

Is menstrual health under-represented in the Global Burden of Disease?

An exploration of weights for disability-adjusted life years

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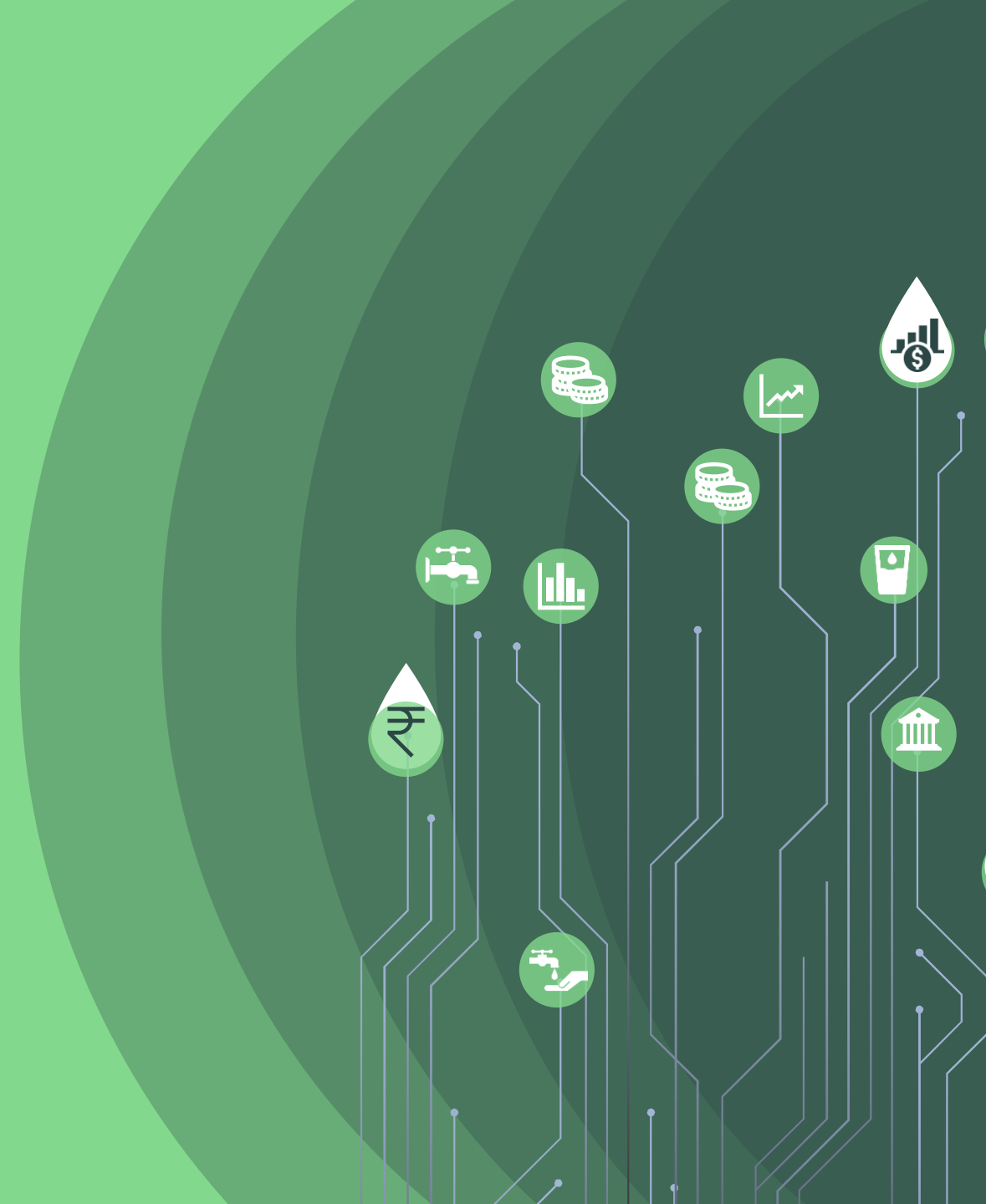
CWAS
CENTER FOR WATER AND SANITATION
CRDF CEPT UNIVERSITY

CEPT
UNIVERSITY
FACULTY OF PLANNING

IFS Institute for Fiscal Studies

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Sequelae are consequences of a condition

