (n=1) Data is not reported for MENA countries separately (n=11), Language (n=2), Tool not EQ-5D (n=19), Pilot study (n=2), Abstracts (n=2) Study
--	---

Studies included in review
(n=131)

Reports of included studies
(n=139)

protocol (1), Statistical modelling study (1), Duplicate (n=2), Methods and results not reported (n=2)

Figure 1. PRISMA flow chart (reconstructed)

Identification of studies via other methods

Records identified from:

- Hand searching (n=18)
- Citation (n=4)

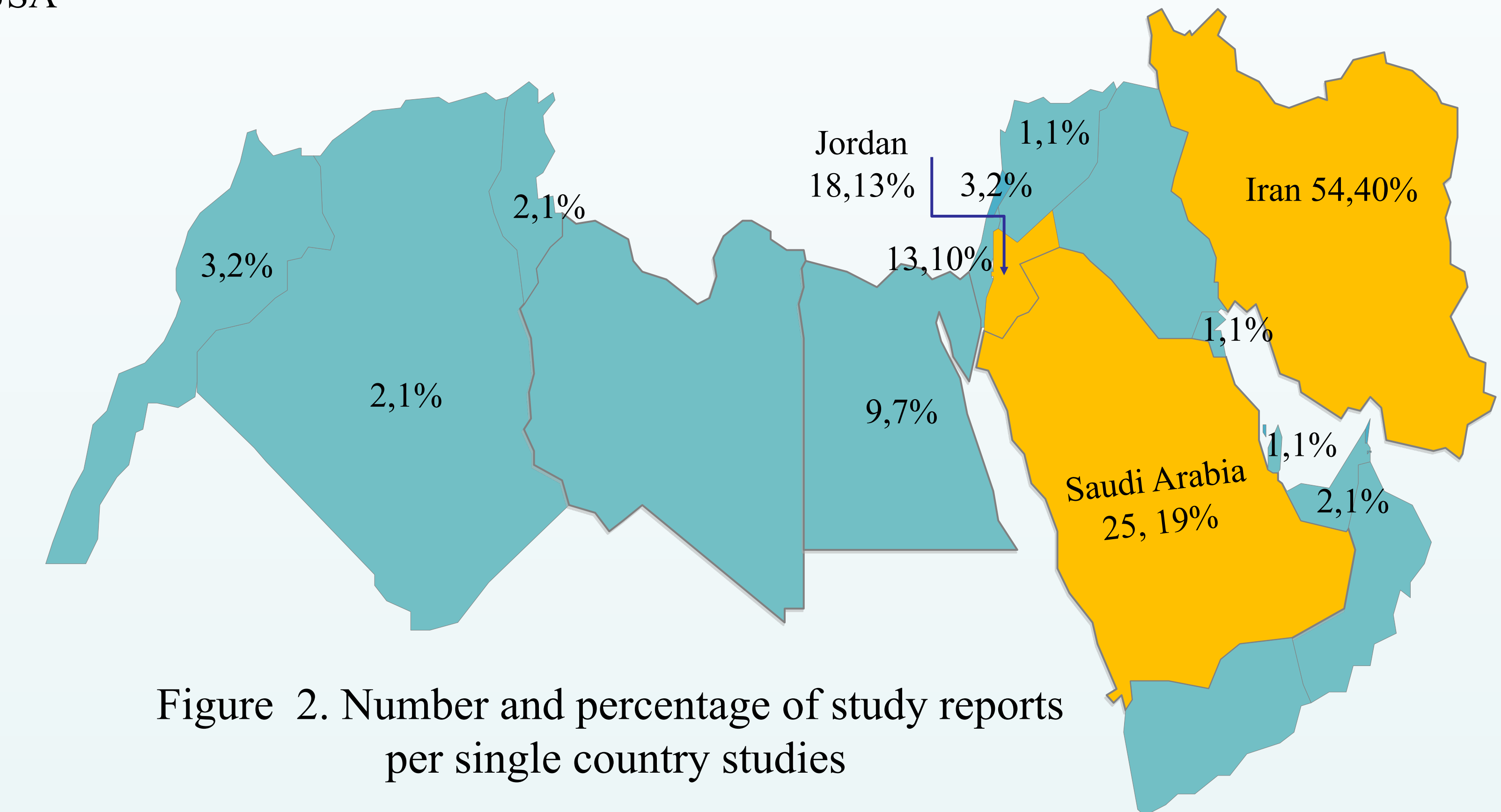
--	--

```
graph TD; A[ ] --> B[Reports sought for retrieval (n=22)]; B --> C[Reports not retrieved (n=0)]; B --> D[ ]; style A fill:none,stroke:none; style D fill:none,stroke:none;
```

```

graph LR
    A[ ] --> B[Reports assessed for eligibility (n=22)]
    B --> C[Reports excluded (n=0)]
    B --> D[ ]
    style A fill:none,stroke:none
    style D fill:none,stroke:none
  
