

## ORIGINAL ARTICLE

### Ocular discomforts following eyelash extension

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Eyelash extension has become common practice for enhancing beauty among Ghanaian women on occasions such as weddings, festivities, and other social gatherings including funerals. This study was therefore conducted to ascertain the effect of eyelash extension on the eyelid and on vision. One hundred and twenty (120) females who had had prior experience with eyelash extension were interviewed on; reasons for extension, frequency of extension, and various problems encountered after extension of their eyelashes. Majorities (94.2%) of the respondents were aged 10-39 years and were literate (91.5%). About 70% (i.e. 69.2%) have undergone eyelash extension more than once. The major purpose (81.6%) for extending their eyelashes was to enhance their beauty, with eyelash replacement accounting for only 1.7% of respondents. One hundred and seventeen (97.5%) had one or more of these problems; dry eyes, itchy eyelids, tearing, burning sensation, lid swelling and pain, casting of shadows in vision, misdirected eyelashes, purulent discharge and eyelashes falling into the eye. Thirty nine (32.5%) had difficulty removing the eyelash extensions. Irrespective of the various difficulties they encountered 65% still intend fixing their eyelashes again because they thought it was fashionable. Eyelash extension could have unfavourable effect on the eyelid and vision. Beauticians should be well trained to ensure safety of the procedure while females should be educated on the potential ocular health hazards of eyelash extension.

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**Keywords:** Itchy eyelids, dry eyes, lagophthalmos, misdirected eyelashes, false eyelashes, eyelash baldness

#### INTRODUCTION

The eyelids are modified folds of skin closing the front of the orbit which act to protect the anterior surface of the globe from local injury (Agarwal, 2002). Additionally, they aid in regulation of light reaching the eye; in tear film maintenance, by distributing the protective and optically important tear film over the cornea during blinking and in tear flow, by their pumping action on the conjunctival sac and lacrimal sac (Patel and Meyers, 2011). Eyelashes, which are found on the margins of eyelids, serve to protect the eye from foreign objects such as

sand and dust among others (Catania, 1996; Edwards, 2011). Eyelashes are shed, like other types of hair, from the follicle. Each eyelash has its own growth cycle (anaphase) that lasts six to eight weeks so that most eyelashes are present to maintain their collective protective mechanisms.

Eyelash extension has become the latest cosmetic trend all over the world. Long eyelashes are considered a sign of femininity in many cultures, as a result some women seek to enhance their eyelash length artificially, using eyelash extensions (Hadza, 2003). False eyelashes can be used for individuals who have thin or short eyelashes along with mascara to thicken the look of eyelashes which creates a bold look (Champion, 2009). According to Julia, (2011), an Arizona based beautician, eyelash exten-

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sion is a revolutionary way to extend the length and thickness of your eyelashes. The false eyelashes used in the extension are synthetic and tapered from thick to thin to resemble a real eyelash. It is applied on a hair by hair basis to one's lashes for a complete natural look.

To the beautician, the procedure may seem simple. However, from the health care point of view, it is still important to pay close attention to its effect on vision and how safe the procedure is as the intermittent fixing of artificial lashes may interfere with the normal periodic shedding and growth of new lashes and cause some discomforts. Eyelash extension could irritate the eyelid or clog follicles in the eyelid as well as pull out eyelashes during removal (Sachdeva and Prasher, 2008). The procedure does not allow frequent washing of the eyelids which could result in bacterial and/or fungal infection seen as ocular discharge with conjunctivitis and eyelid diseases (Sanford-Smith, 1986). The eyelashes may also be displaced when wet with water or sweat and serve as foreign body on the eye. The aim of the study therefore was to establish the comfort and safety or otherwise of eyelash extension. This will involve ascertaining the frequency of the procedure, identifying reasons why some female extend their eyelashes, finding the class of females involved in the procedure, and identifying some problems they face as a result eyelash extension.

## MATERIALS AND METHODS

### Study Area

The study was conducted in Kumasi Metropolis of the Ashanti Region of Ghana. Kumasi (Area: 254 km<sup>2</sup>) is the second-largest city in the country (after the country's capital city Accra) where tradition is held very high and blends very well with modernity. Kumasi is approximately 300 miles (480 km) north of the Equator and 100 miles (160 km) north of the Gulf of Guinea. It is popularly known as "The Garden City" or "Heart Beat" of Ghana because of its many beautiful species of flowers and plants. In the city, data was collected from some of the well-developed suburbs like Adum, Patasi, Asokwa, Atonsu, Ashanti New town, Santasi and Bantama.