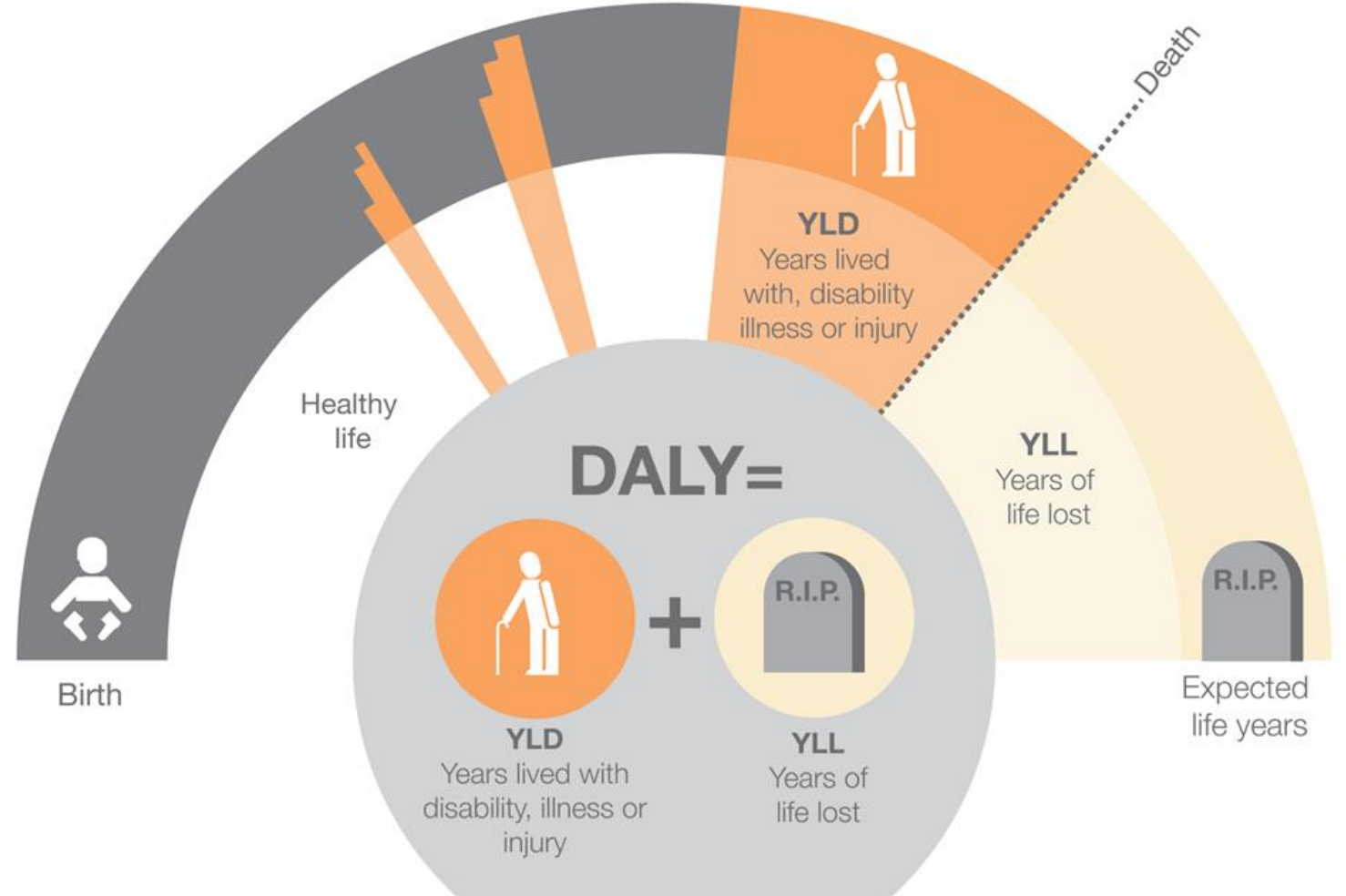
n=2,334 ←^{4x} n=590

Sequela	Health state	Lay description	Disability weight
Mild diarrhea due to schistosomiasis	Diarrhea, mild	has diarrhea three or more times a day with occasional discomfort in the belly.	0.07
Abdominal pain due to premenstrual syndrome	Abdominopelvic problem, mild	has some pain in the belly that causes nausea but does not interfere with daily activities.	0.01

This state applies to 26 sequelae (“generic”)

Disability weights (DWs)

- **DALY framework:** single DW for each health state is applied globally in one “value set”
- **DALYs are a preference-based economic measure**, because DWs are derived from trade-off exercises (Salomon 2015)
- **QALY framework:** value sets are country-specific, but only available for ~30% of countries. Not DWs but “health-related quality of life” (HRQoL) preference weights.



$$\text{DALY} = \text{YLD} + \text{YLL}$$

Menstrual Health

- 1.9 billion people menstruate
- Menstrual health (MH) = "complete physical, mental, and social well-being ... in relation to the menstrual cycle" (Hennegan et al., 2021).
- MH comprises many conditions/outcomes. Some are covered in GBD (e.g. PMS), but not MH as overall category → DALY burden unquantified
- **Extent to which MH is captured in GBD is unclear.**



