

WHAT SHOULD YOU ADD TO YOUR PRACTICE FOR DRY EYE?
A SURVEY ON PERCEIVED VALUE OF VARIOUS DRY EYE DIAGNOSTIC AND
TREATMENT DEVICES AND PROCEDURES


by

Carrie Mitera

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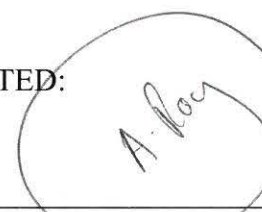
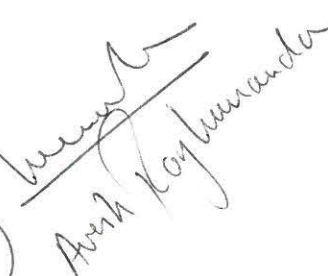
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ABSTRACT

Background: Dry eye management among eye care providers varies greatly based upon the technology available to the clinician. The newest technology available for diagnosing and managing dry eye disease is can be very costly. There are also many different brands of diagnostic and treatment equipment available. Eye care professionals have to determine what device they would like to add to their office, as well as which brand they think will work the best. The purpose of this study is to determine what in office equipment and procedures eye care providers think are most rewarding financially, as well as clinically. *Methods:* An electronic survey was distributed asking clinicians what types of in office devices and procedures they use to treat dry eye. The eye care clinicians were then asked to rate the financial value of these devices to their practice on a scale of one to five (one being low and five being high). There was also an “N/A” option available as well if the clinician did not know, or if that procedure or device was not billable or did not contribute to the financial value of the practice. The same was asked about the clinical value of the instrument. The survey was sent out through many different electronic routes. The Michigan College of Optometry Alumni were contacted through email, the individual state optometric societies throughout the United States were sent an email survey invitation, and the survey was posted on two Facebook social media pages (ODs on Facebook and OSD Docs). *Results:* The main categories in this survey were Meibomian gland analysis,

Meibomian gland heating units, tear analysis, and lid hygiene. Out of the devices listed, eye care providers may benefit more from adding the Oculus Keratograph 5M, Tear Science Lipiflow, or Intensed Pulsed Light. Clinicians may not benefit as much from adding the Rysurg BlephEx or the TearLab Osmolarity Test. *Conclusions:* Adding another device or procedure to an eye care clinic can be expensive, and can take time to implement. It is important for a provider to know what works and what doesn't. This survey provides the perceived clinical and financial value of various testing and treatment devices and for dry eye. Based on the assigned values of the eye care clinicians that responded to this survey, the Oculus Keratograph 5M, Tear Science Lipiflow, and Intensed Pulsed Light therapy seem clinically and financially beneficial. However the Rysurg BlephEx and TearLab Osmolarity Test did not rate as well. The Lipiflow also was the most desired instrument that clinicians listed to add to their current practice.

TABLE OF CONTENTS

| | Page |
|---------------------|------|
| LIST OF TABLES..... | vi |
| CHAPTER | |
| 1 INTRODUCTION..... | 1 |
| 2 METHODS..... | 5 |
| 3 RESULTS..... | 12 |
| 4 DISCUSSION..... | 17 |

LIST OF TABLES

| Table | Page |
|--|------|
| 1 Map of Survey Participant Locations. | 5 |
| 2 Most Common Meibomian Gland Analysis | 6 |
| 3 Perceived Financial Value of Various Meibomian Gland Analysis... | 7 |
| 4 Perceived Clinical Value of Various Meibomian Gland Analysis... | 8 |
| 5 Most Common Types of In Office Meibomian Gland Heating Units | 9 |
| 6 Perceived Financial Value of Various In Office Meibomian Gland Heating Units..... | 10 |
| 7 Perceived Clinical Value of Various In Office Meibomian Gland Heating Units..... | 11 |
| 8 Most Common Tear Assessment..... | 12 |
| 9 Perceived Financial Value of Various Tear Assessment..... | 13 |
| 10 Perceived Clinical Value of Various Tear Assessment..... | 14 |
| 11 Most Common In Office Lid Scrubbing Procedures..... | 15 |
| 12 Perceived Financial Value of Various In Office Lid Scrubbing Procedures | 16 |
| 13 Perceived Clinical Value of Various In Office Lid Scrubbing Procedures | 17 |
| 14 What do Eye Care Provides Want to Add Next to Their Practice?... | 18 |

CHAPTER 1

INTRODUCTION

There is an increasing amount of patients being treated for dry eye, and eye care providers are the primary physicians tackling this problem. There are many different ways of treating and managing dry eye, and an ever increasing list of devices and techniques that eye care clinicians can provide the patient as in office treatment. Each of these products fall on a spectrum of prices, from an affordable Bruder mask, to a state of the art meibomian gland expression unit like the Tear Science Lipiflow. With all of these options, it might be difficult for providers to determine what the most effective product might be to add to their practice that is clinically effective and also brings in an appropriate revenue for the practice.

This survey was created to show how eye doctors rated the various diagnostic and treatment devices and procedures that they are currently using in their offices. The main categories in this survey were Meibomian gland analysis, Meibomian gland heating units, tear analysis, and lid hygiene. There are many different tools and techniques to evaluate the health of the Meibomian glands. There are high end devices that take pictures of the glands that can be costly to add to an office, or the clinician can use a transilluminator to evaluate the Meibomian glands. Both of these techniques give the clinician important information about the level of the patient's condition, however it is the eye care provider's choice to determine how clinically valuable the information is as well as if the cost of the procedure is worth the information it

presents. This same decision making must be employed for the other categories as well (Meibomian gland heating units, tear analysis, and lid hygiene).

CHAPTER 2

METHODS

An electronic survey was disseminated to eye care providers via email and social media (ODs on Facebook). This survey asked eye care physicians to provide the types of instruments they use in their practices, as well as the products they have available in office for their patients. Participants in the survey were asked to grade these instruments and products on clinical importance (on a scale of 1 to 5, 1 being the worst and 5 being the best), as well as financial benefit these services have to the practice. The survey also inquired what instruments the participant would be next interested in purchasing. The participants were also asked to provide their practice zip code. This survey was submitted to the Ferris State University IRB, and the IRB stated that this survey did not need IRB approval at the time and could be sent out as is.

The participants were informed that the survey would take about 5-10 minutes, and information on the nature of the study as well as contact information of the investigators was listed before the participants entered the survey. Participants could end the survey at any point without any penalty. All survey entries were anonymous.

The survey was available from November 13, 2018 to January 15, 2019. There were 231 responses, from 214 unique zip codes.

