Contact Lens Use and Meibomian Gland Dysfunction in the Era of Meibography

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Background

- Meibomian gland disease (MGD) is a major risk factor for chronic dry eye disease (DED) with a reported prevalence of 3.5 – 70% and contributes to 60% of all cases of DED[1]
- Dry eye estimated to affect the quality of life of 10—30% of the human population[2]
- Changes to meibomian gland morphology associated with MGD include gland dropout, shortening, truncation, distortion, and dilation

Meibography

- First described in 1977
- Non contact infrared meibography has seen increased utilization over the past decade
- Meiboscore demonstrated to have good within reader and between reader reliability[3]
- Meibomian gland disease has been associated with prior contact lens use[4]
  - Shortening and dropout of meibomian glands
  - Evidence is inconclusive in current literature, with a few studies demonstrating more meibomian gland loss in contact lens wearers compared to non-contact lens users
  - Duration of contact lens use may be associated with meibomian gland dropout on meibography

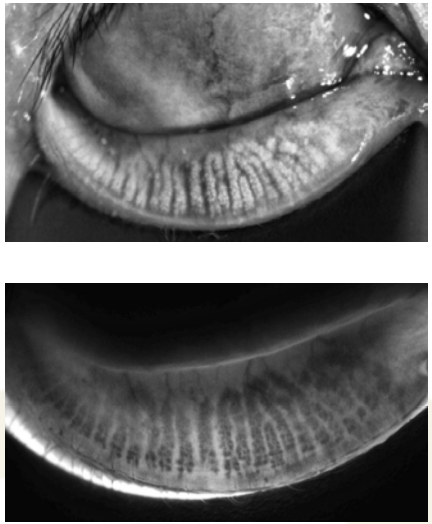
Purpose & Methods

Purpose: To understand the association of contact lens use with meibomian gland dysfunction and associated changes on meibography.

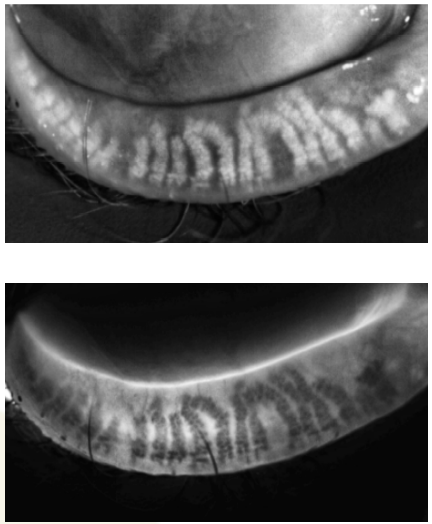
Methods: A total of 203 patients (406 eyes) were given a survey regarding their frequency and type of contact lens (CTL) use. 189 patients had images that could be scored. Mean age was 67 years old. 23% were male, and 77% female. Their meibomian glands were imaged using Lipiview (*Johnson & Johnson, Inc.*) and scored with "meiboscore."[3]

Prior CTL Use	Type of CTL	Hours per day of CTL use	Total years of CTL use
Yes (n=78) No (n=111)	Scleral (n=4) Soft (n=49) RGP (n=25)	<2 (n=116) 3-6 (n=9) 7-9 (n=15) 10-14 (n=33) >15 (n=12)	1-5 (n=16) 6-10 (n=13) 11-20 (n=15) >20 (n=31)

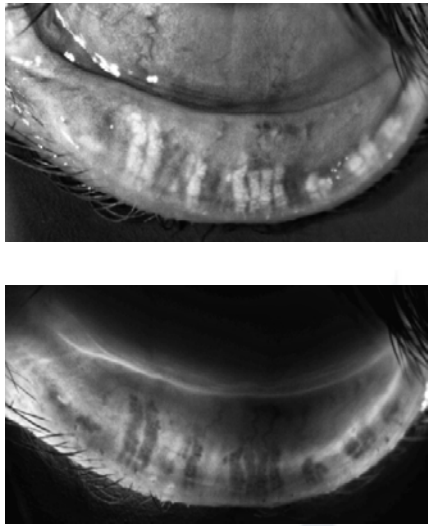
Meiboscores[3]