Some highly prevalent menstrual health conditions

Condition	Description	Estimated prevalence in adult females globally
Primary dysmenorrhea (PD)	Abdominal pain, often with back pain, nausea, fatigue	45-75% (mild, moderate, severe)
Premenstrual syndrome (PMS)	bloating, headache, mood swings, breast tenderness, (+ anxiety/depression = PMDD)	25-45%
Heavy menstrual bleeding	total flow >80ml/cycle or lasting >7 days	20%

Pain **during** menstruation in the absence of pelvic pathology

Physical, emotional, and behavioural symptoms occurring **1–2 weeks before** menstruation

High prevalence → big impact of small changes in DWs

Aim and objectives

- **Aim:** to explore what proportion of MH-related outcomes were included in GBD 2023 and the extent to which primary dysmenorrhea (as an indicator condition) might be under-valued.
- **Objective 1:** to categorise health/social outcomes associated with MH in a framework allowing mapping to GBD sequelae;
- **Objective 2:** to establish which MH outcomes in the framework are captured in GBD 2023;
- **Objective 3:** to estimate average HRQoL amongst women with primary dysmenorrhea, using meta-analysis. Compare this average to disability weights in GBD 2023.

Objective 1 methods - three-step approach

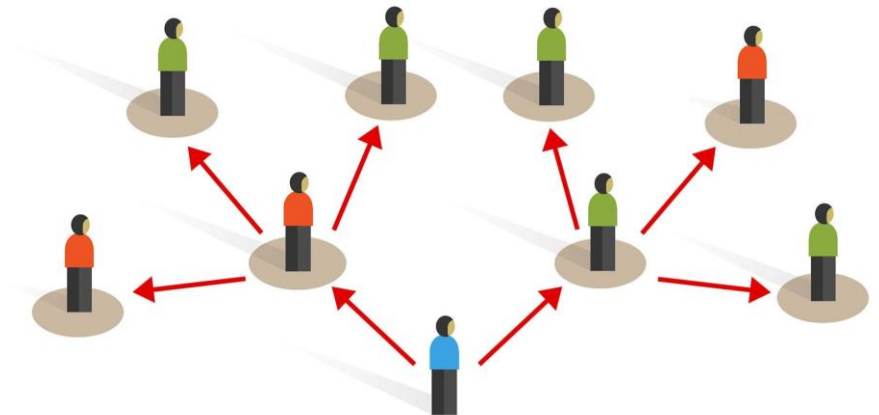
1. Define scope of MH for sequelae:

- Include if menstrual health outcome as a primary symptom of a condition (e.g. PD).
- Excluded if gynaecological condition with secondary MH consequences (e.g. endometriosis).

