

Evaluation of the Ocular Surface and Adnexa of Permed Lashes Wearer Among Selected 4th year Female Students of the School of Optometry

Cecilia L. Yu, Cecilio DG. Basan III,

Cathlyn Faye J. Dichoso, Ma. Isabel C. Escobar, Aeron John C. Estrella,

Ellysha Joyce D. Garcia, Romuel Ryan D. Musico, Kyle Leslie L. Ocampo II, Patricia Anne C. Oro,

Jeanna Marie N. Remandaban, Mariel Marea D. Rongavilla, Alaine Anne N. Sahagun

Optometry Centro Escolar University

Philippine

*mclyu@ceu.edu.ph

Abstract— This study was designed to evaluate the effect of permed lash wear of the selected 4th year female students in the School of Optometry. Subjects were purposely selected according to our inclusion and exclusion criteria which narrowed down to forty-three subjects. The subjects' undergone pre-post assessment and permed lash wear procedure. The assessment was composed of self-administered questionnaire; ocular surface disease index questionnaire; slit-lamp biomicroscopy; noninvasive tear break up time; invasive tear break up time and Schirmer's test. Data were gathered upon preliminary assessment before permed lash wear, After Day 1 and After Day 7 of permed lash wear procedure. Meibomian gland dysfunction is the most common finding in eyelid margin and t of flakes in eyelashes. Thus, in terms of tear film status majority of the subjects had dry eye syndrome which decreasing severity on day 7 after perming lash procedure. Statistically, permed lash wear procedure had no effect on the ocular surface, palpebral and bulbar conjunctiva.

Keywords: *ocular surface, ocular adnexa, permed lash wear procedure, slit-lamp biomicroscopy, Schirmer's Test, tear film, ocular surface disease index, meibomian gland dysfunction, dry eye syndrome*

I. INTRODUCTION

A quote from an unknown author goes "eyes are captivatingly beautiful, not because of the color but because of the words they hold within them." This quote pertains to how exquisite a woman's eyes are because they can express different moods and emotions of an individual. That is the reason why women nowadays, use different products or do different procedures to their eyes to enhance their beauty. The only problem is that women buy products even if they do not know whether it is safe or not, and this may cause harm to their eyes. However, if the products used or procedures are done safely, then it could result having alluring eyes.

One of the most common beauty enhancing techniques nowadays is the eyelash perming. The enhancement procedures evolved from applying mascaras to eyelash extensions and now, eyelash perming. This procedure is done in order for the eyelashes to be curled and to appear longer and thicker as if mascaras are applied.

Recently, eyelash perming is now becoming a trend among Filipinos. Nobody knows who invented the eyelash perm. Some say France invented eyelash perm, because France is also known as the world's beauty parlour capital, and others ascribe Japan due to the fact the eyelash perming became popular there about 10 years ago.

In an article published by Beauty Resource UK [1], the eyelash perm was inspired by the earlier creation of hair perm that invented in 1870s. The hair perm solution used today contains *ammonium thioglycolate* that is also used in eyelash perming, this chemical helps break down the protein bonds in the hair to permanently alter the structure of each strand. Eyelash perming is done by special adhesives that coat around the lashes and wrapped around with rods and covered with plastic wrap with perming solution. This holds them in a curled position that you were hoping to achieve.

Further, the Beauty Resource article cited that the eyes and the skin around their eyelashes are extremely delicate, and can occur irritation especially if one has history of dry eye and other extra ocular diseases. Since the chemical used in hair perm are also used in eyelash perm, if the chemical left on too long, there's a great possibility in damaging the lashes although extra precautions are done to protect their eyes and the skin around it.

Basically, eyelashes perform several functions in their eyes. In an article published by wonderpolis org [2], they are used to protect the surface of the eye from small particles such as dust, sand and other debris from entering and harming the eye. Eyelashes are also helps us to provide a danger warning, since eyelashes are very highly sensitive to touch. They can provide a warning that an object may be too close to the eye. With these functions, eyelashes are replaced 60-90 days but when the lashes were pulled out they can take around 7-8 weeks to grow back. Any devices or any chemicals that are used in eyelashes is bound to do some damage and when used over an extended period of time or done with too much pressure can cause hair loss. Therefore, their eyes particularly their eyelashes are very sensitive.