```

the 1990s, the number of people in the United States who are 65 years of age or older has increased by 50 percent, and the number of people 75 years of age or older has increased by 75 percent. The number of people 85 years of age or older has increased by 150 percent. The number of people 95 years of age or older has increased by 300 percent. The number of people 100 years of age or older has increased by 500 percent. The number of people 105 years of age or older has increased by 1,000 percent. The number of people 110 years of age or older has increased by 2,000 percent. The number of people 115 years of age or older has increased by 4,000 percent. The number of people 120 years of age or older has increased by 8,000 percent. The number of people 125 years of age or older has increased by 16,000 percent. The number of people 130 years of age or older has increased by 32,000 percent. The number of people 135 years of age or older has increased by 64,000 percent. The number of people 140 years of age or older has increased by 128,000 percent. The number of people 145 years of age or older has increased by 256,000 percent. The number of people 150 years of age or older has increased by 512,000 percent. The number of people 155 years of age or older has increased by 1,024,000 percent. The number of people 160 years of age or older has increased by 2,048,000 percent. The number of people 165 years of age or older has increased by 4,096,000 percent. The number of people 170 years of age or older has increased by 8,192,000 percent. The number of people 175 years of age or older has increased by 16,384,000 percent. The number of people 180 years of age or older has increased by 32,768,000 percent. The number of people 185 years of age or older has increased by 65,536,000 percent. The number of people 190 years of age or older has increased by 131,072,000 percent. The number of people 195 years of age or older has increased by 262,144,000 percent. The number of people 200 years of age or older has increased by 524,288,000 percent. The number of people 205 years of age or older has increased by 1,048,576,000 percent. The number of people 210 years of age or older has increased by 2,097,152,000 percent. The number of people 215 years of age or older has increased by 4,194,304,000 percent. The number of people 220 years of age or older has increased by 8,388,608,000 percent. The number of people 225 years of age or older has increased by 16,777,216,000 percent. The number of people 230 years of age or older has increased by 33,554,432,000 percent. The number of people 235 years of age or older has increased by 67,108,864,000 percent. The number of people 240 years of age or older has increased by 134,217,728,000 percent. The number of people 245 years of age or older has increased by 268,435,456,000 percent. The number of people 250 years of age or older has increased by 536,870,912,000 percent. The number of people 255 years of age or older has increased by 1,073,741,824,000 percent. The number of people 260 years of age or older has increased by 2,147,483,648,000 percent. The number of people 265 years of age or older has increased by 4,294,967,296,000 percent. The number of people 270 years of age or older has increased by 8,589,934,592,000 percent. The number of people 275 years of age or older has increased by 17,179,869,184,000 percent. The number of people 280 years of age or older has increased by 34,359,738,368,000 percent. The number of people 285 years of age or older has increased by 68,719,476,736,000 percent. The number of people 290 years of age or older has increased by 137,438,953,472,000 percent. The number of people 295 years of age or older has increased by 274,877,906,944,000 percent. The number of people 300 years of age or older has increased by 549,755,813,888,000 percent. The number of people 305 years of age or older has increased by 1,099,511,627,776,000 percent. The number of people 310 years of age or older has increased by 2,199,023,255,552,000 percent. The number of people 315 years of age or older has increased by 4,398,046,511,104,000 percent. The number of people 320 years of age or older has increased by 8,796,093,022,208,000 percent. The number of people 325 years of age or older has increased by 17,592,186,044,416,000 percent. The number of people 330 years of age or older has increased by 35,184,372,088,832,000 percent. The number of people 335 years of age or older has increased by 70,368,744,177,664,000 percent. The number of people 340 years of age or older has increased by 140,737,488,355,328,000 percent. The number of people 345 years of age or older has increased by 281,474,976,710,656,000 percent. The number of people 350 years of age or older has increased by 562,949,953,421,312,000 percent. The number of people 355 years of age or older has increased by 1,125,899,906,842,624,000 percent. The number of people 360 years of age or older has increased by 2,251,799,813,685,248,000 percent. The number of people 365 years of age or older has increased by 4,503,599,627,370,496,000 percent. The number of people 370 years of age or older has increased by 9,007,199,254,740,992,000 percent. The number of people 375 years of age or older has increased by 18,014,398,509,481,984,000 percent. The number of people 380 years of age or older has increased by 36,028,797,018,963,968,000 percent. The number of people 385 years