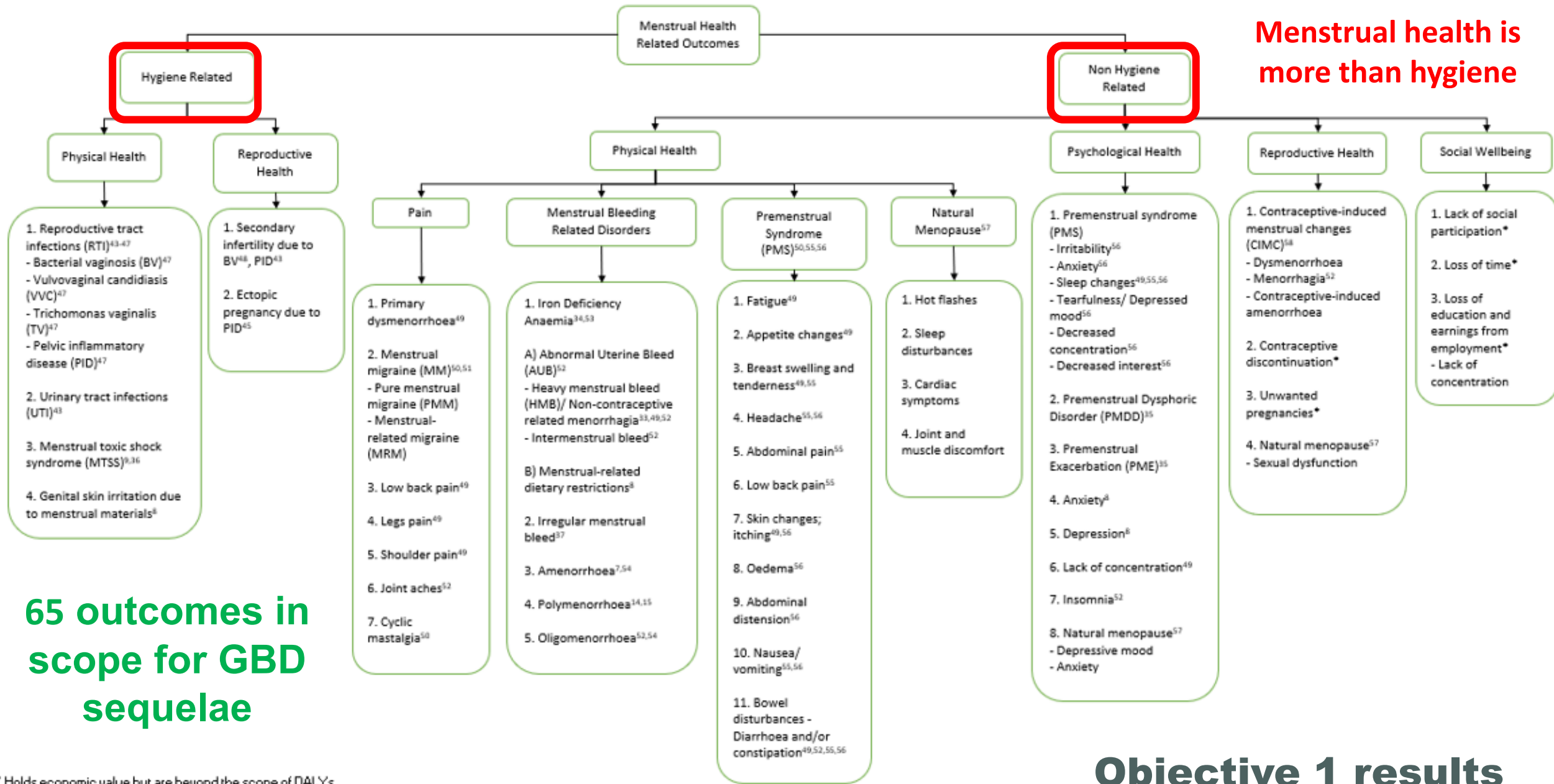
2. Snowball approach: started from 6 articles,