### Study design

Questionnaire, which consisted of open and closed-ended questions on the subject, were administered purposively to 120 females in saloons, shops and homes. Information sought for included; demography, reasons for eyelash extension, frequency of extension and various problems encountered after eyelash extension. Interpretation and/or translation were given to those who could not understand clearly the questionnaire.

### Ethical considerations

The study was approved by the ethics committee of the College of Health Sciences, the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana. Consent of the respondents was also sought through formal notification. Participants were alerted that participation in the study was voluntary and that they were free to withdraw from participation at any time.

### Limitations

Clients' visual acuities were not known before they underwent eyelash extension. The effect on visual acuity therefore cannot be deduced as there was no reference point. Furthermore, males were excluded because eyelash extension is notable among women who are much particular about their eyelashes, showing sign of femininity.

### Data Analysis

Data obtained after administration of the questionnaires was analyzed using SPSS 17 for windows. Graph was plotted using GraphPad prism Version 5 for Windows.

## RESULTS

Among the 120 females interviewed, 94.2% were between the ages of 10-39 years with the highest number of respondents (68.4%) between the ages 20-29 (Figure 1A). Majority (69.2%) had extended their eyelashes more than once with approximately 50% of them having done it more than three times (Figure 1B). Forty two percent (42%) of the females had secondary education, 33% tertiary education, 18% primary education, with only 7% having no form of education (Figure 1C). The purpose for

the majority (81.6%) extending their eyelashes was to enhance their beauty with eyelash replacement accounting for only 1.7% (Figure 1D).

All participants identified with one adverse event or the other with the majority (n=58) reporting of three to four adverse effects after the procedure (Figure 2A). The adverse events reported after the procedure were dry eyes, itchy eyelids, tearing, burn-

ing sensation, lid swelling and pain, casting of shadows on vision, misdirected eyelashes, heavy eyelids, pus release and eyelashes falling into the eye. Figure 2B is a descriptive statistics of the number of participants affected by each of the adverse events (Figure 2A). Asked whether the participants would want to go through the procedure again, 65% responded in the affirmative, whilst 35% said they had no intention of extending their eyelashes again.

