Evaluating Outcomes That Matter: Development Of A Multi-Criteria Decision Analysis Framework In Specialized Burn Care

HTA314

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Introduction

Treating acute burn injuries can be associated with high costs. To maximize patient value, Dutch burn centres are adopting the value-based healthcare (VBHC) strategy, aiming to optimize patient-relevant outcomes relative to their costs. However, steering on patient-relevant outcomes in relation to costs at the hospital level remains challenging. In this context, multi-criteria decision analysis (MCDA) may offer a promising approach.

Aim

To support economic evaluation from a VBHC perspective, we aim to

1) Develop a MCDA framework for burn care (BC-MCDA)
2) Validate the BC-MCDA using real-world data

Methods

The development and validation of the BC-MCDA was based on distinct phases adapted from Angelis & Kanavos (1).

1. Development of the BC-MCDA

- Multiple stakeholders (i.e. patient representatives and burn care professionals) participated in individual interviews and focus groups to establish scores and weights for each criterion (i.e. patient-reported outcome measures (PROMs)).
- Scores and weights were assigned using the Measuring Attractiveness by a Categorical Based Evaluation Technique (MACBETH) method (Fig 1).

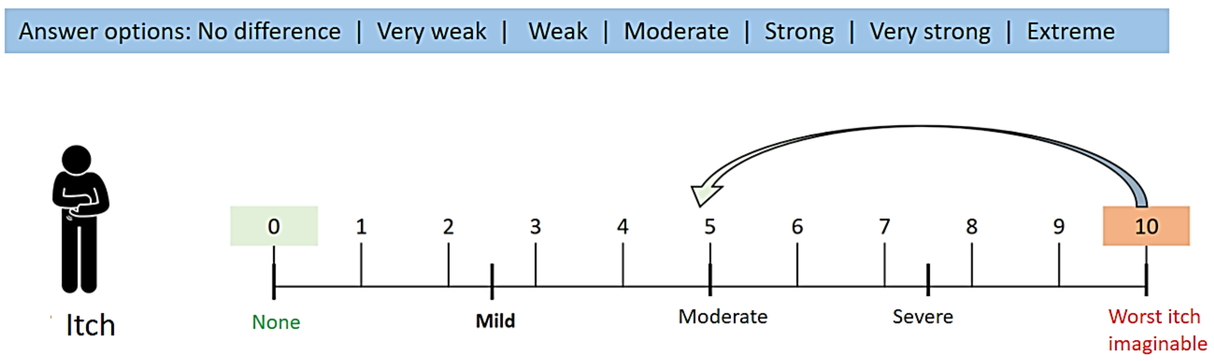

Fig 1. Adding scores by valuing improvements in a criterion

2. Validation of the BC-MCDA

- Patients:
  - Registry-based cohort study: Adult patients admitted with acute burn injuries between July 2023-September 2024, with 12-month follow-up
  - Comparison of minor burns (<5% total body surface area (TBSA)) to moderate/severe burns (≥5% TBSA)
- Costs:
  - Direct medical costs of specialized burn care
  - Following Dutch guidelines and earlier work
- Data collection:
  - Data Dutch Burn Repository and Burn centers Outcomes Registry the Netherlands (BORN)

1. Angelis, A., & Kanavos, P. (2016). Value-based assessment of new medical technologies: towards a robust methodological framework for the application of multiple criteria decision analysis in the context of health technology assessment. Pharmacoeconomics, 34(5), 435-446.