3. Framework development: merged and expanded themes from these articles to form a thematic framework.

quickness



Menstrual health is more than hygiene



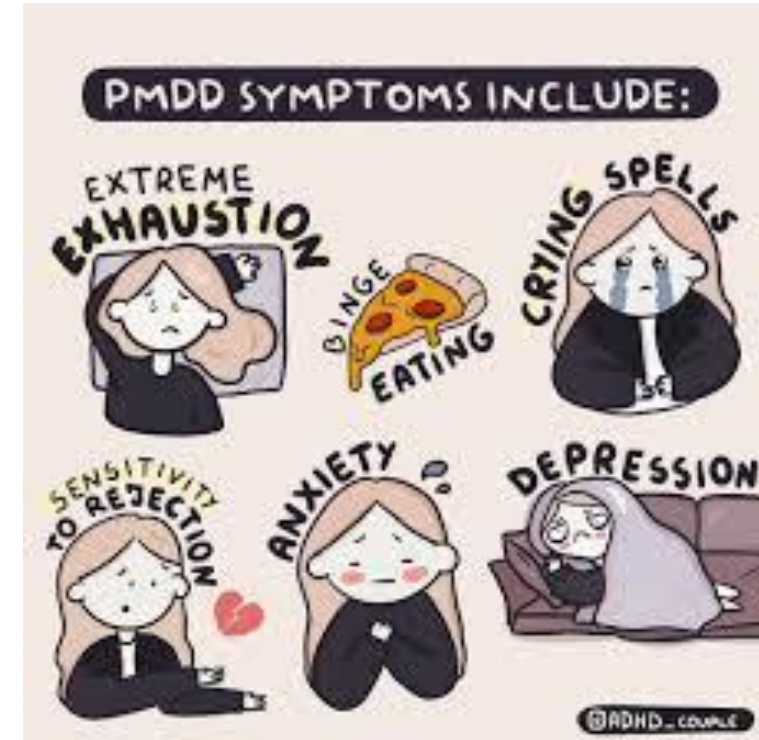
65 outcomes in scope for GBD sequelae

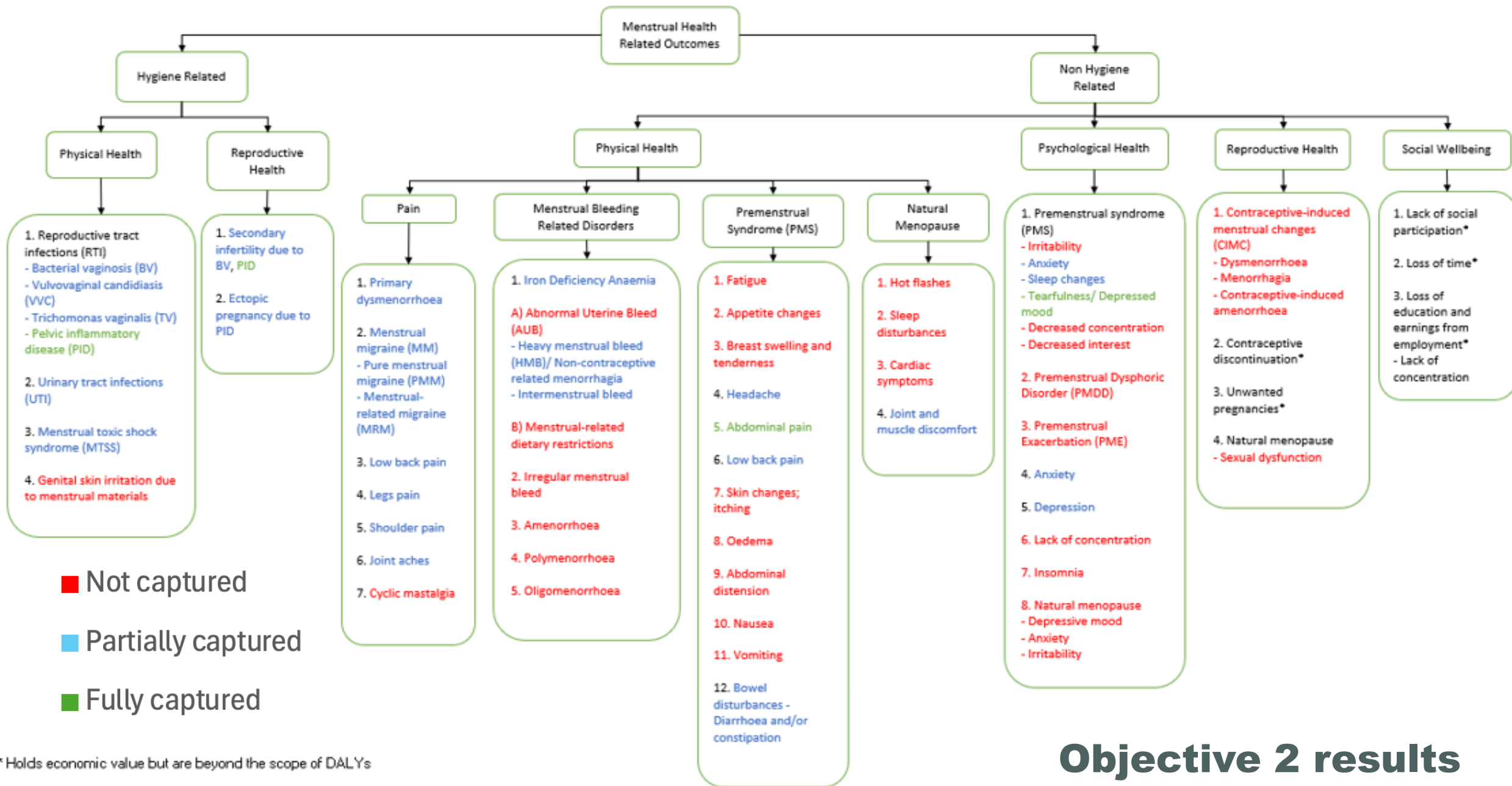
Objective 1 results

* Holds economic value but are beyond the scope of DALYs

Objective 2 methods

1. Mapped outcomes in our framework against the 2,334 sequelae in GBD 2023
2. Define as “fully” captured if condition and cause included in sequela or state. “Partially” captured if 1/2.
 - e.g. “depression due to PMS” (PMDD) fully captured
 - Toxic shock syndrome partially captured under “menstrual disorders without anaemia” (zero DW)
3. For captured outcomes, assess whether health state:
 - generic (applied to >1 sequela)
 - specific (only for that MH sequela)