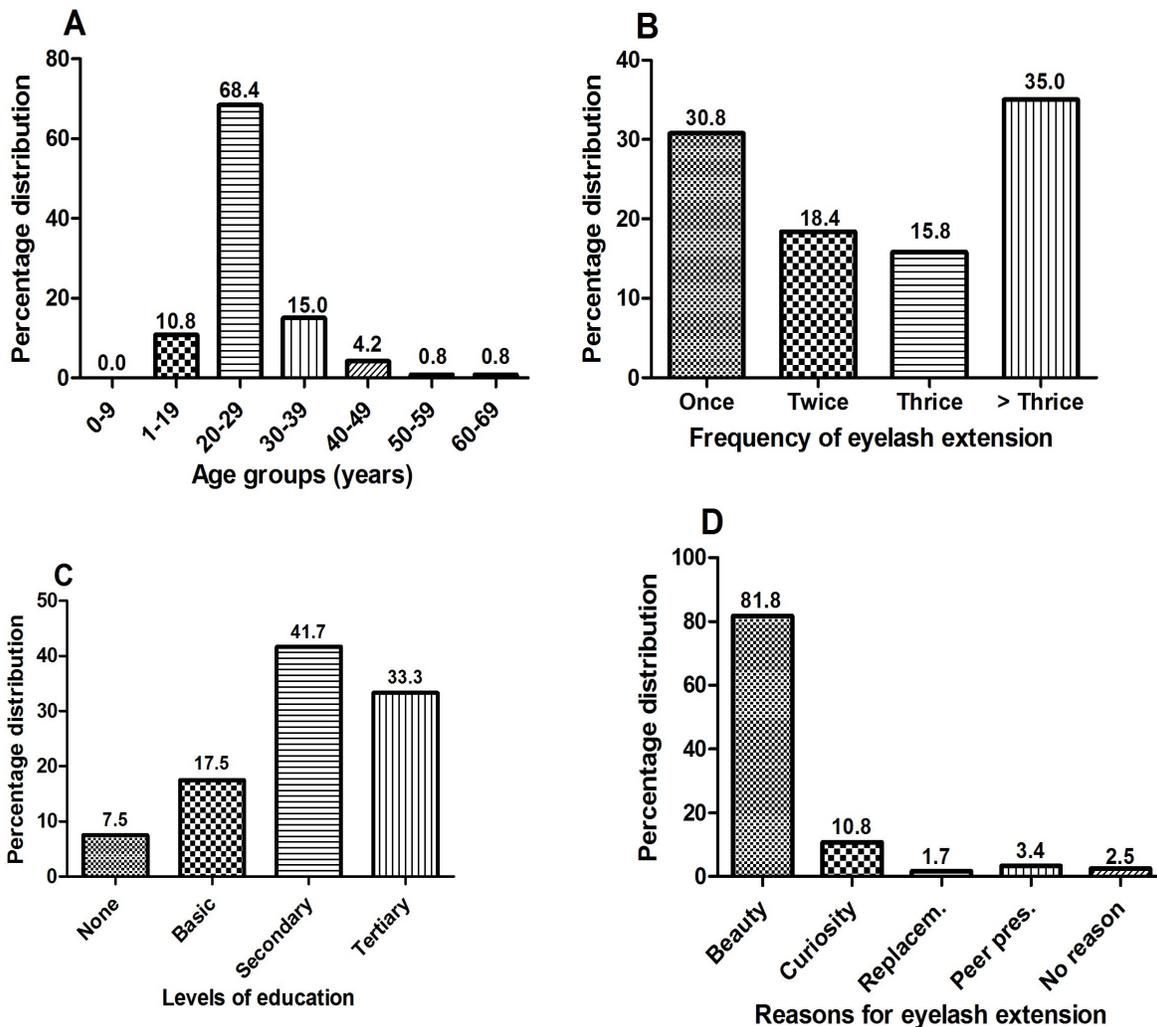
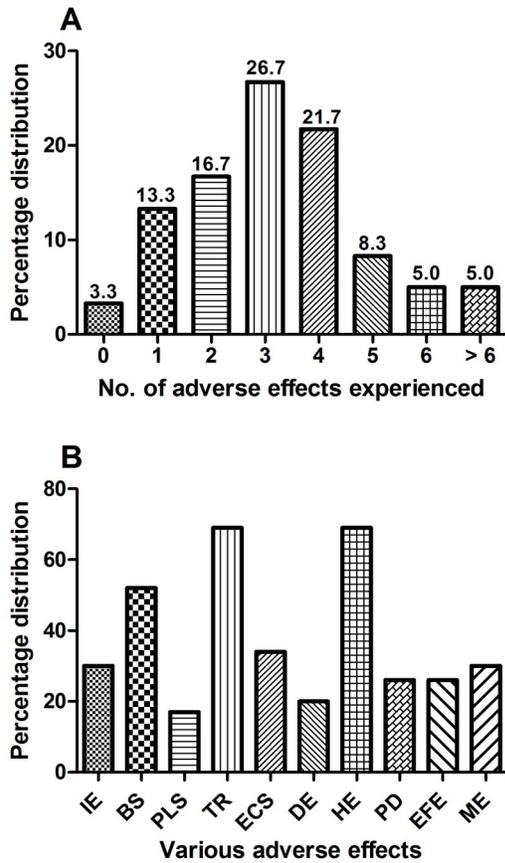


Figure 1: Percentage distribution of the studied population according to age (A), frequency of eyelash extension (B), the level of education attained (c) and the reasons for eyelash extension (D)



**Figure 2: Percentage distribution of the studied population according to the number of adverse effects experienced (A) and the various adverse effects (B). Itchy eyelids (IE), burning sensation (BS), pain and lid swelling (PLS), tearing (TR), eyelashes casting a shadow on vision (ECS), dry eyes (DE), heavy eyelids (HE), purulent discharge (PD), eyelashes falling into the eye (EFE), and misdirected eyelashes (ME).**

