Q-TWiST Analysis Is Back in the Game in Oncology Clinical Trial Analysis: A Recent Trend

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BACKGROUND: Quality-adjusted time without symptoms or toxicity (Q-TWiST) is a clinical tool that integrates progression, survival, treatment toxicities, and patient quality of life into a single metric. It is useful for analyzing the results of randomized trials as a complement to the results obtained from the originator. Although Q-TWiST was introduced >3 decades ago, information on its recent use in cancer therapies is limited.

METHODS: A targeted literature review was conducted using the PubMed database to identify Q-TWiST studies in oncology therapies from January 2020 to May 2023. Both full-text papers and conference abstracts were included.

RESULTS: A total of 18 studies reporting 19 unique Q-TWiST analyses were included (15 of 103 records retrieved from searches; 3 from bibliographic searches). The reported Q-TWiST analyses were most associated with chronic lymphocytic leukemia, renal cell carcinoma, and ovarian cancer, each accounting for 16% (n=3) of the included studies. The predominant health states used in these analyses were time with toxicity (TOX; 100% [n=19]), time without symptoms of disease or toxicity (TWiST; 100% [n=19]), and time from disease progression to death/censoring (REL; 84% [n=16]). The most frequently employed utility weights were 0.5 for TOX (47% [n=9]), 1.0 for TWiST (74% [n=14]), and 0.5 for REL (47% [n=9]). The sources of the utility weights varied. Approximately 26% (n=5) were derived from published literature, 26% (n=5) were estimated from clinical trials, and 42% (n=8) employed threshold analysis. In the base-case analysis, TOX was predominantly defined as involving grade ≥3 adverse events (79% [n=15]), with an additional 11% (n=2) considering grade ≥2 adverse events. However, in scenario/sensitivity analyses, there was considerable variation in the definition of TOX.

CONCLUSIONS: Q-TWiST analysis has been of increasing interest in cancer treatment evaluation and as a valuable decision-making tool to facilitate assessment of risk-benefit trade-offs, further enhancing the understanding of treatment impacts on patients.