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Costing in Value-Based Healthcare – Science or Fiction? A systematic review.

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Cost measurement in VBHC

PhD Trajectory Maura Leusder

- This systematic review is part of my PhD trajectory on cost measurement in (value-based) healthcare.

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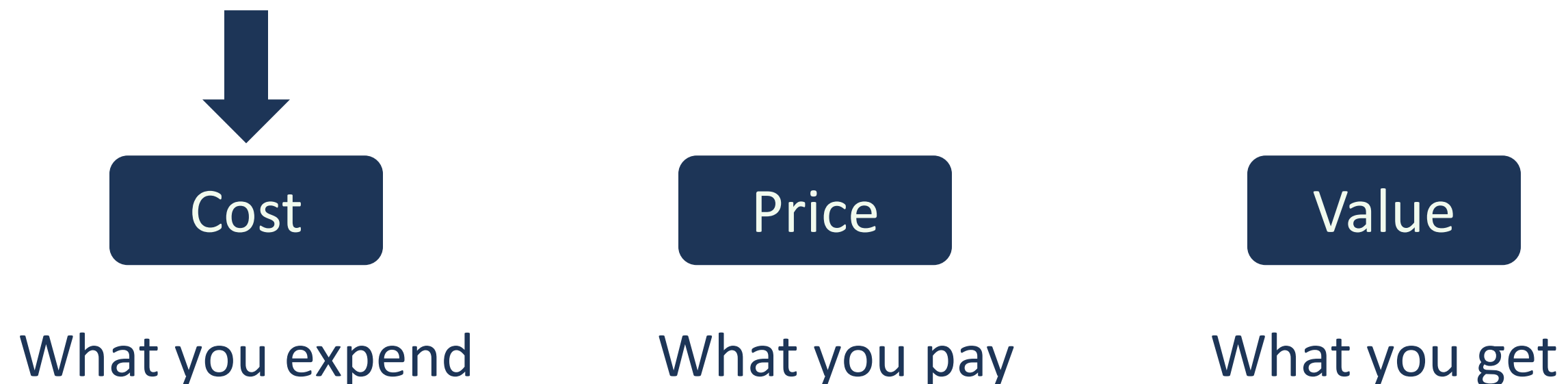
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Measuring the value of healthcare

...is more difficult than you might think

- RQ1: How are costs measured in value-based healthcare implementations?
- RQ2: What does the literature tell us about the consequences of applying a specific **costing method** in **value-based healthcare**?



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- RQ2: What does the literature tell us about the consequences of applying a specific **costing method** in **value-based healthcare**?

When a patient walks in, the expected outcome, cost or duration is often unknown

Some early evidence for “time-driven activity-based costing” but we don’t know how it compares to other methods in terms of benefits