CHAPTER 3

RESULTS

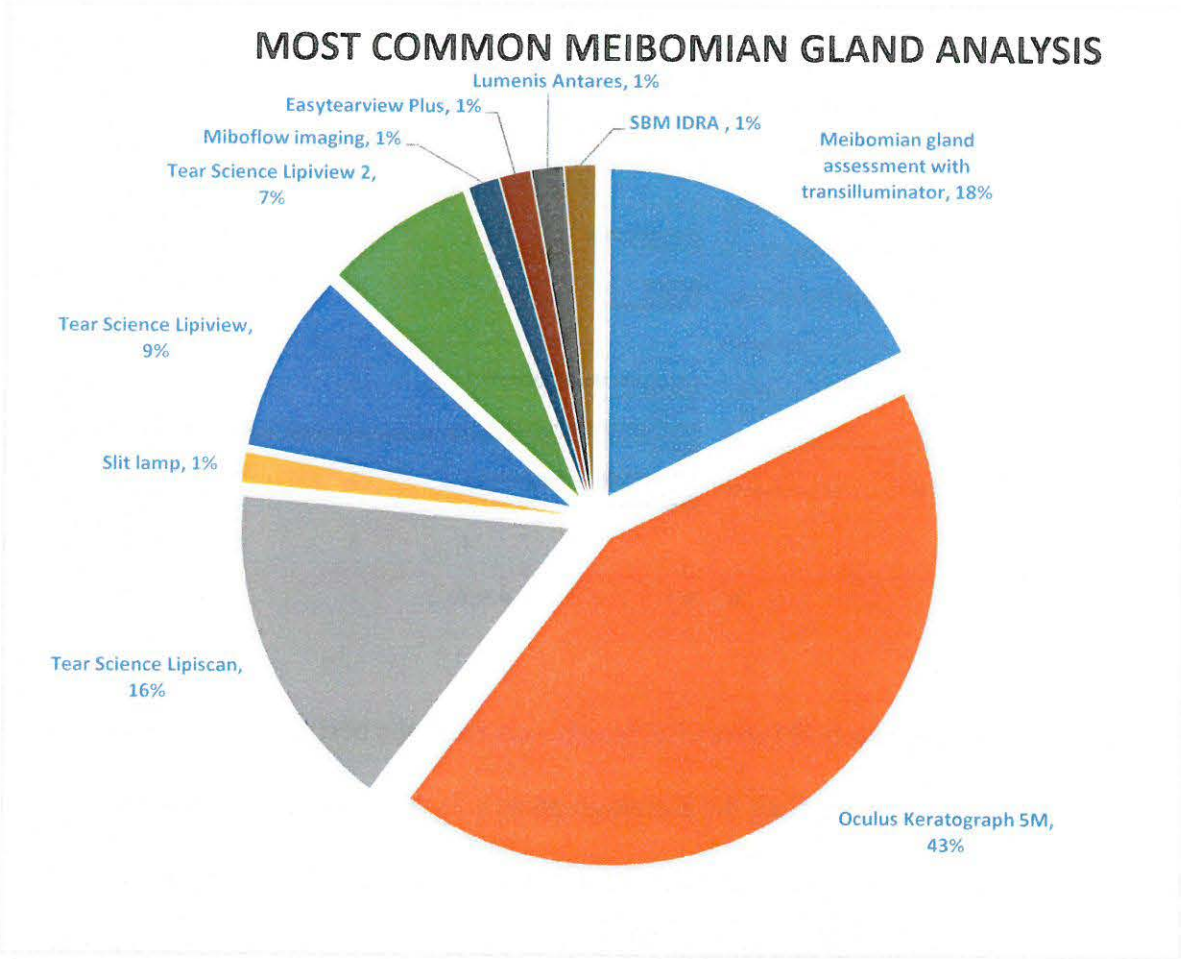
There were 231 participants that took the survey. There were 214 unique practice zip codes listed. Participants were from the United States, Canada, Norway, the United Kingdom, Lithuania, and Malaysia.

Table 1. Map of Survey Participant Locations



The first category of the survey was Meibomian gland analysis. The most popular method to evaluate the health of the Meibomian glands among providers was the Oculus Keratograph 5M (43%), followed by using a transilluminator (18%), Tear Science Lipiscan (16%), Tear Science Lipiview (9%), Tear Science Lipiview 2 (7%), Slit lamp evaluation (1%), Miboflow imaging (1%), Easytearview Plus (1%), Lumenis Antares (1%), and SBM IDRA (1%).

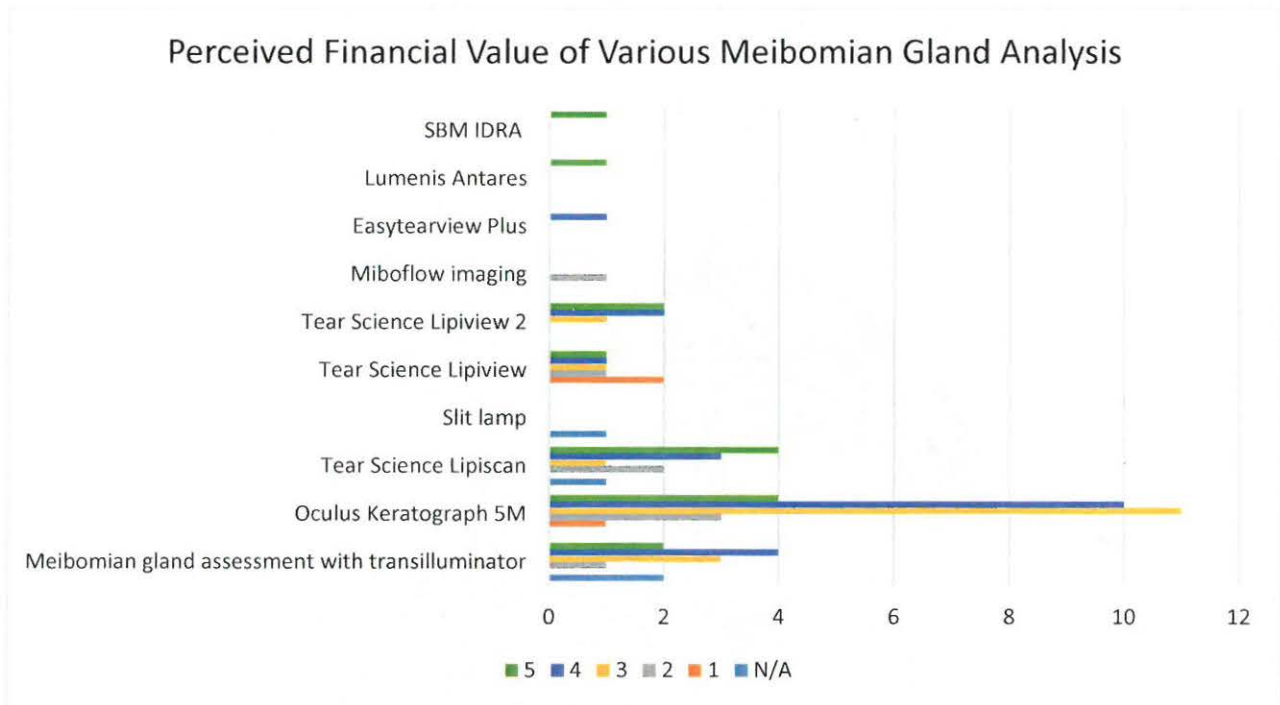
Table 2. Most Common Meibomian Gland Analysis



