

Classification of patients by clinical, psychological, and communication characteristics

Patient profiles for personalized care

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INTRODUCTION

Satisfied?

Total joint replacement (TJR) surgery is a common procedure with good clinical outcomes. Yet, up to 30% of patients report dissatisfaction after surgery. Dissatisfaction may be due to inadequate patient-provider communication and information provision, as these experiences influence overall satisfaction [1–4].

Targeting

In order to improve these communicative aspects we considered the notion of targeted communication, which intends to “reach some specific subgroup of the general population, usually based on one or more demographic characteristics shared by its members” [5]. Subgroups of TJR patients have been previously defined on the basis of clinical or psychological characteristics [6–12].

Not homogeneous

It is assumed that sufficient homogeneity exists among the members of these groups and that communication could be targeted towards them. Yet, even in similar populations (e.g. elderly), patients hold diverse communication preferences which challenges this assumption of homogeneity [13–16].

Biosychosocial groups

Therefore, our aim was to investigate from a broader, biopsychosocial perspective whether subgroups of TJR patients could be defined by concurrently including clinical, coping and communication characteristics.

Personalized care

This provides a stronger justification for how communication and information should be personalized in the future.

METHODS

Data from 3 sources (survey, electronic patient record, onlinePROMs database) were combined for 191 patients.

clinical	psychological	communication	demographics
pain quality of life health status disability functioning of joint affected joint	anxiety coping pain catastrophizing	preferences participation openness emotional support personal talk shared decision making information sharing	skills adherence critical & participative personal talk active disease-related self-efficacy
			age sex education occupation relationship status social support internet use

CLUSTER ANALYSIS

Cluster analysis is a technique for data reduction, which in the context of healthcare can be used to segment patients into clusters to identify homogenous groups of patients that may benefit from specific services [17–20].

Selection of variables

- o Assessable at the start of the care process, to be able to classify new patients and personalise care from the first consultation onwards
- o Applicable to both hip and knee patients
- o Continuous, to preserve the most freedom in selection of clustering algorithms
- o Uncorrelated to avoid multicollinearity which can skew the cluster solution [21]

Exploratory hierarchical cluster analysis

Ward's clustering method & squared Euclidean suggested k = 3

K-means cluster analysis

Confirmed 3 clusters

Clusters differed on characteristics (Wilks' $\lambda = .453$, $F(24,166) = 8.36$, $p < .0001$)
And outcomes after surgery (Wilks' $\lambda = .889$, $F(6,153) = 3.188$, $p = .006$).

Recursive partitioning

Supervised machine learning method used to classify cases to a class using a tree-based model [22–23]. It produces classification rules for new cases.

Overall accuracy 76%: better at cluster 1 (79% correct) and cluster 2 (76%) than cluster 3 (68%).