They must always consider that the eye cosmetics can make their eyes more attractive but one should not cause harm

to their eyes. This research will provide an objective point of view of the positive and negative effects of eyelash perming as well as the importance of ocular health and hygiene.

II. MATERIAL AND METHOD

A. Procedure

The objective of the study is to evaluate the effect of permed lash wear of the selected 4th year female students in the School of Optometry. The study utilized One-group pre-test post-test Quasi-Experimental as the research design. It involved the determination of pre and post test results which was appropriate to the study. Purposive sampling was the technique used in gathering the subjects in accordance to the inclusion –exclusion criteria narrowing the subjects to 43. In this study, the selected 4th year female student with specific age requirement were chosen to participate.

B. Data Analysis

Selection of Subjects : Inclusion criteria

Subjects of this study included selected female 4th year students from different sections from the School of Optometry ranging from 18-25 years old. Subjects must be 1st time to undergo any eyelash cosmetic procedure by the time this research is conducted

Patients who have worn contact lens at least a month before the research is conducted and who have had eye disease for the past six months by the time this research is conducted were excluded in this study. Patients who have undergone eye surgery were not also included.

Clinical Test and Procedure

Several tests and procedures were administered to the subjects. These were slit lamp biomicroscopy, schirmer’s strip, tear break-up time, ocular surface disease index, and self-administered questionnaires.

The Slit-lamp Biomicroscopy helped the researchers in assessing the subject’s ocular surface and adnexa, to check if there are any diseases and abnormalities in the anterior portion of the eye which includes the eyelids, eyelashes, conjunctiva and cornea. The Schirmer’s strip is used to check the quantity of tears of the subjects by instructing them to close their eyes for 5 minutes.

Tear break-up time was used in assessing the tear stability of the subjects. This test was done by instilling fluorescein into the subject’s tear film and the subject is asked not to blink while the tear film is observed under cobalt blue illumination.

Ocular Surface Disease Index (OSDI) is used to assess if the patient has dry eye disease. This index demonstrates sensitivity and specificity in distinguishing between normal subjects and patients with dry eye disease. OSDI has given different situations that may be experienced by the subjects.

This helped the researchers determine the severity of the dry eye disease of the subjects.

Questionnaires were done by the researchers for the pre-assessment to screen the participants who are eligible in the said study.

Statistical treatment

The data are utilized and interpreted using several statistical tools such as Percentage, Mean, Standard Deviation, P value and Cochran Q test. Percentage was useful in determining the distribution of subjects in terms of age, condition of the ocular surface on the preliminary assessment, after 1st and after 7th day of permed lash wear, ocular adnexa, condition of eyelashes and tear film status. To determine the difference in the condition of the ocular surface on the preliminary assessment, after 1st and after 7th day of permed lash wear, ocular adnexa, condition of eyelashes and tear film status, mean, standard deviation, p value and Cochran Q test were used.

III. RESULTS

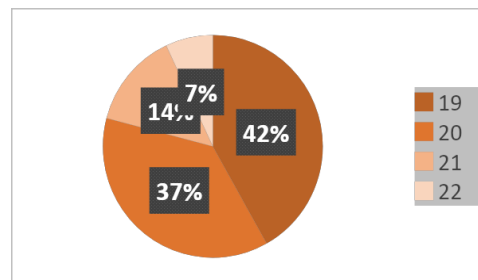


Figure 1. Profile of Subject in terms of Age

Subjects in terms of Age

The age range of the 43 subjects was 19-22 years old. Most of the subjects aged 19 years old with a percentage of 42% from Figure 1. This is in relation from the book of Cline and Fay [3] that most girls started wearing make-up and enhance their look at this age. All of the subjects are female from a similar reason from O’Brien [4] saying appearance and attractiveness matters more to women than men.