Out of the Meibomian gland analysis devices and procedures, the Oculus Keratograph

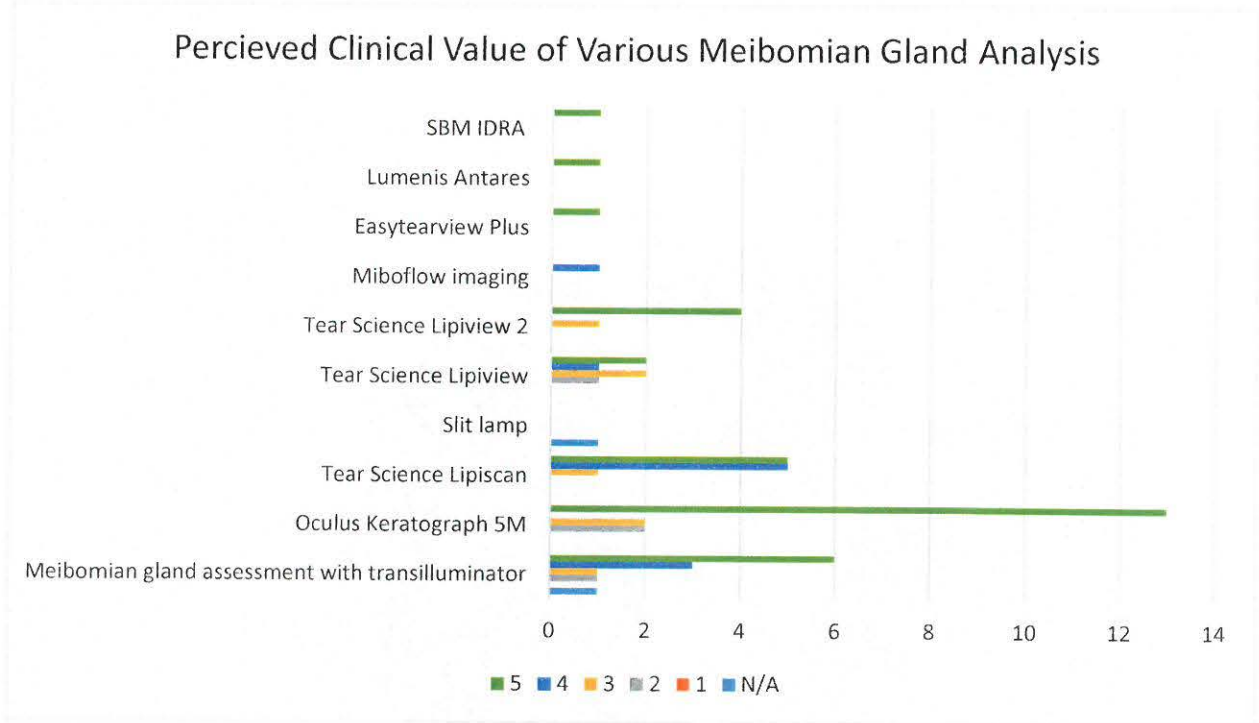
5M and the Tear Science Lipiscan tied for the most amount of 5 rated scores for perceived financial value (four providers rated these devices as 5). The Tear Science Lipiview had the most amount of 1 rated scores for financial value (two clinicians rated the Lipiview as a 1 for financial value).

Table 3. Perceived Financial Value of Various Meibomian Gland Analysis



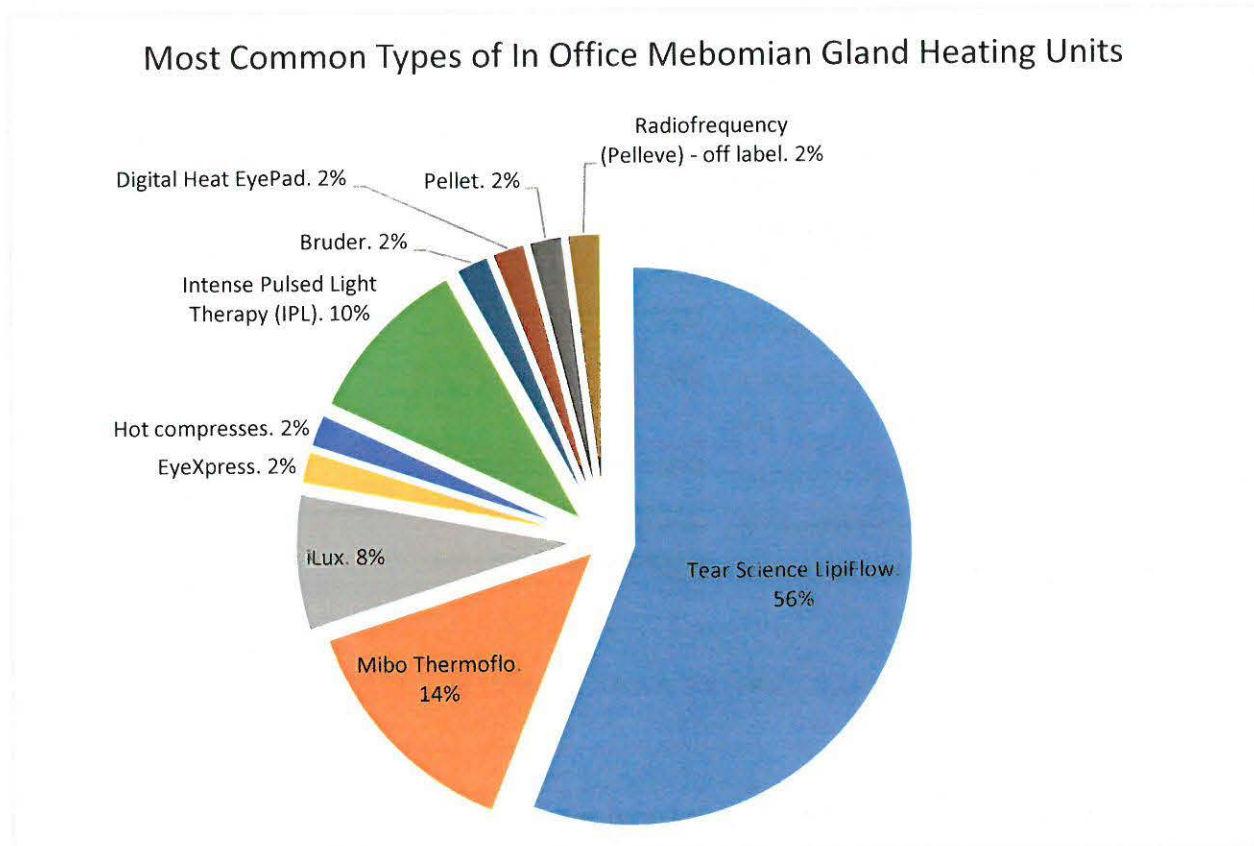
The Oculus Keratograph 5M overwhelmingly was rated the best by most providers for clinical value (thirteen providers rated the Keratograph as a 5). No participants marked any of the instruments or procedures for Meibomian gland analysis as a 1 for clinical value, but two providers rated the Keratograph as a clinical value of 2, and one participant rated the Lipiview as a clinical value of 2.