Results

1. Development of the BC-MCDA

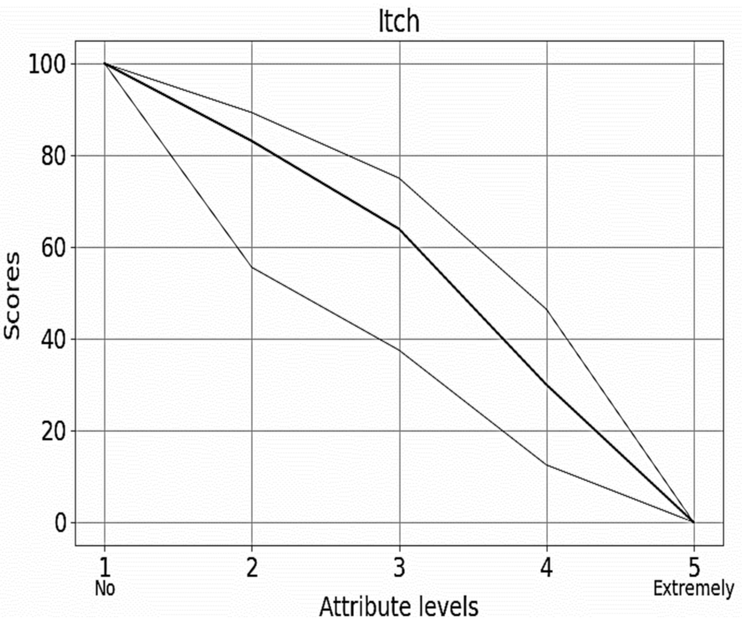

Fig 2. Value function of itch.
Individual scores for each criterion were combined to collective scores, which were discussed in a focus group. Based on this focus group, the final score per criterion was generated from the median of all individual scores (centre line). The scores indicate the patient's preference of achieving a particular health status. The higher the score, the stronger the preference. Itch is illustrated as an example, x-axis shows the sum score range of the respective PROM.

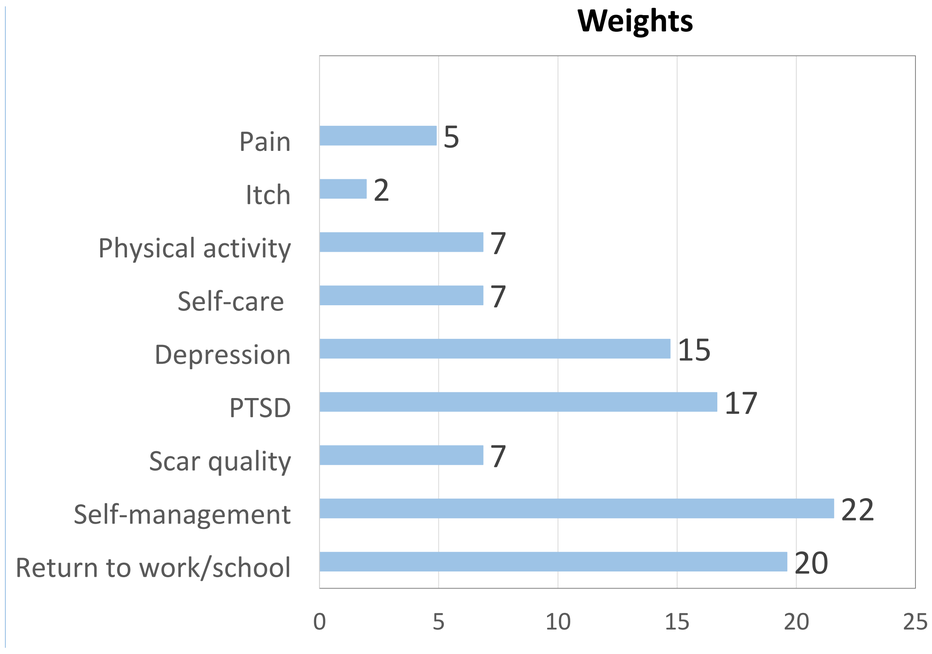

Fig 3. Weights of each criterion.
During the focus group, it became clear that the recovery time point influenced the ranking of outcomes. The results shown represent the weights at 12 month. Weights represent the relative importance, higher values indicate stronger preferences.

2. Validation of the BC-MCDA

For the 12-month analysis, 65 patients were included with a median age of 58 years for mild patients (n=32) and 55 years for moderate to severe patients (n=33). For mild patients, each €10.000 spent on care increased patient value (on a scale from 0 to 1, where 1 represents the highest value) by 0.567 and for moderate to severe patients by 0.118. For the same amount of money, mild patients achieved approximately five times higher patient value than moderate to severe patients.