1. Changes in the Ocular Surface After Day 1 and After Day 7 of Permed Lash Wear Procedure.

In figure 2 shows that after Day 1 and Day 7 of eyelash perming procedure (2.3%) of the subject had corneal scar while 42 (97.7%) of the subjects had normal finding revealing that there is no significant difference on the ocular surface.

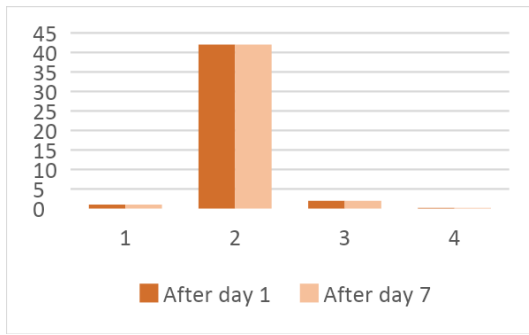


Figure 2. Changes On The Status of Cornea After 1 Day Perming, and 7 Days Perming

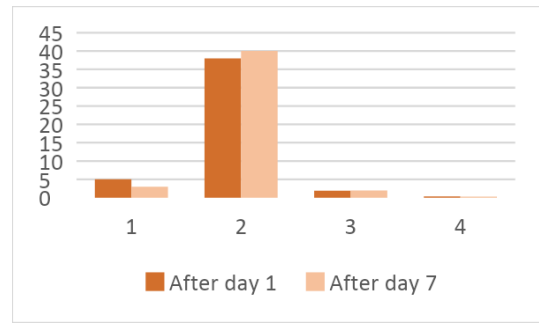


Figure 5. Changes on the Status of Palpebral Conjunctiva After 1 Day Perming and 7 Days Perming

2. Changes in the Ocular Adnexa After Day 1 and After Day 7 of PermedLash Wear Procedure.

2.1 Eyelid Margin. It was revealed that most subject had meibomian gland dysfunction in both post assessment thus it also denotes it decreased on after day-7 of permed lash wear.

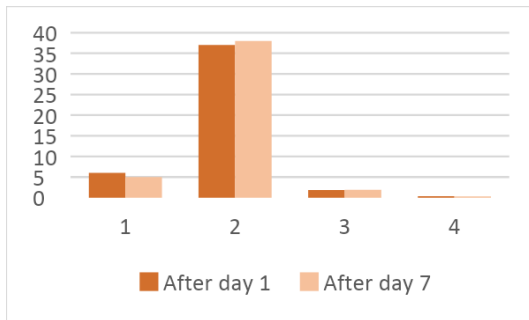


Figure 3. Change on the Status of Eyelid Margin after 1 Day Perming and 7 Days Perming

2.2 Eyelashes. The common significant finding was presence of flakes in both post assessment. Also misdirection of lashes is common in 7th day after permed lash wear revealing a higher chance to have significant findings as time goes by.

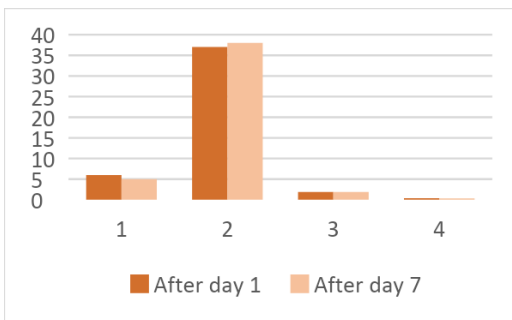


Figure 4. Changes on the Status of Eyelashes after 1 Day Perming, and 7 Days Perming

2.3 Palpebral Conjunctiva. Most of the subjects appeared to have papillae for both eyes. Redness disappeared on 7th day after permed lash wear.