Table 4. Perceived Clinical Value of Various Meibomian Gland Analysis



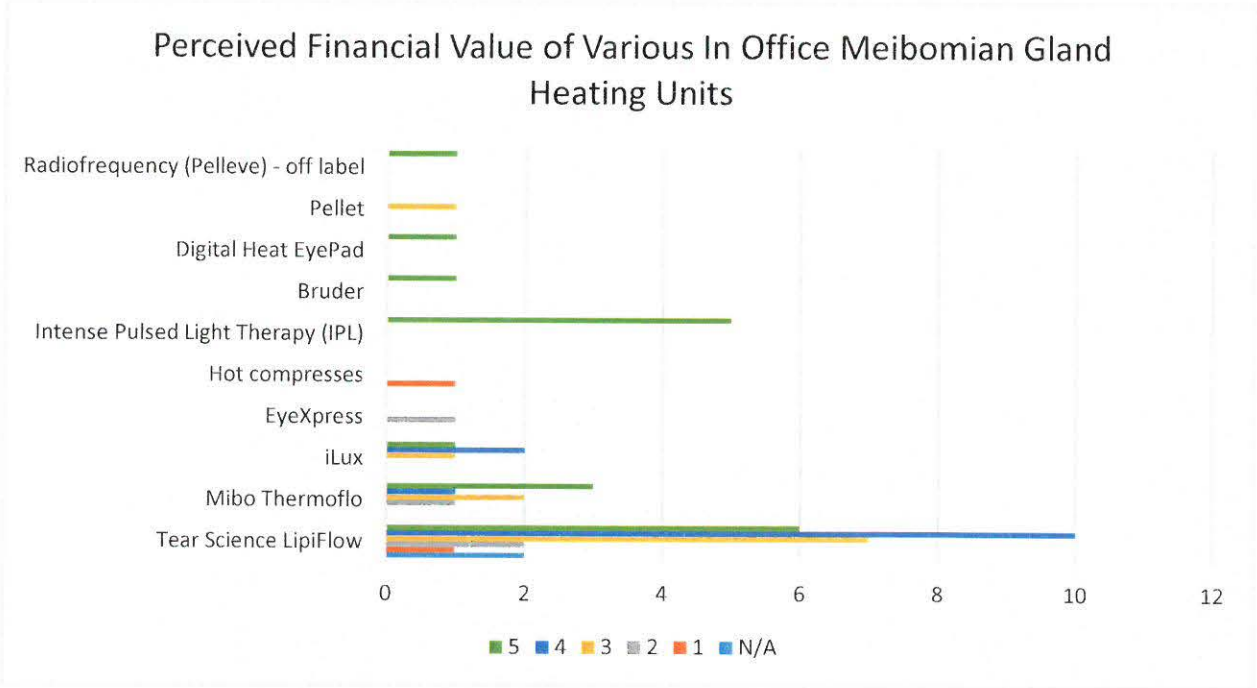
The most common in office Meibomian gland heating unit that provides use was the Tear Science Lipiflow (56%). The next most common unit was the Mibo Thermoflo (14%), IPL (10%), the iLux (8%), EyeXpress (2%), hot compresses (2%), Bruder mask (2%), Digital Heat EyePad (2%), pellet hot compress (2%) and the Pelleve radiofrequency off label unit (2%).

Table 5. Most Common Types of In Office Meibomian Gland Heating Units



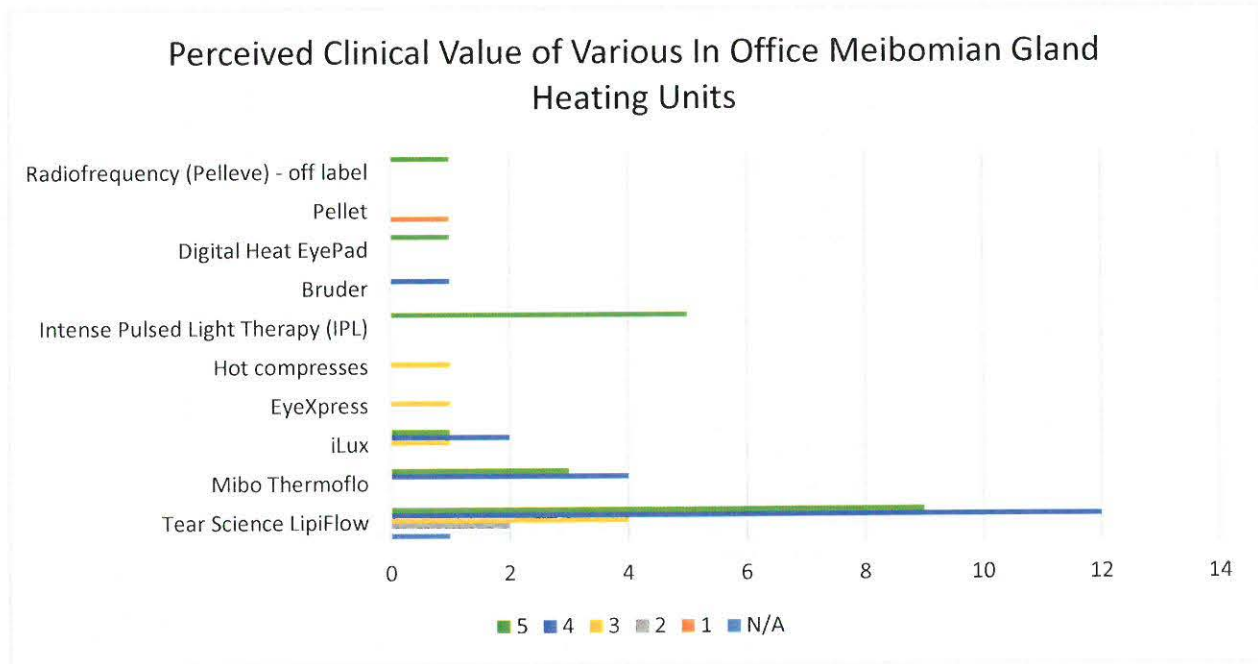
The Tear Science Lipiflow was most highly rated by clinicians for financial value (six participants rated it as a 5, and ten participants rated it as a 4). IPL came in second with five providers rating it as a 5. The one and only provider that uses hot compresses in office marked them as a 1 for financial value, and one provider that has the Lipiflow marked it as a 1 for financial value.