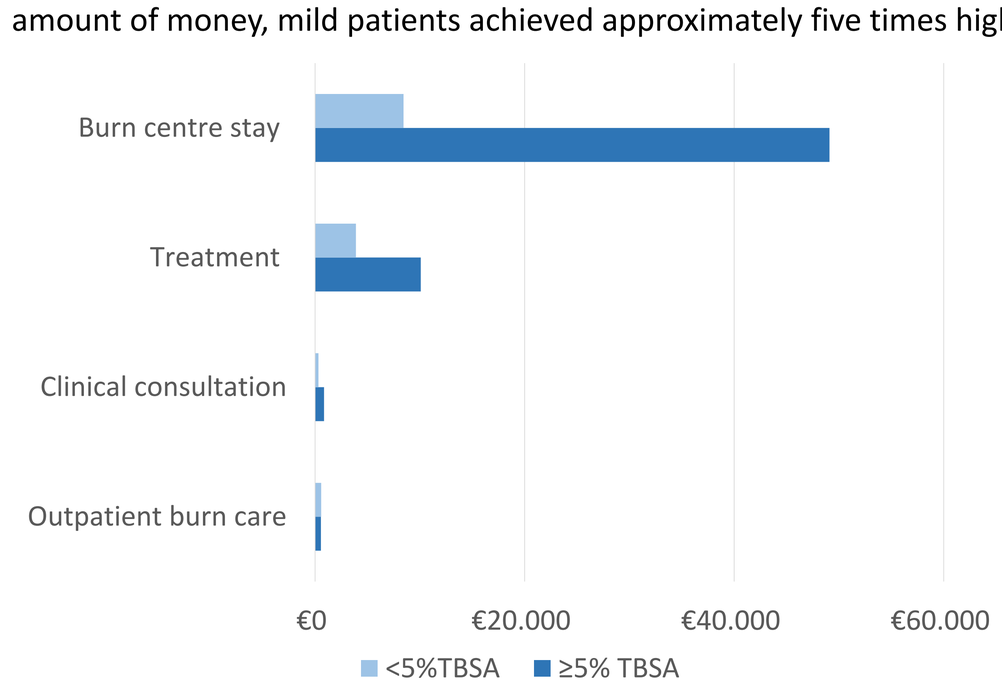

Fig 4. Total mean costs per patient
The cost analysis showed higher total mean costs for patients with ≥5% TBSA (€58.597) [95% CI: €42.112 - €78.200] compared to patients with <5% TBSA (€13.256) [95% CI: €9.928 - €16.948]

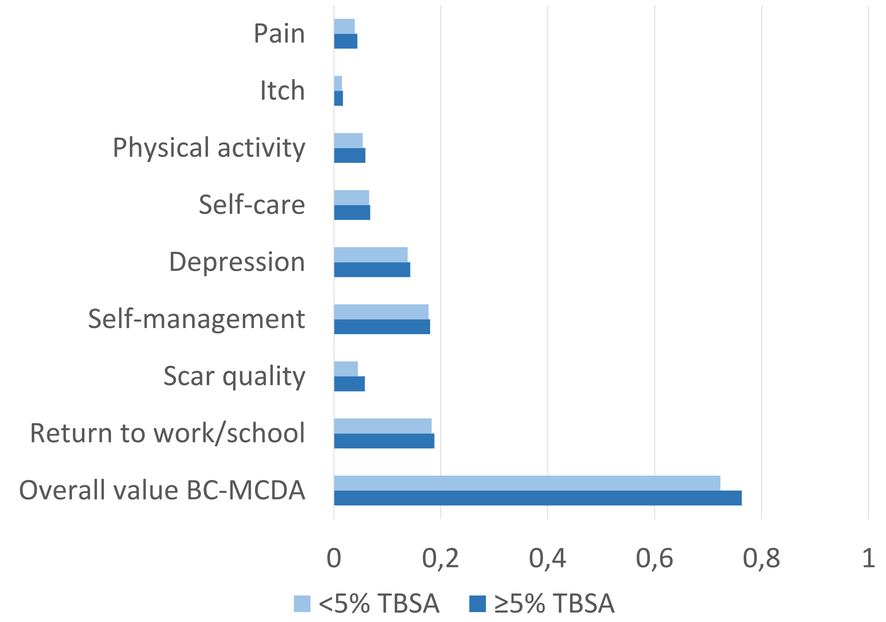

Fig 5. Overall BC-MCDA value
The mild patients had on average a higher overall weighted BC-MCDA value of 0.752 compared to the moderate to severe patients (0.693). The highest weighted average value per criterion was 'Return to work/school' (0.194 vs. 0.177)

Conclusion

The BC-MCDA provides a framework for the joint analysis of multiple PROMs in relation to costs at the hospital level, using a VBHC perspective. Moreover, it can be used to provide insight in the value of different burn care strategies in daily clinical practice.

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