We discuss the benefits and limitations of optical time-division multiplexing (OTDM) techniques based on the optical generation of a periodic train of sinc pulses for wavelength-division multiplexing (WDM) transmission at high baud rates. It is shown how the modulated OTDM spectrum bandwidth is related to the optical comb parameters and the pulse shaping of the modulating waveforms in the electrical domain. Such dependence may result in broadening of the modulated spectra, which can degrade the performance of Nyquist-WDM systems due to interchannel crosstalk penalties. However, it is shown and experimentally demonstrated that the same technique of optical pulse train generation can be allied with digital pulse shaping to improve the confinement of the modulated spectrum toward the Nyquist limit independently of the number of OTDM tributaries used. To investigate the benefits of the proposed approach, we demonstrate the first WDM Nyquist-OTDM signal generation based on the periodic train of sinc pulses and electrical spectrum shaping. Straight line transmission of five 112.5-Gbd Nyquist 34 OTDM dual-polarization quadrature phase-shift keying (QPSK) channels is demonstrated over a dispersion uncompensated link up to 640 km, with full-field coherent detection at the receiver. It is shown that such a design strategy effectively improves the spectral confinement of the modulated OTDM signal, providing a minimum intercarrier crosstalk penalty of 1.5 dB in baud-rate-spaced Nyquist-WDM systems.