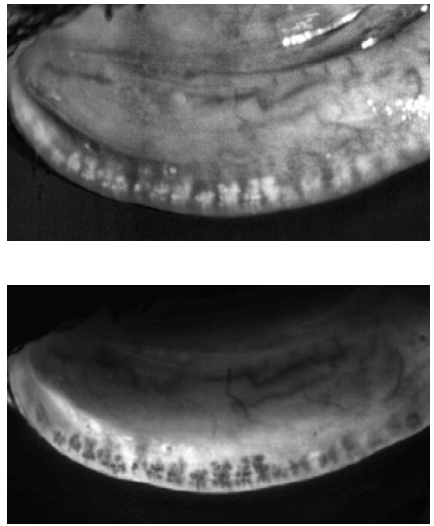
Grade 0: no gland loss



Grade 1: <33% loss

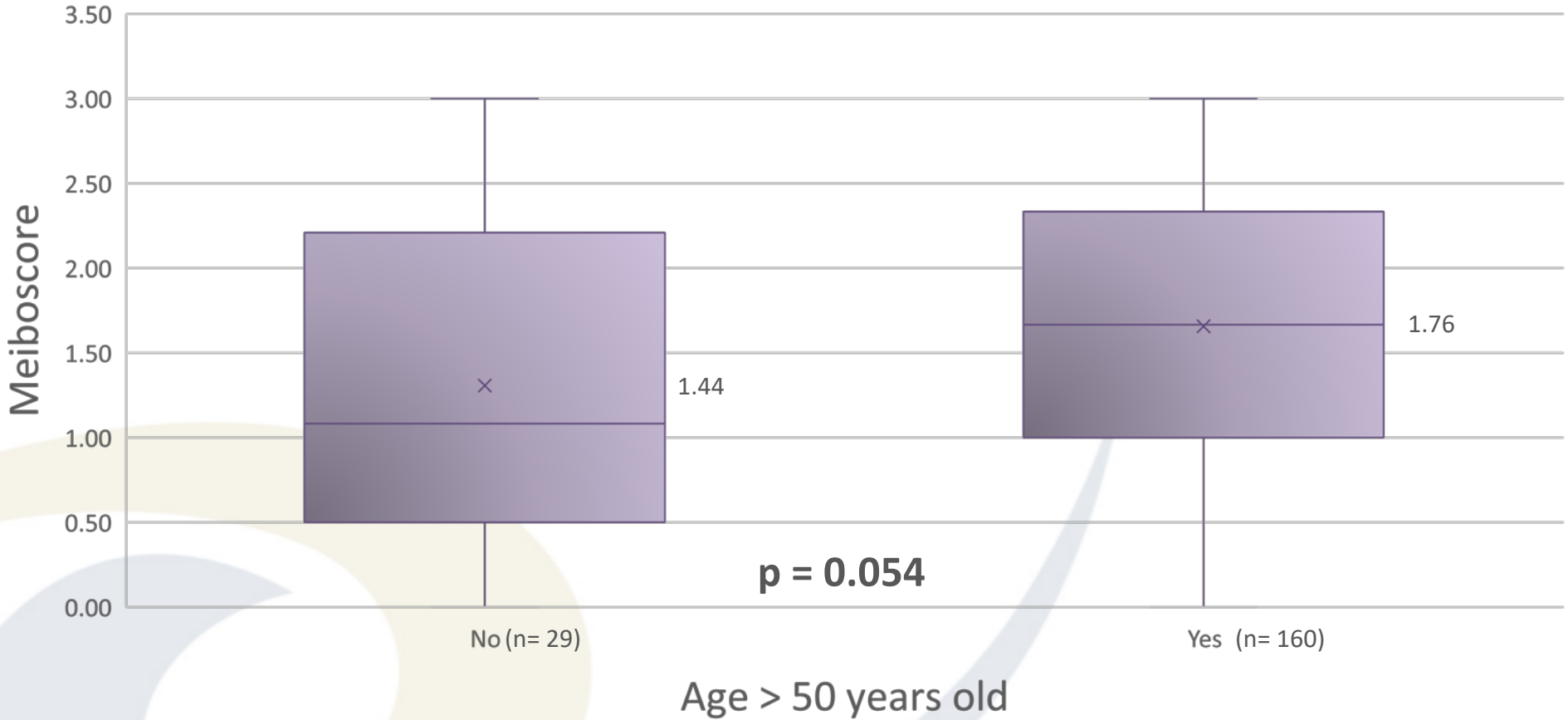


Grade 2: 33-66% loss

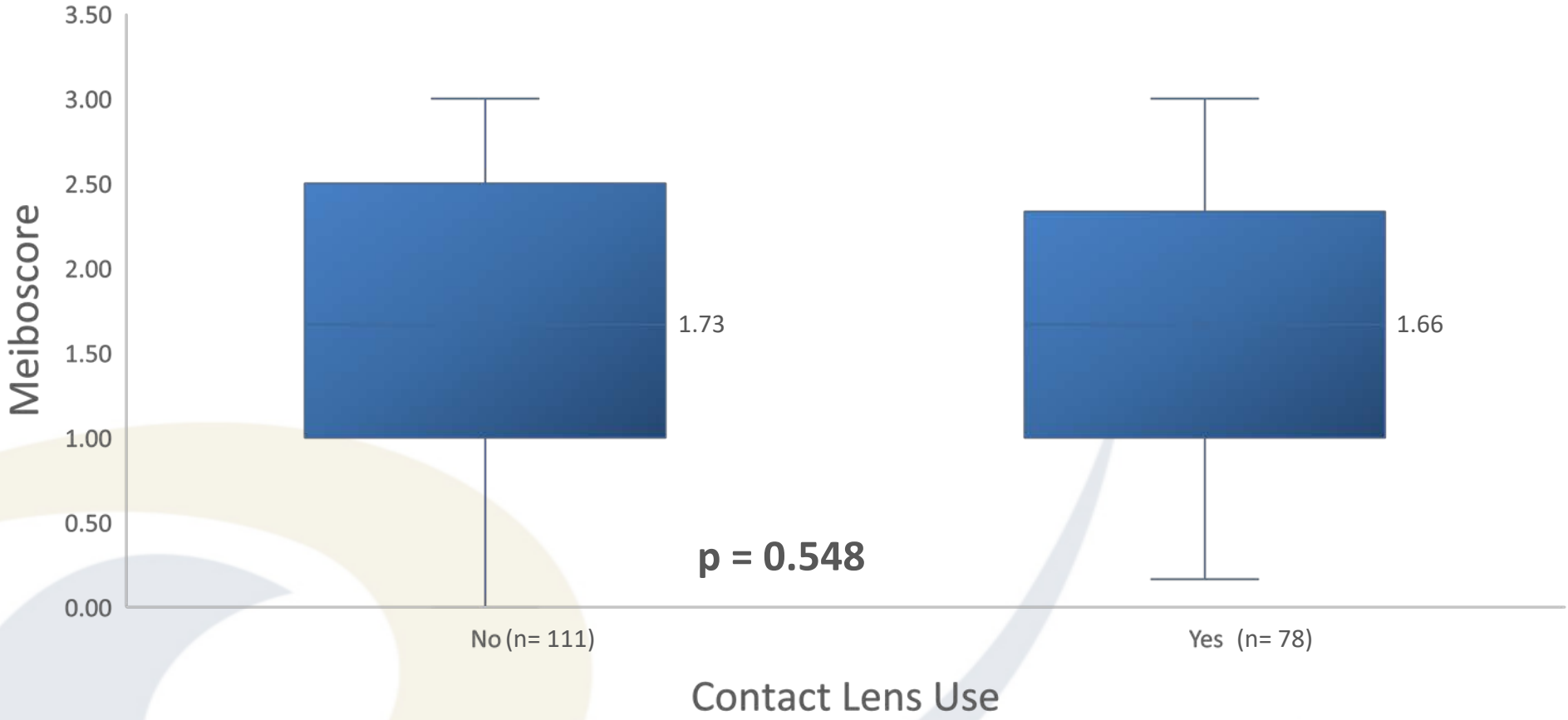


Grade 3: >66% loss

