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Assessment of risk factors on eye dryness in young adults using visual display device in both contact lens wearers and non-wearers

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Abstract
Purpose Researchers are interested in examining the impact of visual display devices (VDDs) on the development of dry eye illness because their use is becoming more common among college students. The goal of this study was to see if there was a link between certain risk factors and the development of eye dryness in VDDs using young adults who wore contact lenses and those who did not.
Methods The self-administrated survey was hosted in Google Forms, sent via e-mail to the participants. It consisted of two parts of assessing different risk factors (i.e., environmental conditions, angle of gaze, and years of VDD use) with contact lens use and Ocular Surface Disease Index (OSDI) questionnaire. The OSDI scores of the entire sample who suffer from dry eye and the subgroup using contact lenses were calculated. The relationship between different risk factors with the OSDI scores was also assessed.
Results A total of 274 young adults from college students and academic staff (216 female, 58 male) were suffering from eye dryness. Eighty-eight of the 274 participants wore contact lenses. The mean OSDI scores of the 274 young adults were 32.92. Mean OSDI scores in contact lens wearers and non-wearers were 34.36 and 32.24, respectively ($p < 0.01$). There was a statistically significant relationship between OSDI score and indoor environmental conditions in computer using VDD group. Using a computer in a dark environment and above the line of sight resulted in a higher OSDI scores. Females who wore contact lenses while using a computer for more than three years had significantly higher OSDI scores than non-wearer females. Tablet type VDD use increased the mean ODSI scores of the contact lens wearers significantly.
Conclusions Dry eye symptoms were shown to be increased in the contact lens wearer group with the increased duration of computer VDD use, decreased indoor environmental brightness conditions, and above the line of sight.

Keywords Dry eye disease · Contact lens use · Computer vision syndrome · Visual display device

Background

The 5th European Survey on working conditions had revealed the exponential increase in computer use over the last twenty years [1]. Especially, the use of handheld electronic devices such as smartphones and tablets had also increased considerably and reached almost saturation levels with 95 percent among the individuals aged 18–34 in 2017 [1]. Consequently, a group of ocular and vision symptoms known as computer vision syndrome (CVS) has emerged among the

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visual display device (VDD) users. CVS was defined by the American Optometric Association as a group of eye and vision problems associated with the computer, tablet, e-reader, and smartphone use for long hours [2]. The most common symptoms of CVS were eye strain, headaches, burning eyes, light sensitivity, blurred vision, dry eyes, neck and shoulder pain [2]. It was predicted that about 60 million people suffer from CVS in the world and that one million new cases emerge every year [3].

Dry eye disease (DED) was a multifactorial ocular surface disease that was the result of inadequate tear production and/or increasing evaporation over ocular surface both of which were resulted in inadequate moistening of the eye [4]. DED might result in serious complications from reversible ocular discomfort due to ocular surface damage to the irreversible visual impairment. Besides the discomfort of the patient, disease interferes with daily life and had unfavorably affected the daily activities such as driving, reading, watching TV, and using a computer. [5] It was more common in females because of changing hormone levels during pregnancy and menopause [6]. Also, some factors penetrating the daily life such as indoor environment could lead to DED which was becoming widespread among the young adults in continuing COVID-19 pandemic [7]. Additionally, low humidity and temperature conditions of the environment were already known as triggering factors for DED [8].

Recently, computer use and contact lens wear were demonstrated as major risk factors in DED guidelines [9]. There were approximately 140 million contact lens wearers and the number of wearers was increasing each year. There was a big diversity of contact lens types with different wear modalities. Many contact lens wearers reported dryness as the initial symptom. Contact lens wear was associated with a 12-fold increase in risk of experiencing dry eye disease, and moreover, more than 50% of the contact lens wearers experienced dry eye symptoms. This requires physicians to stay current in matters concerning contact lens related dry eye disease consequences [10].

This study aimed to investigate the relationship of using various visual display devices in the development of dry eye disease in young adults specifically using contact lenses.

Methods

This was a cross-sectional web-based survey study conducted at tertiary level university hospital that aimed to state frequency and risk factors of eye dryness among young adults (with or without contact lenses) of VDD users.

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Acibadem University (2015–12/8).

The target sample consisted of 568 randomly chosen participants which included graduate and undergraduate students, academic staff, and administrative staff of Acibadem University. Participation was voluntary and anonymous. The survey commenced with an information letter and informed consent was obtained from each participant. It can be reached online as an appendix.

Participants other than young adults (defined as 15–29 years of age) [11] with systemic illnesses, with previous dry eye disease diagnosis, and whose OSDI scores of zero were excluded from the study. In addition to analysis of the entire sample, answers of the contact lens wearers were also analyzed and presented separately from non-wearers.

The survey was hosted in Google Forms, sent via e-mail to the participants. It consisted of two parts of assessing different risk factors (i.e., environmental conditions, angle of gaze, and years of VDD use) with contact lens use and Ocular Surface Disease Index (OSDI) questionnaire. First part included demographic data, experienced eye symptoms, visual tasks during the day (duration, distance and viewing level as using computer, laptop, smartphone, hardcopy reading), and ophthalmic drug use. The second part specifically focused on contact lens wearers and here contact lens usage habits, dry eye symptoms were asked. The participants answered the questions by self-administration.