■ Not captured

■ Partially captured

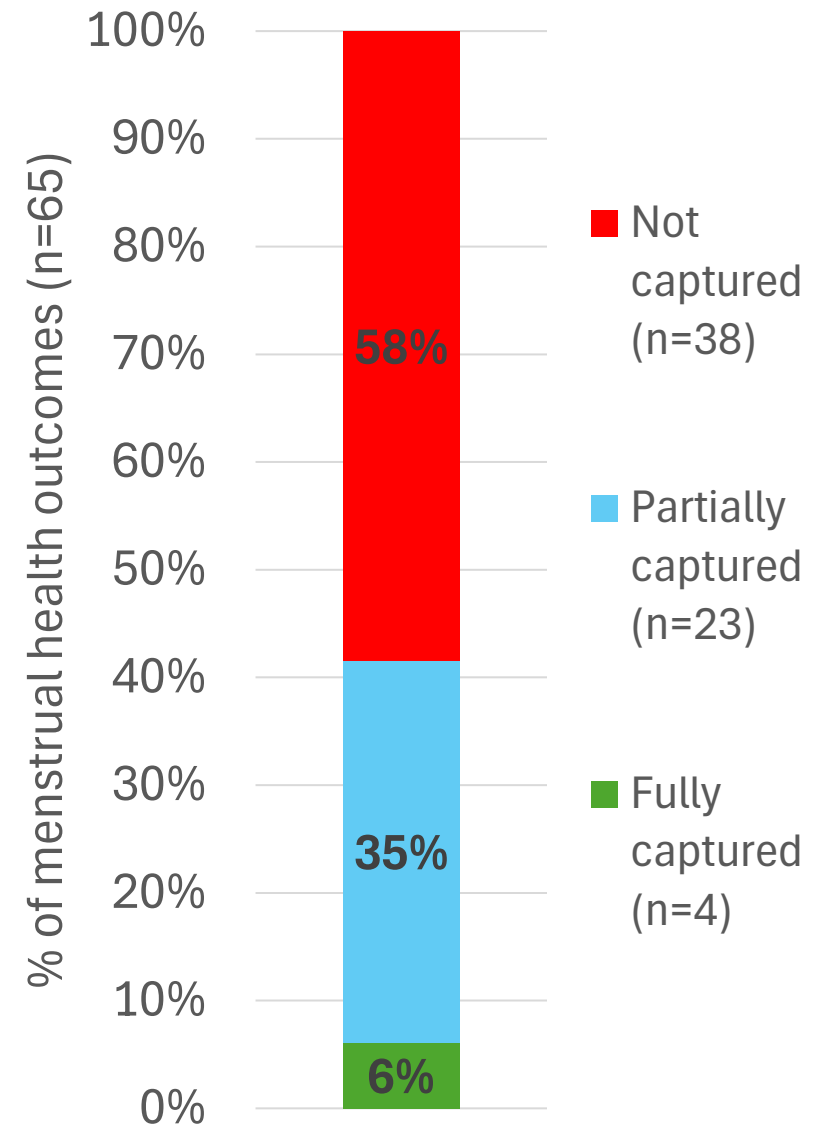
■ Fully captured

* Holds economic value but are beyond the scope of DALYs

Objective 2 results

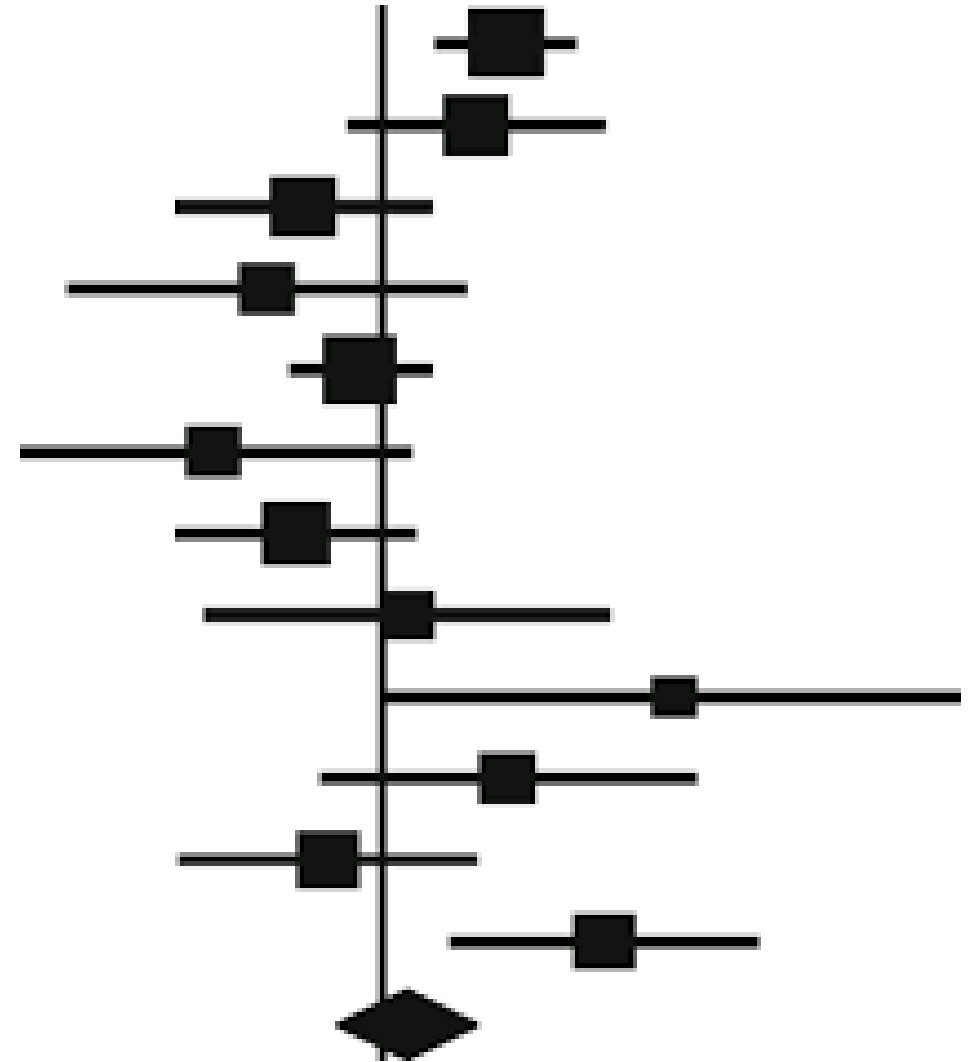
Objective 2 results

- More than half of outcomes not captured
- Of the 42% which are, almost all are “partially” rather than “completely” captured
- Focusing on primary dysmenorrhoea (PD), how it captured is unclear. Three possible explanations:
 1. elided with PMS as “abdominal pain due to PMS” since pain not a classic PMS symptom