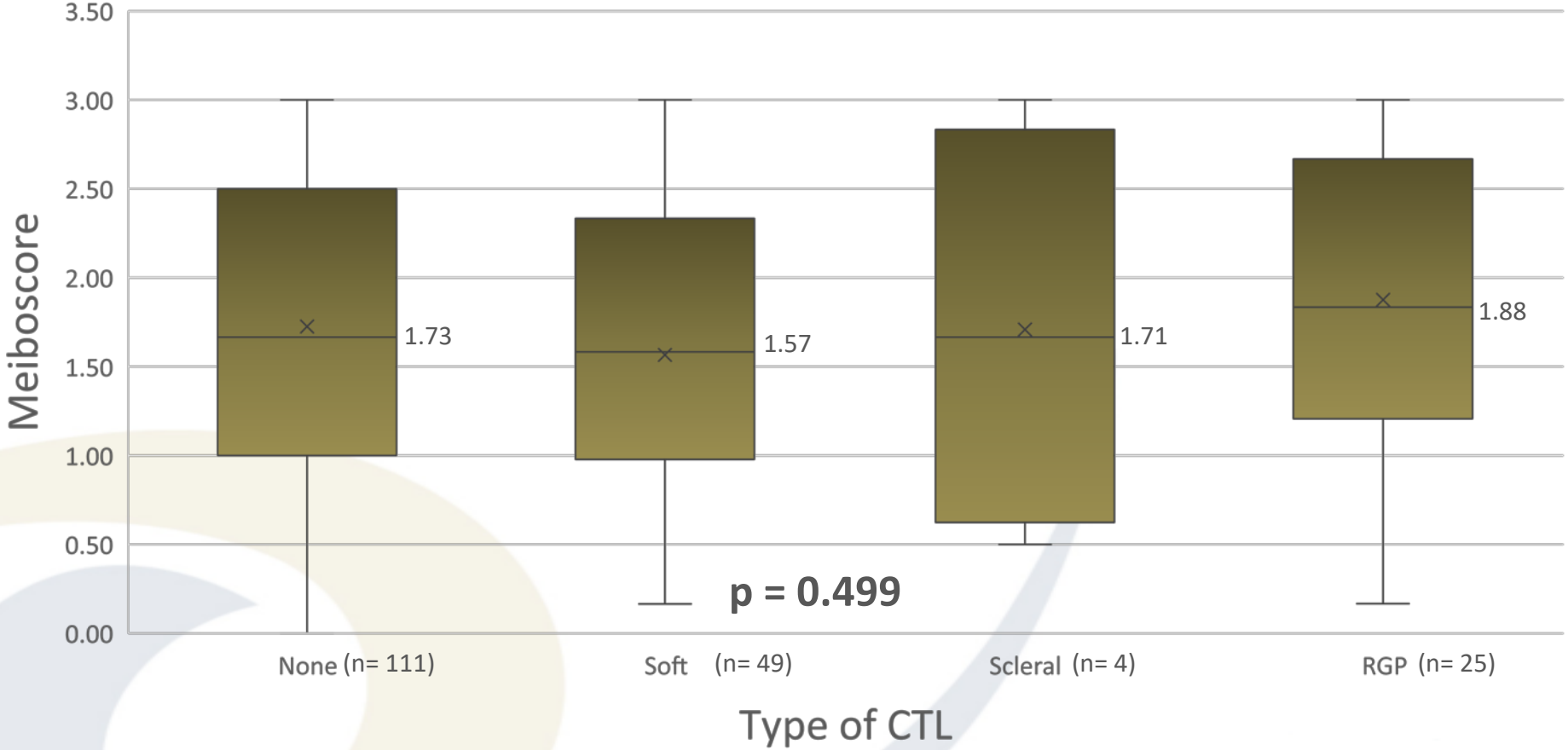
Meiboscore by Age

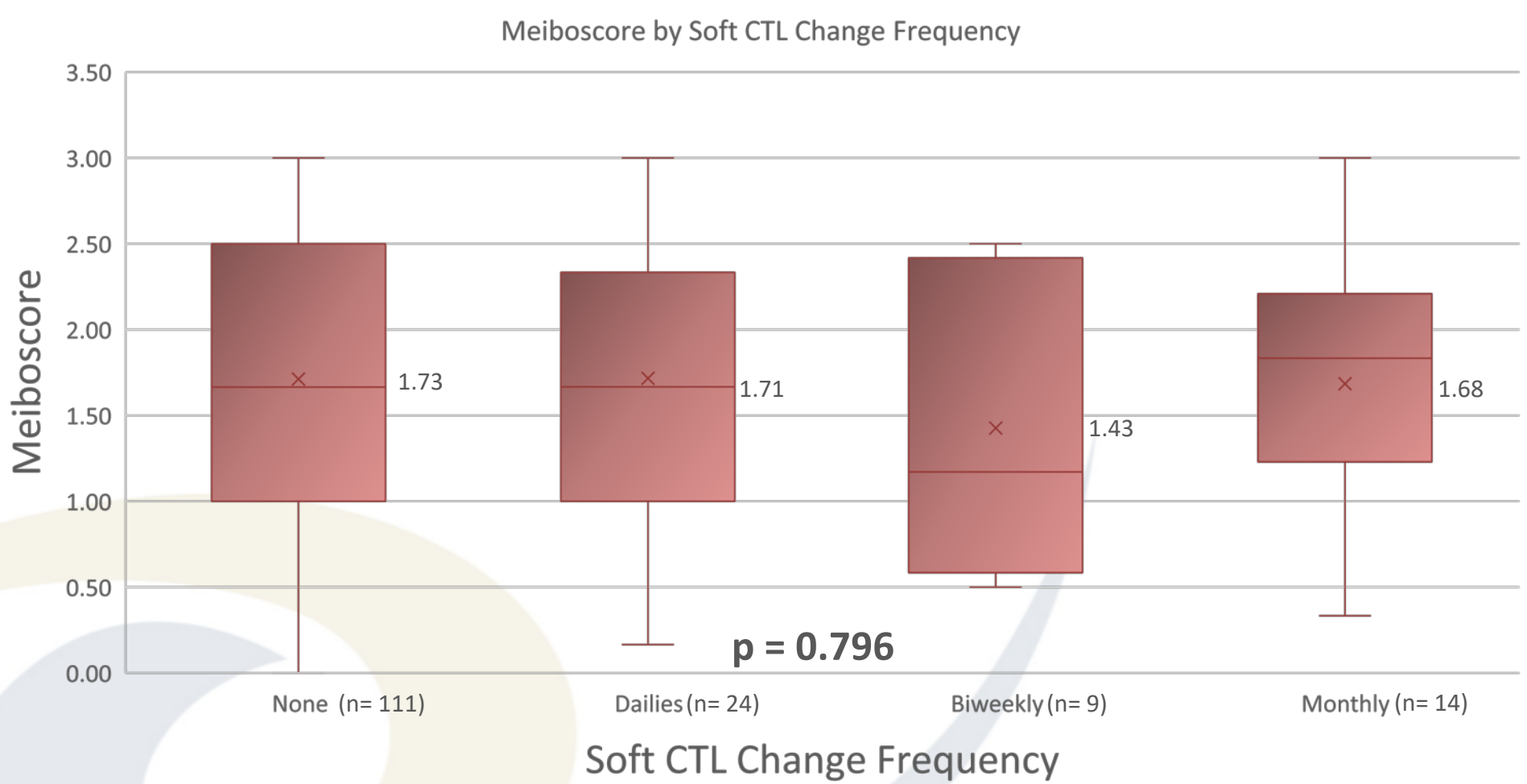


Meiboscores for CTL Use vs No CTL Use

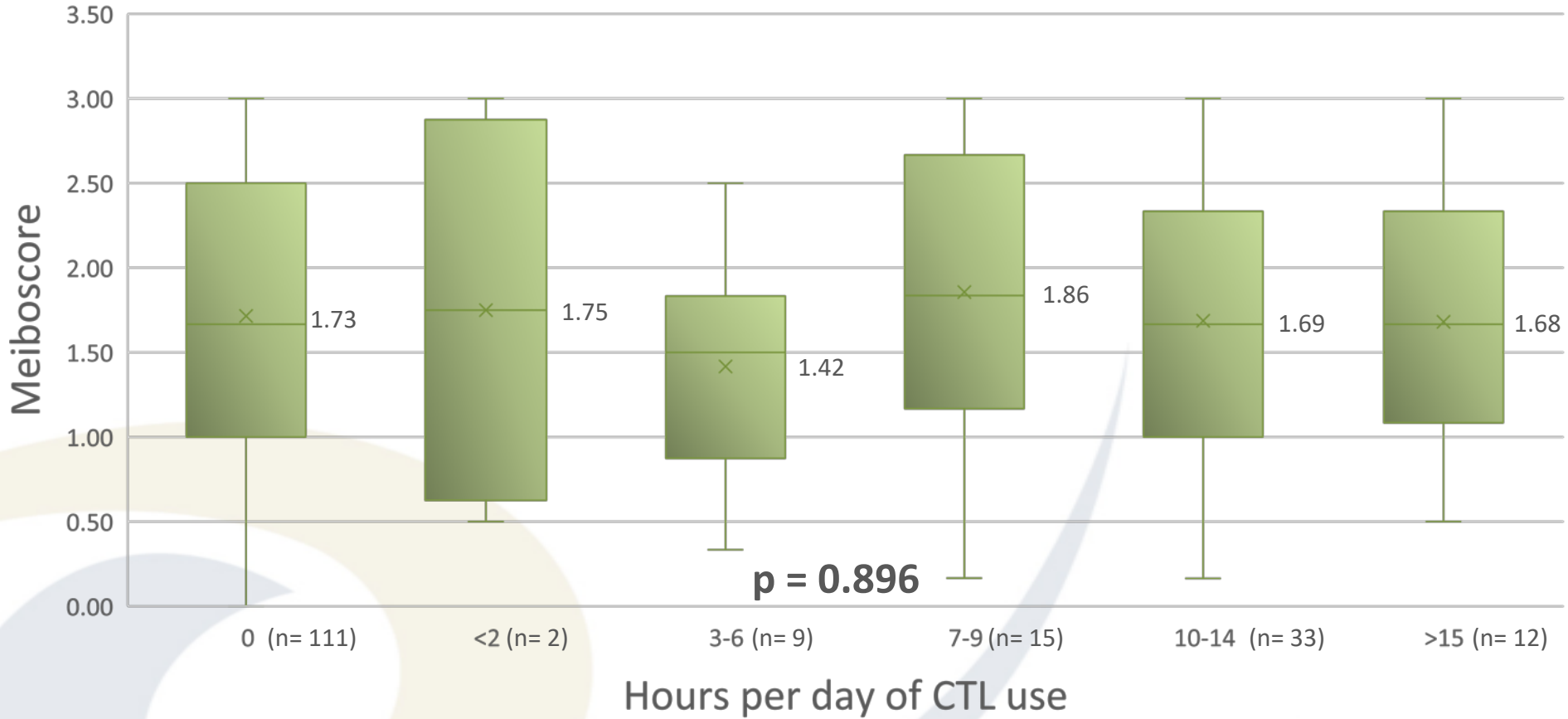


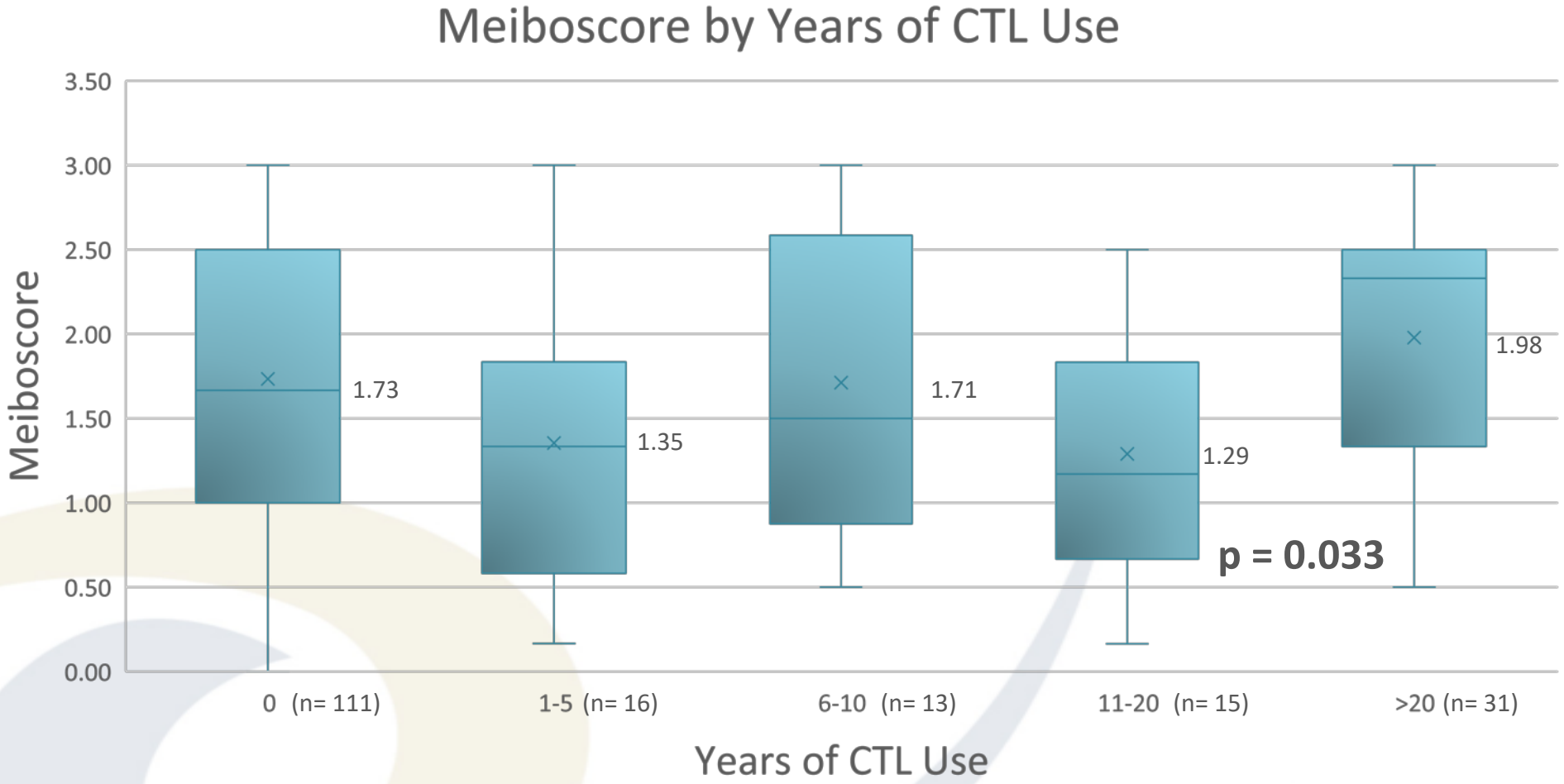
Meiboscores by Type of CTL Worn




Meiboscore by Soft CTL Change Frequency
Meiboscore
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1.73
1.71
1.43
1.68
p = 0.796
None (n= 111)
Dailies (n= 24)
Biweekly (n= 9)
Monthly (n= 14)
Soft CTL Change Frequency

Meiboscore by Hours Per Day of CTL Use




Meiboscore by Years of CTL Use
Meiboscore
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1.73
1.35
1.71
1.29
1.98
p = 0.033
0 (n= 111)
1-5 (n= 16)
6-10 (n= 13)
11-20 (n= 15)
>20 (n= 31)
Years of CTL Use

Discussion

- CTL users do not demonstrate more meibomian gland loss than those who do not use CTL
- The type of CTL used, change frequency, and hours of use per day do not seem to have an impact on meibomian gland dropout on meibography
- Chronic CTL users (more than 20 years) appear to suffer from more meibomian gland dropout than those who have used contact lenses for less time

Thank you!

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