2.4 Bulbar Conjunctiva. Majority of the subject had redness grade 2 and decreased on day 7 after permed lash wear.

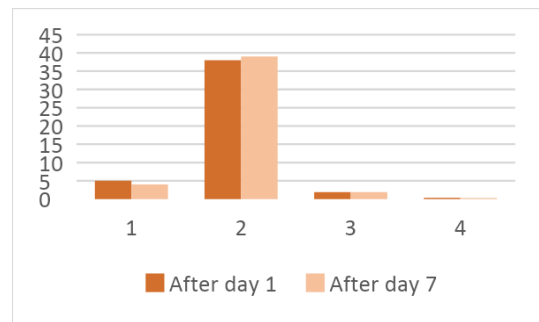


Figure 6. Changes on the Status of Bulbar Conjunctiva after 1 Day Perming and 7 Days Perming

3. Changes in the Tear film status After Day 1 and After Day 7 of PermedLash Wear Procedure.

3.1 Quantity. For both eyes, it showed majority of the subject had dry eye after the permed lash wear and significantly increased on 7th day after the said procedure.

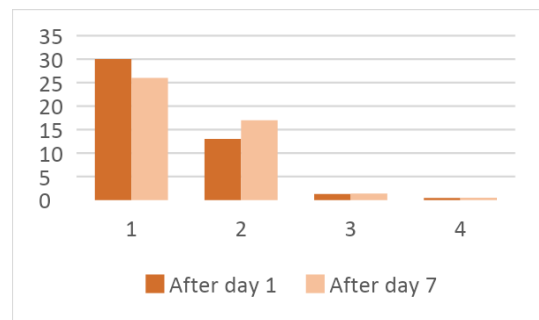


Figure 7. Changes on the Status of Tear Quantity OD after 1 Day Perming and 7 Days Perming

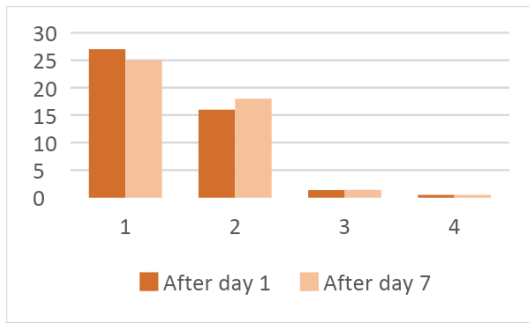


Figure 8. Changes on the Status of Tear Quantity OS after 1 Day Perming And 7 Days Perming

3.2 Quality. In terms of NITBUT the right eye revealed to have dry eye and increased severity in 7th day after permed lash wear while the left eye decreased in 7th day after permed lash wear. And in terms of ITBUT both eye showed improvement in tear stability.

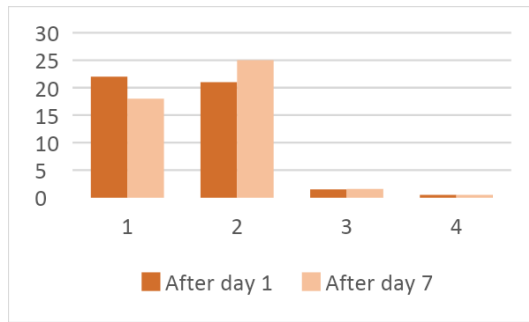


Figure 9. Difference on the Status of Tear Stability (NITBUT) OD after 1 Day Perming and 7 Days Perming

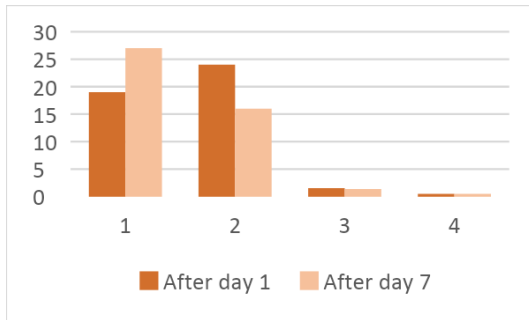


Figure 10. Difference on the Status of Tear Stability (NITBUT) OS after 1 Day Perming and 7 Days Perming