Table 6. Perceived Financial Value of Various In Office Meibomian Gland Heating Units



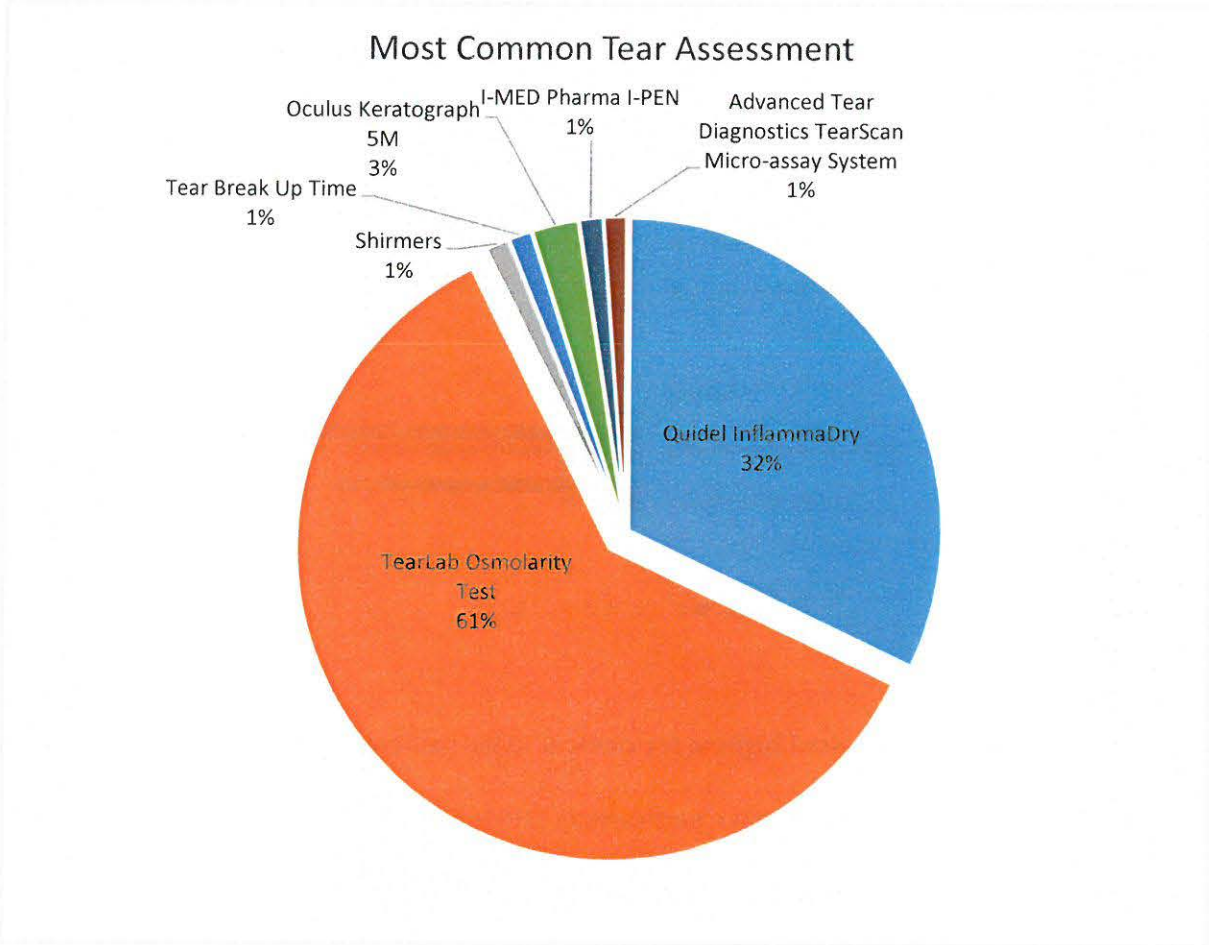
The Lipiflow also was highly rated for clinical value (nine participants rated it as a 5), and the pellet hot compress was rated the lowest for clinical value (one participant rated it as a 1).

Table 7. Perceived Clinical Value of Various In Office Meibomian Gland Heating Units



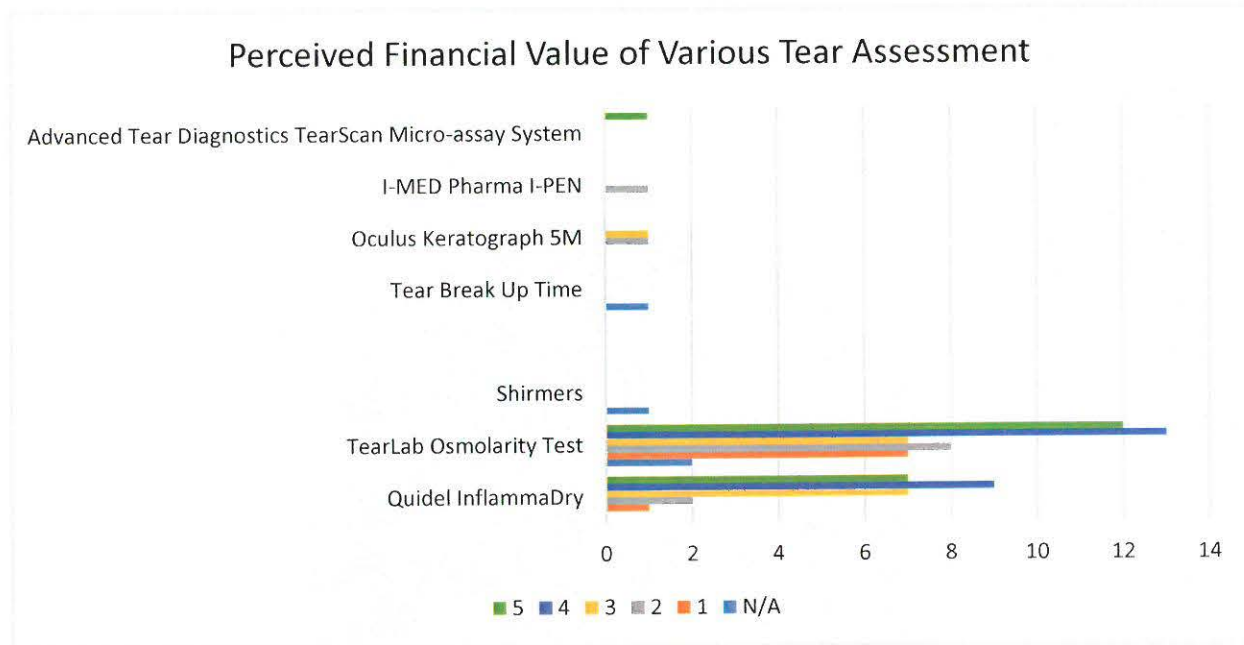
The most common tear assessment device used was the TearLab Osmolarity Test (61%), followed but the InflammADry (32%), Oculus Keratograph 5M (3%), Shirmers (1%), Tear Break Up Time (1%), I-MED Pharma I-PEN (1%), and the Advanced Tear Diagnostics TearScan Micro-assay System (1%).

