**Introduction:**

- In 11.1% dry eye symptoms are caused by a hyposecretion of the lacrimal gland. More often hyperevaporation is the initiating factor with 76.7% [1].
- A dysfunction of the meibomian glands induces an insufficient lipidlayer which leads to a hyperevaporation of the tear film [2].

Therefore the examination of the meibomian glands with infrared-meibography is supposed to be a standard component of the dry eye diagnostic

- IR-meibography uses IR-light and an IR-sensitive camera to visualize the meibomian glands > signs of a dysfunction can be detected at an early stage
- Grading scales enable a meaningful documentation
- For the classification of meibomian glands the MEIBOSCORE by ARITA et al. [3] seems to be the most common grading scale > lacking information regarding its quality

**Purpose:**

Primary objective:
- Intra- and interrater reliability of the new illustrative grading scale by JENVIS RESEARCH which was developed in dependence on the MEIBOSCORE of ARITA et al. (2008)

Secondary objective:
- Intra- and interrater reliability for the MEIBOSCORE
- Compare both scales with each other

**Methods:**

- 48 trained practitioners independently graded a set of 80 images, 40 of the upper as well as the lower eyelid in a randomized order, with one of two grading scales in an online survey that consisted of four independent cycles
- Figure 1 shows the execution plan for this study

**Results:**

Figure 3 shows the absolute frequency with which the KAPPA values for the intrarater reliability were classified according to their level of agreement.
- 48 participants = 48 KAPPA values for both grading scales
- The individual gradings of all 80 images (including upper and lower eyelid) were factored into this calculation of the KAPPA values
- The separate calculations of the KAPPA-COEFFICIENTS for upper and lower eyelid show comparable results

**Conclusion:**

Both grading scales show a high degree of agreement concerning the repeatability (intrarater reliability) as well as the classification by different graders (intrarater reliability).
- Especially the intrarater reliability was improved employing the illustrative scale by JENVIS RESEARCH
- Illustrative scales may be beneficial to practitioners to classify meibomian gland dropout.
- The optometric practice is lacking grading scales for the classification of the thickness and tortuosity of meibomian glands

**References:**


**Employee grading scales:**

- The well-established grading scale by ARITA et al. [2] (Figure 2, red frame)
- The new illustrative grading scale by JENVIS RESEARCH (Figure 2, blue frame) in dependence on ARITA et al.

**Statistics** → KAPPA-COEFFICIENT according to COHEN and FLEISS

- COHENS-KAPPA measures the level of agreement between repeated classification by one grader and therefore the intrarater reliability [2]
- FLEISS-KAPPA measures the level of agreement between classifications of different graders, consequently it measures the interrater reliability [2]
- The KAPPA-COEFFICIENTS were interpreted as followed:
  - KAPPA-Values < 0 (no agreement), 0–0.2 (slight), 0.21–0.4 (fair), 0.41–0.6 (distinct), 0.61–0.8 (substantial), > 0.8 (almost perfect)

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