PRISMA and methodology

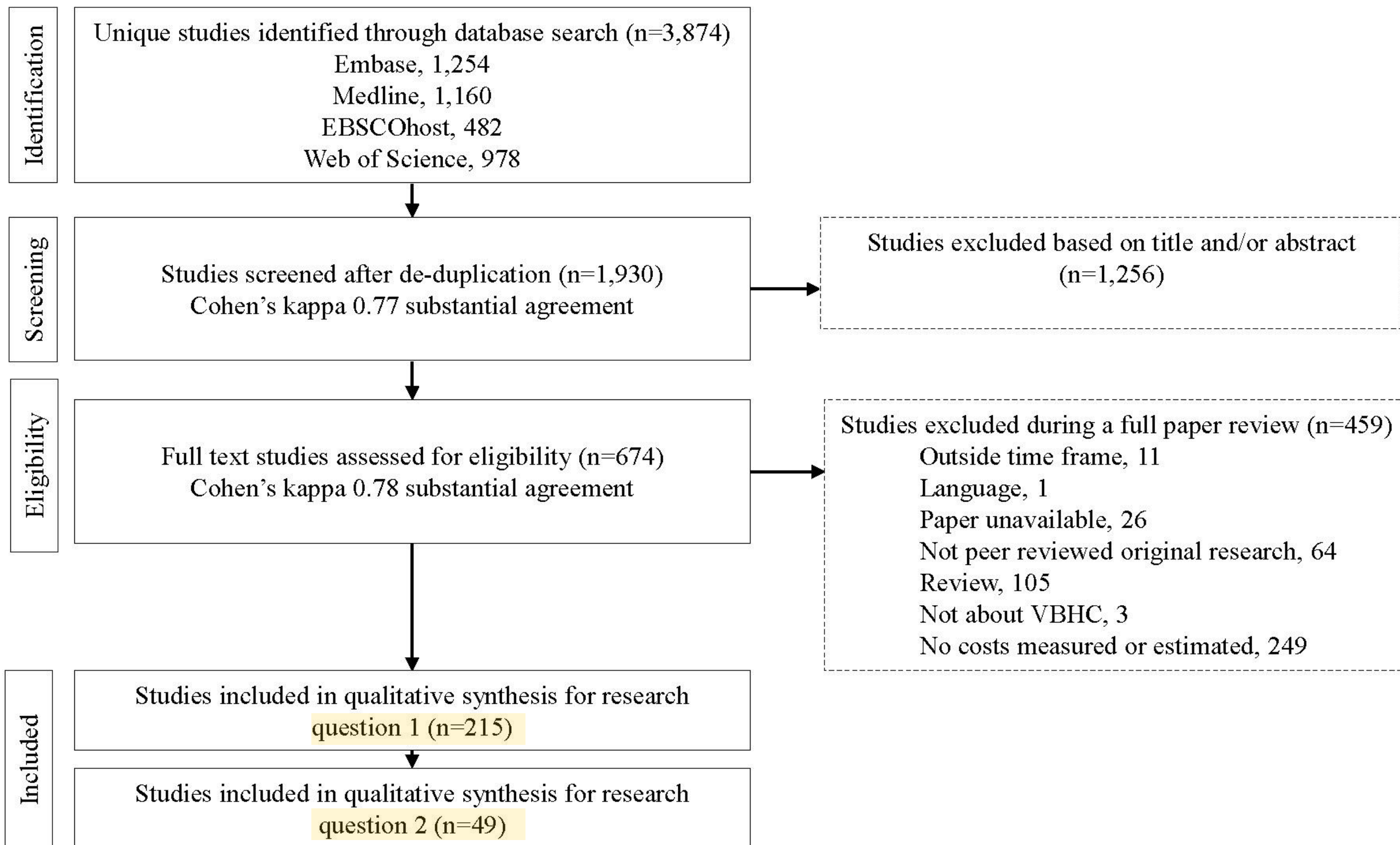


Table 1. Characteristics of value-based healthcare studies measuring costs (n=215).

Characteristic	n	%	Characteristic	n	%
Year published			Topic		
2005-2009	3	1.4%	Cardiology	5	2.3%
2010-2013	6	2.8%	Dermatology	1	0.5%
2014	6	2.8%	Emergency & acute care	11	5.1%
2015	7	3.3%	Endocrinology	3	1.4%
2016	9	4.2%	Surgical of which	99	46.0%
2017	17	7.9%	Appendicitis, 2		
2018	28	13.0%	Abdominal, 6		
2019	41	19.1%	Bariatric, 2		
2020	43	20.0%	Cardiac/Thoracic, 12		
2021	51	23.7%	Colon/Rectal, 2		
2022 as per 1/1/2022	4	1.9%	Endocrine, 2		
			Ear/Nose/Throat, 2		
Geography			Gallbladder, 2		
Americas		84.3%	Liver, 2		
Brazil	3		Neurosurgical, 5		
Canada	1		Orthopaedic arthroplasty, 25		
US of which	178		Orthopaedic fracture, 12		
Boston, 8			Orthopaedic rotator cuff repair, 2		
California, 18			Orthopaedic other, 3		
New York, 23			Plastic surgery, 2		
Texas, 12			Spine, 13		
Pennsylvania, 9			other surgical, 5		
Other states, 108			Geriatrics	1	0.5%
Asia		2.3%	Gynaecology & obstetrics	8	3.7%
China	1		Infectious disease	1	0.5%
Iran	1		Internal medicine	12	5.6%
Kuwait	1		Multiple	3	1.4%
Lebanon	1		Nephrology	1	0.5%
Singapore	1		Neurology	2	0.9%
Europe		10.6%	Oncology	37	17.2%
Andalusia	1		Ophthalmology	3	1.4%
Germany	1		Orthopaedic	1	0.5%
Italy	3		Pain medicine	3	1.4%
Norway	1		Paediatrics of which	19	8.8%
Serbia	1		Appendicitis, 3		
Spain	2		Emergency & acute care, 2		
Netherlands	9		Neonatal, 3		
UK	4		Oncology, 1		
Oceania		1.9%	Surgical, 5		
Australia	4		Surgical, plastic surgery, 2		
Transcontinental		0.9%	Other paediatric, 3		
Russia	1		Toxicology	1	0.5%
Turkey	1		Urology	4	1.9%

- Nearly half published in past 2,5 years
- Overwhelming majority is from US
- Surgical, oncology and paediatrics most represented.

Results RQ1: How are costs measured?

Table 3. Overview of cost measurement methods used in value-based healthcare

Perspective	Method	n
<i>Provider</i>		
<i>Insurer</i>		
<i>Patient</i>		

Note: Total number of studies here is 222; seven studies measure two cost types. Studies are classified based on actual costs included and methods described, not necessarily the labels used by authors. ABC: Activity-based costing, TDABC: Time-driven activity-based costing

“The terms reimbursement, cost, and payment have been used interchangeably throughout the text to represent actual amounts paid by insurers.” (Jain, 2018)

“Total hospital charges were utilized in this standardized costing analysis. Hospital charge data provides a relative measure of the ‘cost’ of episodes of care, as actual cost data are generally not ascertainable in the healthcare setting.” (Robles, 2018)

Results RQ2: cost meas. facilitates VBHC



1. Identification of cost drivers (48)
 2. Comparison of costs across patient groups, care providers, or procedures (39)
 3. Measurable cost differences at equal or better care (26)
 4. Suggested or measured care path improvements (40)
- Achieved through TDABC (29), ABC (6), absorption costing (12) or direct costing (3)

Results RQ2: cost meas. facilitates VBHC



1. Identification of cost drivers (48)
 2. Comparison of costs across patient groups, care providers, or procedures (39)
 3. Measurable cost differences at equal or better care (26)
 4. Suggested or measured care path improvements (40)
- Best practices are process mapping (24), expert input (17) and direct observations (24).

Closing remarks

- Cost measurement (TDABC, ABC) can facilitate VBHC through four mechanisms
- Majority of studies measure costs for partial care paths, which drastically limits their ability to inform VBHC
 - E.g: considering only a surgical intervention, and then concluding that time in OR is costly
- Patient-level value analysis (e.g. Wise et al 2022)
- Limitation: TDABC popularity may cloud the picture
 - we evaluated actual costs used and methods implemented (not just the labels used by authors).

Thank you!

Looking for a good 'home' for this review – suggestions welcome!

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