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Clustering and the design of preference-assessment surveys in healthcare.

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Abstract

OBJECTIVE: To show cluster analysis as a potentially useful tool in defining common outcomes empirically and in facilitating the assessment of preferences for health states.

DATA SOURCES: A survey of 224 patients with ventricular arrhythmias treated at Kaiser Permanente of Northern California.

STUDY DESIGN/METHODS: Physical functioning was measured using the Duke Activity Status Index (DASI), and mental status and vitality using the Medical Outcomes Study Short Form-36 items (SF-36). A "k-means" clustering algorithm was used to identify prototypical health states, in which patients in the same cluster shared similar responses to items in the survey.

PRINCIPAL FINDINGS: The clustering algorithm yielded four prototypical health states. Cluster 1 (21 percent of patients) was characterized by high scores on physical functioning, vitality, and mental health. Cluster 2 (33 percent of patients) had low physical function but high scores on vitality and mental health. Cluster 3 (29 percent of patients) had low physical function and low vitality but preserved mental health. Cluster 4 (17 percent of patients) had low scores on all scales. These clusters served as the basis of written descriptions of the health states.

CONCLUSIONS: Employing a clustering algorithm to analyze health status survey data enables researchers to gain a data-driven, concise summary of the experiences of patients.

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