Table 8. Most Common Tear Assessment



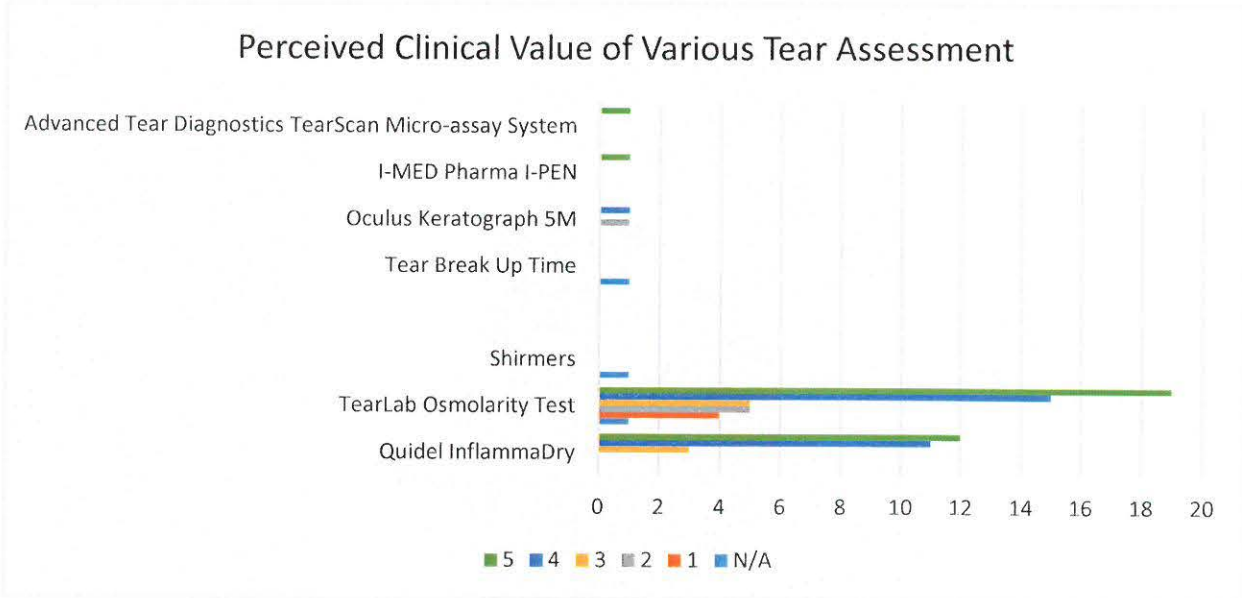
TearLab was rated the highest by participants for financial value (twelve eye doctors rated it as a 5). However seven providers also rated TearLab as a 1 for financial value. The only other device that received a 1 rating for financial value was the Inflammadry (one participant rated it as a 1).

Table 9. Perceived Financial Value of Various Tear Assessment



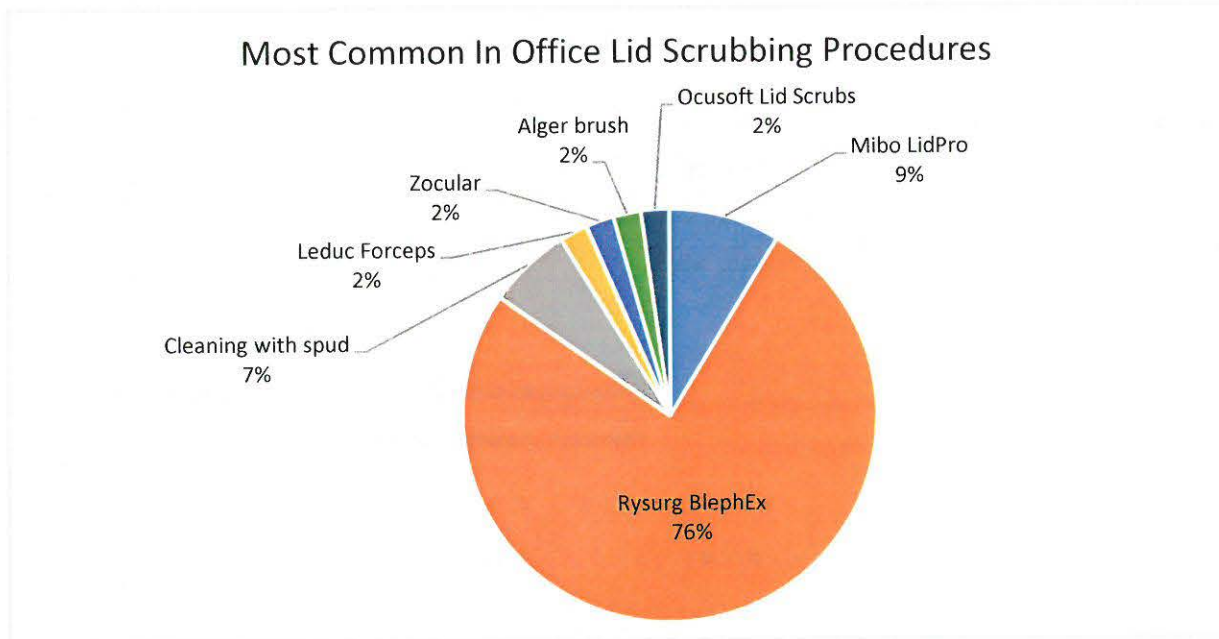
The TearLab test measured highest for clinical value (nineteen participants rated it as a 5), followed by the InflammDry (twelve participants rated it as a 5). However the TearLab also had the poorest ratings (four participants marked it as a 1 for clinical value).