 2. Subsumed under “mild other gynecological disorders” (same DW as PMS in any case).
 3. Excluded entirely.



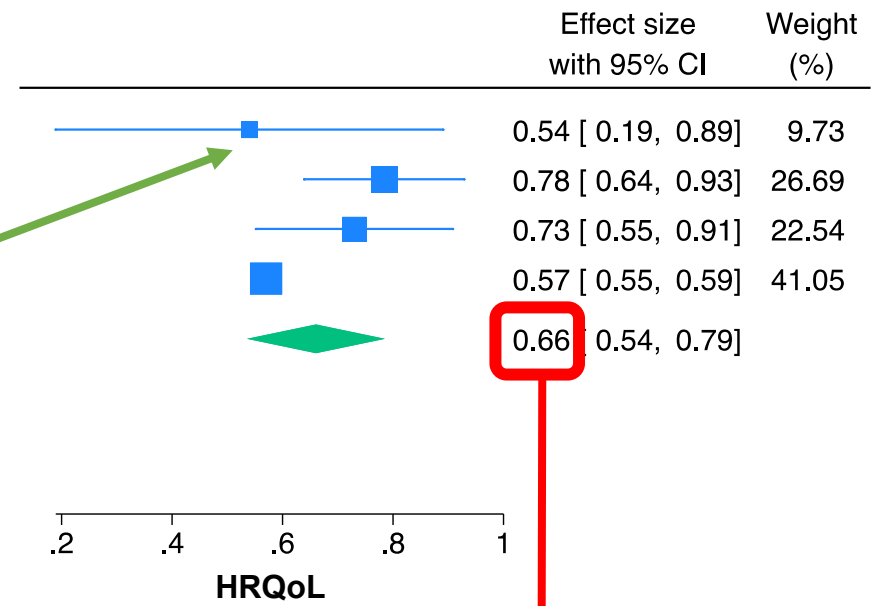
Objective 3 methods

1. Searched EMBASE/MEDLINE for studies of women with PD which included a preference-based HRQoL measure (e.g. EQ-5D, SF-6D, HUI)
2. Extracted means, confidence intervals, and data allowing characterisation of severity
3. Meta-analysis of those means, then convert the pooled estimate to the DW scale (1-HRQoL). Compare to appropriate GBD sequelae (“other gynecological disorders”)