**DISCUSSION**

Eyelash extensions involve a number of enhancements designed to add length, thickness and fullness to natural eyelashes (EEC, 2012). Eyelash extension is gradually becoming common practice in Ghanaian cities. Findings from this study showed that 94.2% of the respondents were aged 10-39 years and 91.5% were literates' giving an indication that eyelash exten-

sion has caught on with the literate population and the youth. Although these females extend their eyelashes to appear more attractive and to keep abreast with post-modernism, the 10-19 year old females encountered in this study did this to look beautiful for the occasion of being the bride's maid, or flower girl for a wedding, or attempting to enhance ones beauty after graduating from Junior High School.

The age distribution suggests that the economically active age-group of the population (20-29 years) are the majority involved in eyelash extension. It can also be said that this age group represents school going youth groups. Detrimental effects of this procedure on vision therefore could be a risk factor in socioeconomic development (Frick and Foster, 2003). Visual disruptions can and often do interfere with reading and learning. The majority (50%) of the respondents had attended at least a second cycle institution which shows that the procedure is done by the literate population who want to explore other avenues of looking beautiful as this was the main reason for undergoing the procedure. This is quite interesting because one would have thought that, literates should have exempted themselves from eyelash extension for beauty as they are expected to learn more about the procedure before engaging in it. The good news, however, is that findings of the negative implications of eyelash extension could be communicated easily to the literates with better understanding.

Almost all the participants had various problems such as dry eyes, itchy eyelids, tearing, and burning sensation. Research has shown that dry eyes result when there is lack of sufficient lubrication and moisture in the eye (Loft, 2011). Persistent dryness results in itching, burning sensation, as well as foreign body sensation and tearing (Lee et al., 2011). During the entire 90-150 minute procedure, blinking which moisten the ocular surface is drastically reduced (Mouselli, 2010). This could result in dry eyes and its resultant tearing and burning sensation (Bedinghaus, 2007). Occasionally, after eye lash extension, there could be incomplete closure of the eyelids (lagophthalmos) during sleep exposing the

corneal surface to air, dust and microbes among other. This may promote dry eyes syndrome and ocular bacterial or fungal infection (Alfonso, 2008; Amer *et al.*, 2011, Jernigan, 2011).

Some individuals are allergic to the false eyelashes and materials (e.g. glue) used to attach the eyelashes (Jernigan, 2011; The Beauty Insiders, 2012). The glue also causes burning sensation (Dale, 2006; Champion, 2009). A participant said “when the glue melted and mixed with tears, it caused burning sensation in my eyes”. Another said “if they change the glue, we can continue doing it”, and then one also said “research should be conducted on the composition of the glue to see if it can be modified in order to minimize, if not eliminate totally, the burning sensation it causes”. Glue fumes could account for the watery eye and burning sensation. Salons should be using medical or pharmaceutical grade glue which is free of formaldehyde. Non-medical grade glue and glue with formaldehyde can irritate the eyes (GAA, 2012). An experienced and highly regarded professional beautician should perform a patch test in order to determine whether or not an individual is allergic to the materials used (The Beauty Insiders, 2012). According to the participants, most beauticians have not received formal training and therefore are not experts in eyelash extension fixation and for that matter, could end up getting a lot of glue on the eye which can block the puncta if allowed to get to the lower lids. All these contribute to eye irritation and watering (GAA, 2012).

Purulent discharges experienced by 14 of the participants may be due to microbial infection of the eyelid or blepharitis (Grimms and Graham, 2012). Wearing false eyelashes to bed or for more than one day can cause bacteria to collect under the eyelash glue and on the false eyelash, causing eye infections (Champion, 2009). After the procedure, one cannot wash thoroughly her face, let alone the lids and lashes. This reduction in hygienic condition may lead to microbial infection and dirt entering the eye. Other problems encountered as a result of eyelash extension are misdirection of lashes and lashes falling on their eyes of clients. One respondent commented “it is funny because sometimes as you walk, the lashes

fall themselves. Some respondents complained that, the artificial lashes fall on their eyes during the procedure when they or the beautician fidget. Others also admitted that, the artificial lashes were not properly fixed (misdirection) and this made some fall on their eyes. One perceived danger is that, the artificial lashes, especially, if the base is calcified with the glue, may scratch the cornea and cause pain as well. The extended eyelashes cast a shadow on vision as some of the lashes were too many and/or too long which might affect the quality of vision.