Table 10. Perceived Clinical Value of Various Tear Assessment



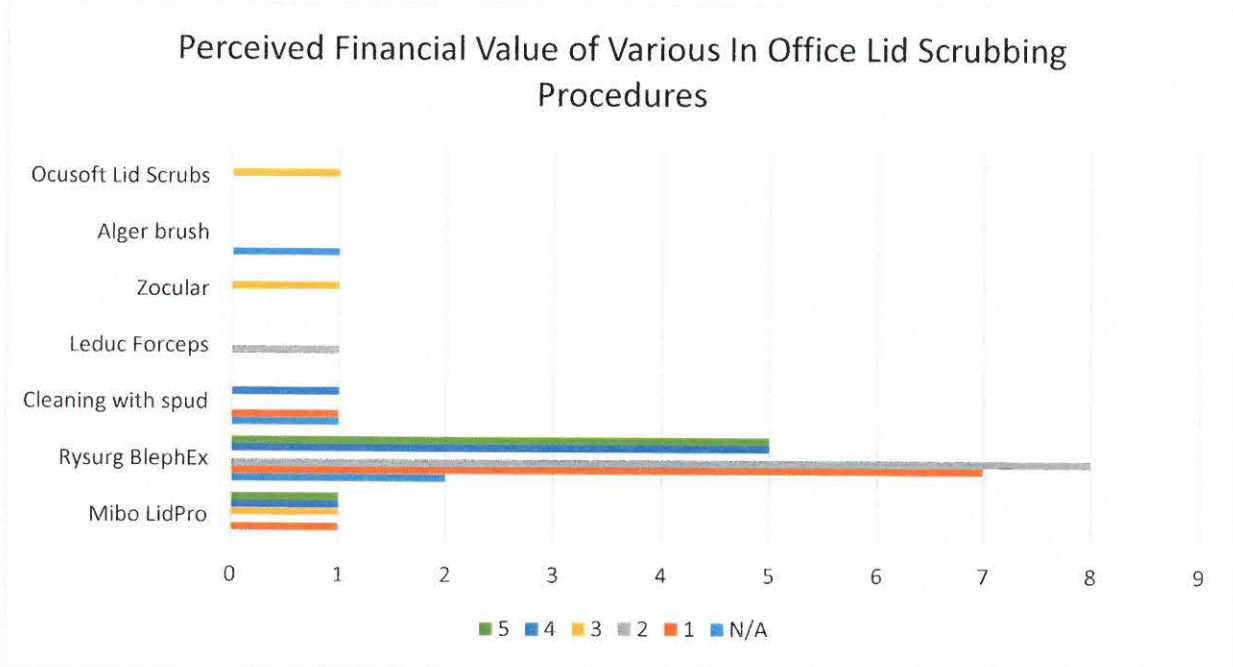
The most common lid scrubbing procedure by a large margin was the BlephEx (76%), followed by the Mibo LidPro (9%), cleaning the lids using a spud (7%), cleaning the lids with Leduc forceps (2%), Zocular lid scrubbing system (2%), Alger brush debridement (2%) and Ocusoft Lid Scrubs (2%).

Table 11. Most Common In Office Lid Scrubbing Procedures



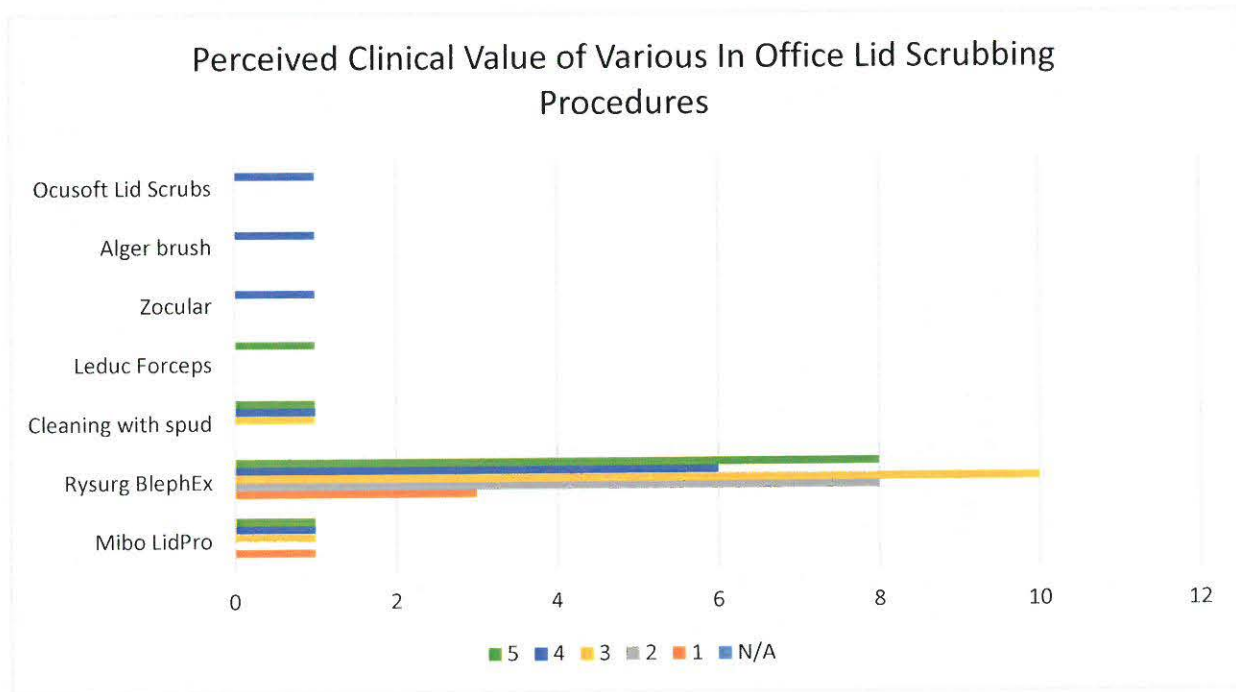
The BlephEx technically had the most amount of 5 ratings for financial value (five providers marked it as a 5), however there were more participants that rated it poorly (seven rated it as a 1, and eight rated it as a 2). While it is the most common type of in office lid scrubbing device, it also has the largest amount of poor ratings.

Table 12. Perceived Financial Value of Various In Office Lid Scrubbing Procedures



