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Poster Abstracts
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Evaluation of power profiles of daily disposable multifocal lens designs using normalized variance analysis

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Purpose: This study evaluated power profiles of the kalifilcon A multifocal (MF) contact lens (CL) relative to several other commercially available daily disposable MFCLs to understand differences in zone-specific power variance across the available power range, particularly at near and distance.
Method: Radial power profiles were measured using LAMBDA-X NIMO for commercially available add powers of 8 different daily disposable CLs: kalifilcon A (UODMF), nelfilcon A (DAQP MF), delefilcon A (DT1 MF), somofilcon A (C1D MF), etafilcon A (1DAM MF), stenfilcon A (MD MF), omafilcon A (PC1D MF), and senofilcon A (AOM1D MF). Measurements were obtained for multiple sphere powers (ranging from -9.00D to +6.00D; target n=8 CLs each). Data were normalized to the -3.00D intermediate zone and the overall total power variation (max-min) at the near zone (0.30 to 0.70 mm) and distance zone (2.60 to 3.00 mm) across the sphere power range and add powers were calculated for each product.
Results: Overall, the observed power variability across the powers tested ranged from 0.107D to 0.336D for near zones and 0.061D to 0.737D for distance zones. The overall normalized variance data analysis showed that the UODMF lenses had statistically significantly ($p<0.05$) lower overall power profile variation across the power range compared to all lenses and numerically lower than the senofilcon A multifocal lens (AOM1D MF; $p= 0.115$).
Conclusions: The normalized variance analysis demonstrated that UODMF lenses exhibited significantly less overall power profile variation across the available power range compared to most other daily disposable multifocal lens designs. The observed variability in power profiles across daily disposable MFCLs may also help further explain some of the various fitting recommendations provided by the respective manufacturers of these CLs today. Further research could explore the clinical implications of these findings in real-world patient populations.

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