PATIENT PROFILES



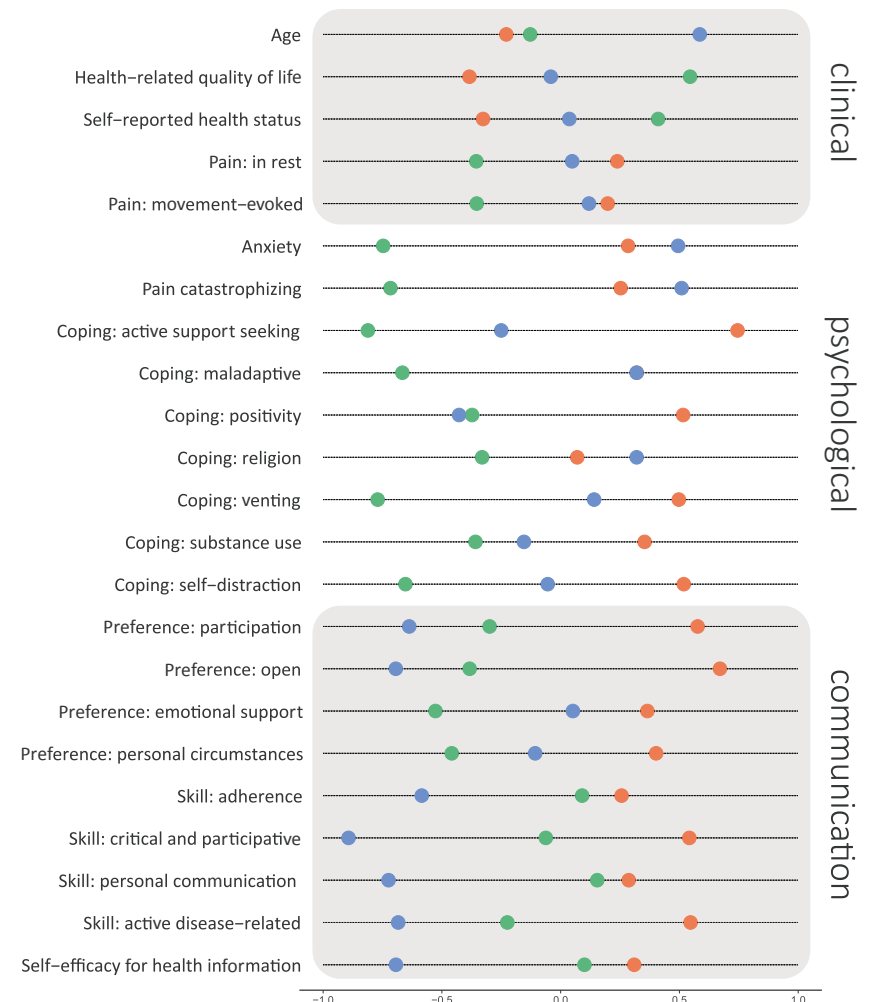
cluster 1 (44%) managing



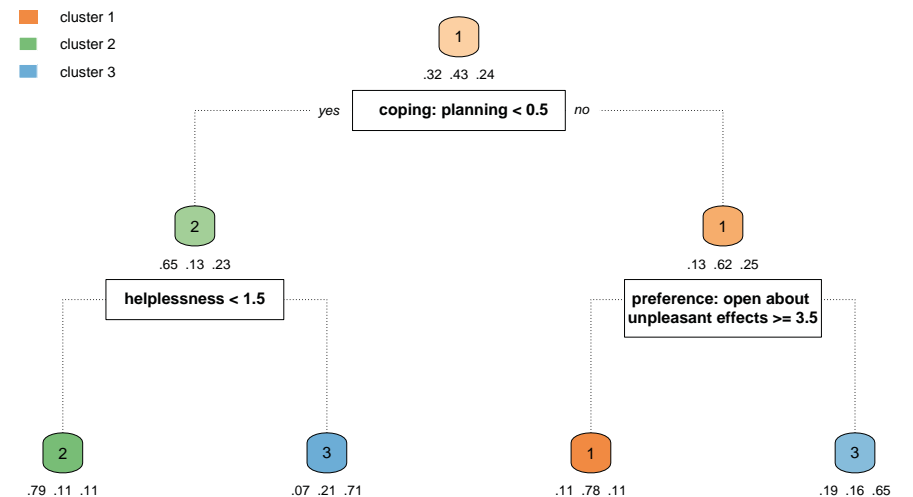
cluster 2 (32%) optimistic



cluster 3 (24%) modest



cluster 1
cluster 2
cluster 3



DISCUSSION

Suggestions for tailoring care

Cluster 1 'Managing role'

- o Meet high communication needs (SDM, additional information)
- o Involve social network in care management

Cluster 2 'Optimistic role'

- o Needs are (already) in line with typical consultation [24]
- o Additional efforts in emotional or personal support may be counter-productive.

Cluster 3 'Modest role'

- o Provide emotional support & make adjustments for lower (health) literacy.
- o Build skills in expressing care needs to reduce pain catastrophizing (diminished need for communal expressions of distress [25–27]).

Limitations

Retrospective survey: causality of findings and stability of preferences.

Exploratory technique, clusters need to be validated over time and in other contexts.

The bottom line

The TJA population can be classified in three biopsychosocial patient profiles to tailor the provision of care, which is expected to improve satisfaction.



... references
... movie
... contact details

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