Objective 3 meta-analysis results

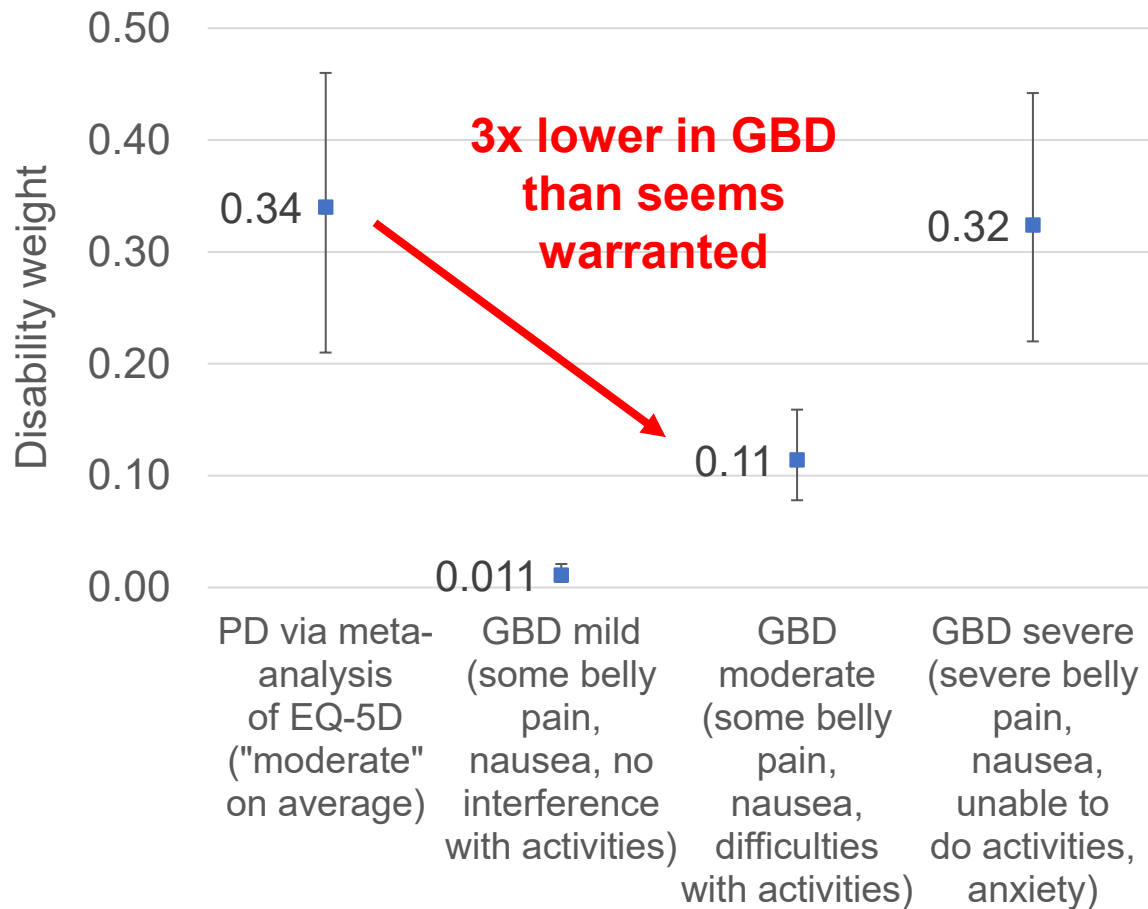
Country	Sample	Predominant level of severity	HRQoL mean(CI)
France	20 women with chronic pelvic pain seeking medical treatment	Severe	0.54 (0.19-0.89)
Spain	153 female nursing students with and without PD	Mild to moderate	0.78 (0.64-0.93)
South Korea	88 women seeking medical treatment for PD	Moderate to severe	0.73 (0.48-0.98)
South Korea	240 patients from multiple centres	Moderate	0.57 (0.55-0.59)



Equivalent to DW of 0.34

**if we believe that
DW = 1-HRQoL**

Comparison to DWs for “other gynecological disorders”



- If characterisation as “moderate” is correct, PD is undervalued.
- But analysis is exploratory, and limitations in the comparison.

Discussion

- **MH is undervalued in GBD** (Only 42% of MH outcomes captured, PD either not captured or undervalued by 3x)
- **Can't calculate MH DALY burden**, as not transparent how the most prevalent MH outcomes are *meant* to be captured.
- **MH may therefore receive lower priority than would be warranted** with a fuller accounting of outcomes, and the cost-effectiveness of interventions improving MH outcomes may be understated.
- **Same problem likely in other areas of health?** 590 health states in GBD, but the DW preference elicitation study only valued 183 of them (Salomon et al., 2015). So generic values are widespread. Time for updated/extended DW study?
- **Gender health gap of 75 million DALYs** (World Economic Forum, 2024) but it could be worse than that if women's health DWs are systematically undervalued

Conclusion / WASHecon takeaway

- Some aspects of MH are part of WASH, and good WASH services support good MH
- If WASH interventions can support MH, then they will be more economically favourable if MH benefits are properly valued
- In the next GBD iteration (3yrs time?), its authors should re-evaluate how they define and model MH outcomes.