of age or older has increased by 72,057,594,037,927,936,000 percent. The number of people 390 years of age or older has increased by 144,115,188,075,855,872,000 percent. The number of people 395 years of age or older has increased by 288,230,376,151,711,744,000 percent. The number of people 400 years of age or older has increased by 576,460,752,303,423,488,000 percent. The number of people 405 years of age or older has increased by 1,152,921,504,606,846,976,000 percent. The number of people 410 years of age or older has increased by 2,305,843,009,213,693,952,000 percent. The number of people 415 years of age or older has increased by 4,611,686,018,427,387,904,000 percent. The number of people 420 years of age or older has increased by 9,223,372,036,854,775,808,000 percent. The number of people 425 years of age or older has increased by 18,446,744,073,709,551,616,000 percent. The number of people 430 years of age or older has increased by 36,893,488,147,419,103,232,000 percent. The number of people 435 years of age or older has increased by 73,786,976,294,838,206,464,000 percent. The number of people 440 years of age or older has increased by 147,573,952,589,676,412,928,000 percent. The number of people 445 years of age or older has increased by 295,147,905,179,352,825,856,000 percent. The number of people 450 years of age or older has increased by 590,295,810,358,705,651,712,000 percent. The number of people 455 years of age or older has increased by 1,180,591,620,717,411,303,424,000 percent. The number of people 460 years of age or older has increased by 2,361,183,241,434,822,606,848,000 percent. The number of people 465 years of age or older has increased by 4,722,366,482,869,645,213,696,000 percent. The number of people 470 years of age or older has increased by 9,444,732,965,739,290,427,392,000 percent. The number of people 475 years of age or older has increased by 18,889,465,931,478,580,854,784,000 percent. The number of people 480 years of age or older has increased by 37,778,931,862,957,161,709,568,000 percent. The number of people 485 years of age or older has increased by 75,557,863,725,914,323,419,136,000 percent. The number of people 490 years of age or older has increased by 151,115,727,451,828,646,838,272,000 percent. The number of people 495 years of age or older has increased by 302,231,454,903,657,293,676,544,000 percent. The number of people 500 years of age or older has increased by 604,462,909,807,314,587,353,088,000 percent. The number of people 505 years of age or older has increased by 1,208,925,819,614,629,174,706,176,000 percent. The number of people 510 years of age or older has increased by 2,417,851,639,229,258,349,412,352,000 percent. The number of people 515 years of age or older has increased by 4,835,703,278,458,516,698,824,704,000 percent. The number of people 520 years of age or older has increased by 9,671,406,556,917,033,397,649,408,000 percent. The number of people 525 years of age or older has increased by 19,342,813,113,834,066,795,298,816,000 percent. The number of people 530 years of age or older has increased by 38,685,626,227,668,133,590,597,632,000 percent. The number of people 535 years of age or older has increased by 77,371,252,455,336,267,181,195,264,000 percent. The number of people 540 years of age or older has increased by 154,742,504,910,672,534,362,390,528,000 percent. The number of people 545 years of age or older has increased by 309,485,009,821,345,068,724,781,056,000 percent. The number of people 550 years of age or older has increased by 618,970,019,642,690,137,449,562,112,000 percent. The number of people 555 years of age or older has increased by 1,237,940,039,285,380,274,899,124,224,000 percent. The number of people 560 years of age or older has increased by 2,475,880,078,570,760,549,798,248,448,000 percent. The number of people 565 years of age or older has increased by 4,951,760,157,141,521,099,596,496,896,000 percent. The number of people 570 years of age or older has increased by 9,903,520,314,283,042,199,193,993,792,000 percent. The number of people 575 years of age or older has increased by 19,807,040,



- An increased use of EQ-5D in the region was seen starting from year 2020. **58%** of the studies were reported between 2020 and 2022.

- 2020, **38%** of the studies were reported between 2020 and 2021 compared with **42%** from 2011 to 2019.
- **139** studies were included with a total sample size of **64,011** individuals, and, five studies were multicounty studies.
- Main contributors were **Iran** , **Saudi Arabia** , and **Jordan**. (Figure 2)
- Majority of studies (**85%**) focused on patient populations, particularly targeting endocrine diseases (**33%**).
- In only **8%** of studies was EQ-5D used in the context of an economic evaluation.
- Notably, **60%** of all studies adopted an observational study design, with **86%** being cross sectional studies.
- The EQ-5D-3L version (**42%**) surpassed the EQ-5D-5L (**34%**).
- Only **20%** of studies reported dimension-level data, index and VAS scores.
- Funding sources and MoA were not reported in **30%** and **25% of studies**, respectively.

Conclusion

- There is an increased use of EQ-5D in the MENA region, especially after 2019.
- There is a prevalent inclination towards non-economic research applications. However, there is a discernible need for standardization and guidance in reporting EQ-5D study results in this region.