Another area of concern is the difficulty encountered removing the eyelash extensions. Five individuals experienced pain during the removal and swelling on the upper lid after the removal. Repeatedly pulling off extensions, injure the eyelash hair follicles. The extra weight added to the lashes increasing follicle tension and solvents used to dissolve the sealant glue are potentially harmful to the follicles and irritating to the eyelids (Bauman, 2007). This could explain why those individuals experienced pain during the removal of the synthetic eyelashes and post-removal upper lid swelling.

The lashes get stuck so hard to the lids or the natural lashes that the more they tried to pull it, the more the pain (which eventually leads to some eyelid disorders) and the natural lashes being pulled off (The Beauty Insiders, 2012). Three participants had no option than to leave it permanently on with one participant claiming to have cut the eyelashes short with a pair of scissors. There were comments like “it can pluck your natural lashes if care is not taken”, “having done it many times, it has spoilt my natural lashes”. According to Trygve Saude (2003), the eyelashes grow and are renewed two or three times a year. This natural phenomenon, if interfered with frequent fixing of false lashes, may pose a risk of eyelash loss or “eyelash baldness” (Bauman, 2007; Jernigan, 2011).

One would have thought that, all these problems encountered, would reduce individual interest in eyelash extension but as much as 67.2% of the clients said they would fix eyelashes again. Thus, so far as eyelash extension enhances one’s appearance

irrespective of the aforementioned problems, they may want to have it done again. For the minority who do not want to fix and extend their lashes again only 23 (19%) linked their reason to the associated problems. The others gave reasons such as financial constraints and peer pressure from friends to discontinue this fashion. This therefore indicates that even though there were attending problems associated with the procedure, people do not realize the imminent potentially associated hazards the procedure has on the eye and on vision. Females who patronize this procedure need to be educated on how with eyelash extension one's vision could be affected so as to limit the frequency of involvement with the procedure.

## CONCLUSION

Eyelash extensions can seriously predispose patronizing females to eye injury. The eye is a very important but delicate organ of the body; therefore it needs to be well protected to maintain one's sight. Eyelash extension is inimical to the eyelid and could be detrimental to vision and therefore the obsession on eyelash extension should be curbed.

## RECOMMENDATIONS

A national survey on eyelash extension and its effect should be conducted in Ghana. If possible, baseline vision of prospective participants could be compared with vision post eyelash extension to ascertain its effect on vision in general. The Ghana Health Service and the Ministry of Health should be alerted on the upsurge of eyelash extension and its inimical effect on the eye and vision so that these organizations can educate eye care practitioners and the general public.

## COMPETING INTERESTS

The authors declare that they have no competing interests.

## REFERENCES

- Agarwal A, (2002). Anatomy of the eyelid: In Agarwal S, Agarwal A, Apple DJ, (2002). Textbook of Ophthalmology, Vol 2, Jaypee Brothers Medical Publishers (P) Ltd, New Dehli, India. p 551.
- Alfonso EC, (2008). Genotypic Identification of Fusarium Species from Ocular Sources: Comparison to Morphologic Classification and Antifungal Sensitivity Testing (An AOS Thesis) Trans Am Ophthalmol Soc., 106: 227–239.
- Amer TA, El-Minawi HM, and El-Shazly MI, (2011). Low-level versus high-level placement of gold plates in the upper eyelid in patients with facial palsy. *Clin Ophthalmol.*, 5: 891–895.
- Bauman AJ, (2007). Eyelash transplantation is not just for reconstructive purposes anymore. It is becoming part of the aesthetic surgery mainstream. Plastic Surgery Practice [© 2012 Allied Media]. Available at: [http://www.plasticsurgerypractice.com/issues/articles/2007-03\\_02.asp#risks](http://www.plasticsurgerypractice.com/issues/articles/2007-03_02.asp#risks). Accessed on: July 24, 2012.
- Bedinghaus T, (2007). Top seven symptoms of dry eye syndrome. About.com Guide [©2012 About.com], Available at: [http://vision.about.com/od/sportsvision/tp/Dry\\_Eye.htm](http://vision.about.com/od/sportsvision/tp/Dry_Eye.htm). Accessed on: July 24, 2012.
- Catania JL, (1996). Primary Care of the Anterior Segment, 2<sup>nd</sup> Edn, Appleton & Lange, Norwalk, CT 2:22-28.
- Champion L, (2009). The pros and cons of false eye lashes. Livestrong.com [© 2012 Demand Media, Inc.]. Available at: <http://www.livestrong.com/article/47240-pros-cons-false-eye/>. Accessed on: July 24, 2012.
- Edwards R, (2011). [Eye lash growth. \[eHow.com; © 1999-2011\]. Available from http://www.ehow.com/about\\_5403623\\_eyelash-growth.html#ixzz1CLV3Ccao](http://www.ehow.com/about_5403623_eyelash-growth.html#ixzz1CLV3Ccao). Accessed on January 28, 2011.
- Eyelash Extension Clinic (EEC), (2012). What are eyelash extensions? [© Medilash LLC 2008-2012]. Available at: <http://www.eyelashextensionclinic.com/faqs.htm>. Accessed on: July 26, 2012.
- Frick KD, Foster A (2003). The magnitude and cost of global blindness: an increasing problem that can be alleviated. *Am J Ophthalmol.*, 135(4):471-476.