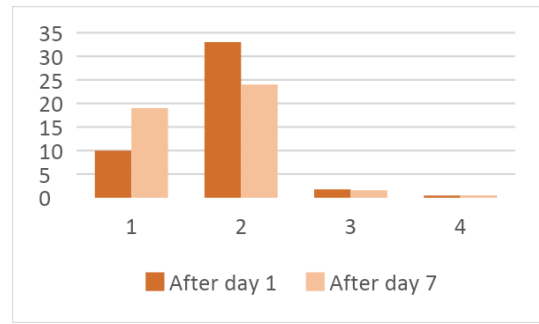


Figure 11. Difference on the Status of Tear Stability (ITBUT) OD after 1 Day Perming and 7 Days Perming

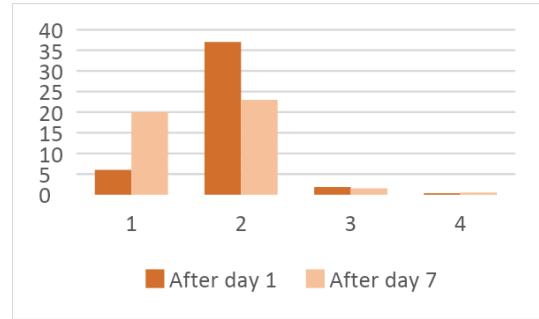


Figure 12. Difference on the Status of Tear Stability (ITBUT) OS after 1 Day Perming and 7 Days Perming

3.3 Results of OSDI Most of the subjects experienced severe dry for both 1st and 7th day after permed lash wear.

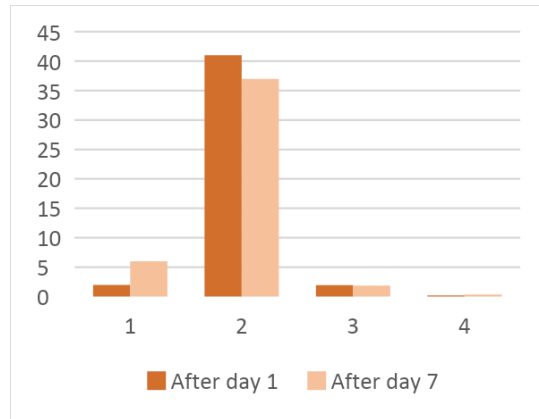


Figure 13. Changes on the status of ocular surface disease index after 1 day and 7 days permed eyelash wear

IV. DISCUSSION

Based on the results of the findings, the following recommendation are drawn:

- 1. Consumer.** The researcher recommends instillation of artificial tears after perming procedure to prevent dry eye and be aware of the pros and cons of altering the natural structures of the body.

2. **Establishment Owner of Perming Lash Wear.** The researchers encourage awareness of the possible side effects of eyelash perming for the benefit of the consumer.
3. **Future Researchers.** The research can be a guide in conducting research of about perming of eyelashes and its effect also to use for researches for other related study about ocular surface and adnexa.
4. **Optometrist.** The researchers recommend that the optometrist do a comprehensive exam to address the possible effect of perming of eyelashes; thus, they recommend when encountering patients who have undergone eyelash they introduce proper eye care, in to endation artificial tears.
5. **Academe.** The researches recommend to have an Optometrist that specializes on patients who use cosmetics.

V. CONCLUSION

Based on the analysis and interpretation of the findings, the following conclusions are presented.

1. Majority of the subjects are 19 years old since the 4th year was the selected level.
2. Statistically permed lash wear had no significant difference in the ocular adnexa.
3. Meibomian gland dysfunction and presence of flakes is the most common finding seen on the subjects in terms on the eyelid margin and eyelashes respectively.
4. It can be concluded that permed lash wear can cause Dry Eye Syndrome in both quality and quantity of the tear film, which could be brought about by the adhesive used or the main chemical in perming procedure that can alter the precorneal tear film.
5. The ocular structure that was altered by permed lash wear was eyelashes and meibomian gland since the procedure uses a special glue, perming solution and neutralizer that can clog the follicles and gland responsible for the supply of meibum and which prevents the tear film to evaporate.

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