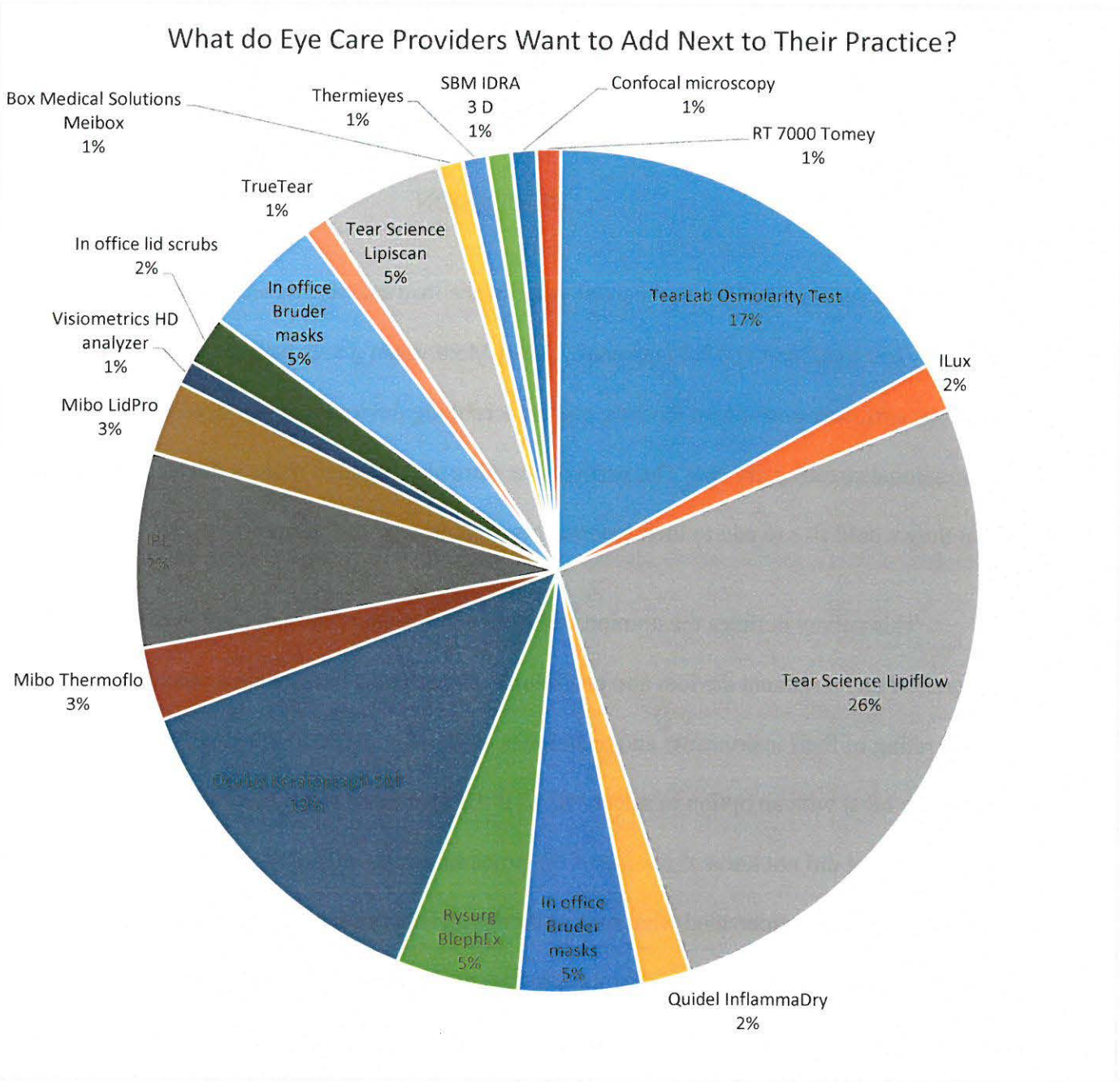
The BlephEx also had the largest amount of high ratings for clinical value (eight participants rated it as a 5) as well as the largest amount of poor clinical value ratings (three clinicians rated it as a 1).

Table 13. Perceived Clinical Value of Various In Office Lid Scrubbing Procedures



When asked what participants would like to add next to their practice, most answered that they would pick the Tear Science Lipiflow. The next most common answer was the TearLab Osmolarity Test (17%), followed by the Oculus Keratograph 5M (13%).

Table 14. What do Eye Care Providers Want to Add Next to Their Practice?



CHAPTER 4

DISCUSSION

This survey provider's perceived value of the instruments and techniques they use for their dry eye treatment and management. Use of Meibomian gland analysis, Meibomian gland heating units, tear assessment devices, and lid scrubbing devices was surveyed from eye care professionals treating dry eye. The participants were also asked to name a device or procedure that they would like to add to their existing practice, as well as their practice zip code.

This survey outlines the opinion that eye care providers have of their in office dry eye diagnostic and treatment devices and procedures. Participants listed their financial and clinical value rating of their instruments and techniques on a scale of 1 to 5 (1 being the worst and 5 being the best) with an option to select "N/A" if the procedure is not billable to insurance, or if the participant did not know the value of the procedure/instrument. The results of the survey help eye care providers understand what many other clinicians think of the devices and procedures that they are performing in office for the treatment of dry eye. It also demonstrates which devices are most popular and are clinically helpful to eye care professionals, as well as which are most beneficial financially to the practice. This survey serves as a guide to other providers which instruments are truly worth implementing into their practices, and which instruments are more "hype" and not clinically relevant helping treat patients and/or financially lucrative to procure and add to the eye care practice.

After reviewing all of the results of the survey, perhaps an eye care provider would benefit the most from a device like the Oculus Keratograph 5M. The Keratograph has many functions (tear assessment, meibography, topography) and was consistently rated well clinically and financially. Intense Pulsed Light therapy as well as the Tear Science Lipiflow was also consistently rated well financially and clinically. A device that perhaps a clinician would not benefit from adding to the practice would be the Rysurg BlephEx. While it was the most popular device used for in office lid hygiene maintenance, it had many poor ratings for financial value, as well as poor ratings for clinical value. The TearLab Osmolarity Test also had a proportionally larger number of poor ratings for financial value to the practice.

There are some weaknesses in this study. It is known that there are several different categories of dry eye, and this survey did not address which instruments and/or products are better for which type of dry eye. Some people answered N/A to some of the questions because they did not know the answer to the question, or did not have an opinion on the question. These answers were not useful to the study, and it is possible that they should have been discarded during data analysis.

There were also quite a few outliers in the data. Of the four device/procedure categories, all of them had at least one or two very popular devices, and then many devices that were listed by only one provider. Therefore interpreting the data was flawed because these outliers were included in the data. For instance, one provider might have listed a device that no one else listed, and rated it highly in clinical and financial value. It is possible that it is a great device, but it since it is such a small sample size it is not properly representative of the device.

This is why data was mostly analyzed by the number of responses, not by averages.

While the survey asks the participants to rate the clinical importance and financial importance of the instruments and/or products, if the participant listed a number of items used, they were not able to split up each item and rate them individually, they simply had to just rate them as a group. Therefore, the items that were submitted as one group with a single rating for clinical and financial value were split up and that one value was assigned to all of the items in the group. This creates a flaw in the value assignments, as a provider might personally assign different values to certain instruments or procedures, but did not have the opportunity to list them separately in the format of this survey.

All of the value ratings were subjective opinions and did not have concrete data behind why a provider rated the procedures or devices. Therefore, a provider might rate a device improperly if they are not reviewing the actual financial income that the product generates for the practice. The provider might also be billing incorrectly for the procedures, and that could also affect the way they value the instrument or technique. The clinical value could also be inaccurate as it is just the opinion listed from the clinician. It is possible that a device could be very clinically helpful, but if the provider does not know how to interpret the data that is provided from the device, they could rate the device lower than its true clinical value.

The survey did not target a specific group of eye care providers. The email survey was sent to all types of providers (those in private practice, institutions, academia, etc). These settings greatly influence how a provider might rate a technique or device.

In some settings clinicians are able to use a wide variety of devices, and therefore might rate a specific device differently than a private practice clinician that only has one device catered towards dry eye diagnosis and management.

There were a fairly large amount of participants in this survey, however not all of the participants listed a device that they use, so while there were 231 participants, there were not 231 responses in each of the device categories. For instance, only 68 participants listed and rated a Meibomian gland analysis procedure or device. Therefore this greatly impacts the statistical significance of the survey responses.