- Go Ask Alice (GAA), (2012). Eyelash extensions: Are they safe? Go Ask Alice! [Copyright 2005-2012]. Available at: <http://goaskalice.columbia.edu/eyelash-extensions-are-they-safe>, Accessed on: July 24, 2012.
- Grimms L, Graham RH, (2012). Common Eye Conditions. Medscape Reference [© 1994-2012 by WebMD LLC], Available at: <http://reference.medscape.com/features/slideshow/common-eye-conditions>, Accessed on: July 24, 2012.
- Hadza C, (2003). Encyclopedia of sex and gender: men and women in the world's cultures, Volume 1. Springer, New York.
- Jernigan K, (2011). Side effects of eyelash extensions. Livestrong.com [© 2012 Demand Media, Inc.]. Available at: <http://www.livestrong.com/article/297718-side-effects-of-eyelash-extensions/>. Accessed on: July 24, 2012.
- Julia T, (2011). What are eyelash extensions? [eHow.com; © 1999-2011] Available from: [http://www.ehow.com/video\\_4407436\\_eyelash-extensions\\_.html#ixzz1CKOW4IPi](http://www.ehow.com/video_4407436_eyelash-extensions_.html#ixzz1CKOW4IPi). Accessed on January 28, 2011.
- Lee J, Bailer G, Thompson V (Reviewer) (2011). Dry Eye Syndrome, [AllAboutVision.com, © 2000-2011] Available from: <http://www.allaboutvision.com/conditions/dryeye.htm>. Accessed on January 28, 2011.
- Loft ES, (2011). Dry Eyes. WebMD [©2005-2012 WebMD, LLC.] Available at: <http://www.webmd.com/eye-health/eye-health-dry-eyes>. Accessed on: July 24, 2012
- Mouselli J, (2010). Xtreme eyelashes [© 2001-2010] Available at: <http://www.xtremelashes.com/faq-consumer.aspx#HowLongDoesItTake>, Accessed on: July 24, 2012.
- Patel B, Meyers AD, (2011). Eyelid Anatomy [WebMD LLC © 1994-2012] Available from: <http://emedicine.medscape.com/article/834932-overview>. Accessed on: July 2, 2012
- Sachdeva S, Prasher P, (2008). Madarosis: A dermatological marker. *Indian J Dermatol Venereol Leprol.*, 74:74-6.
- Sanford-Smith J, (1986). Eye diseases in hot climates, W Arrowsmith Ltd, Bristol, UK, 5:22, 51-54.
- Saude T, (2003). Ocular Anatomy and Physiology, Blackwell Science Ltd, UK, 1:88.
- The Beauty Insiders, (2012). Three most common side effects of having fake lashes. [© 2012 The Beauty Insiders]. Available at: <http://www.thebeautyinsiders.com/3-most-common-side-effects-of-having-fake-lashes.html>. Accessed on: July 24, 2012.