Questions in both parts were grouped under 3 subclasses: ocular symptoms, vision-related function, and environmental triggers. All questions were graded between 0 and 4; 0 indicates never, 1 indicates sometimes, 2 indicates usually, 3 indicates most of the time, and 4 indicates always. The total OSDI score of the entire population was also calculated as assessed by Schiffman using the following formula.

$$\text{OSDI}^{\copyright} = (\text{sum of scores}) \times 25 / (\text{number of questions answered})$$

Statistical methods

Data was analyzed using the statistical program R version 3.5.0 [12, 13]. Linear regression analyses were conducted as total OSDI score being the dependent variable. Shapiro–Wilk normality and Bartlett homogeneity tests were done on residuals of the model to ensure normal and homogenous distribution. Residuals were homogeneous with abnormal distribution. To normalize the data, Box–Cox transformation was conducted, and best lambda was calculated as 0.6. After the transformation, linear regression analyses were reconducted using 0.6th power of total OSDI scores. Once again Shapiro–Wilk normality and Bartlett homogeneity tests were done on residuals of the model to ensure normal and homogenous distribution. Residuals were homogeneously and normally distributed. To ensure effective sample size, power analysis was also carried out and it had a mean value of 0.81.

Results

Entire cohort

In total, 568 individual responses were collected from the survey and 342 participants experienced the feeling of dry eye. Sixty participants were older than 29 years old and 49 participants had systemic illnesses. After the exclusion, 274 young adults were included in the analysis. Eighty-eight of 274 participants were wearing contact lenses.

Table 1 Demographics of the study cohort

Gender (number of respondents)	
Male	58
Female	216
Age (average)	
Male	21.36
Female	20.86
Total	20.97

There were 216 female and 58 male participants with an average age of 20.97 years. Table 1 shows the demographics of the participants. The average age of women and men were 20.86 and 21.36 years, respectively ($p = 0.18$). Various risk factors of computer use habits associated with dryness in contact lens wearers and non-wearers were demonstrated in Table 2.

The average OSDI score of the entire cohort was 32.92 units and females were likely to present a higher mean OSDI score than males ($p < 0.01$). Mean OSDI scores in CL wearers and non-wearers were 34.36 and 32.24, respectively, and this difference was statistically significant ($p < 0.01$).

Table 3 shows the various risk factors which had a statistically significant effect on OSDI scores of the entire cohort that was obtained from linear regression models. One hundred fifty-nine individuals (58%) were not using a computer or using it less than seven days a week. Females who were not using a computer or even using less than seven days in a week had significantly higher mean OSDI scores than males ($p < 0.01$). There was no significant relation found between OSDI scores of participants with duration of VDD use in an hour, a day, or the time elapsed since the initiation of use ($p = 0.07$ computer, $p = 0.89$ tablet, $p = 0.68$ mobile phone, daily hour; $p = 0.77$ computer, $p = 0.64$ tablet, $p = 0.41$ mobile phone).

Using a VDD in a dark environment resulted in statistically significant higher OSDI scores when compared with VDD users in bright conditions ($p = 0.03$). This subclass of 67 VDD users in dark environment also had significantly higher OSDI scores than non-computer users ($p = 0.01$).

Majority of the participants were using a laptop, 75.55% (207 people). Of the total computer users, only 6.93% (19 people) were using a personal computer (PC). There was no significant difference in OSDI scores between participants using desktop computers and non-computer users ($p = 0.20$), but laptop users had significantly higher OSDI scores than non-computer users ($p = 0.04$). Participants using both laptops and desktops had an even greater OSDI score than non-computer users ($p < 0.01$).

30.29 percent of the participants reported that they were looking at the computer screen from a distance of less than 50 cm proximity and those had significantly higher OSDI scores than others more specifically nonusers ($p = 0.01$).

Table 2 Risk factors of computer use habits associated with eye dryness in contact lens wearers and non-wearers

Risk factor	Lens wearer	Non-wearer	Total no. of respondents
Gender			
Male	10	48	58
Female	78	138	216
Weekly computer Usage in days			
< 7 days	51	108	159
7 days	37	78	115
Weekly phone Usage in days			
< 7 days	4	7	11
7 days	84	179	263
Weekly tablet Usage in days			
0 days	47	99	146
> 0 days	41	87	128
Daily computer Usage in hours			
< 4 h	69	143	212
> = 4 h	19	43	62
Daily tablet usage in hours			
< 2 h	72	165	237
> = 2 h	16	21	37
Daily phone usage in hours			
< 4 h	21	61	82
> = 4 h	67	125	192
Computer usage in years			
< 3 years	11	30	41
3 years	77	156	233
Tablet usage in years			
< 3 years	61	132	193
3 years	27	54	81
Phone usage in years			
< 3 years	1	12	13
3 years	87	174	261
Environment in computer used			
Do not use computer	4	6	10
Bright	61	127	188
Dim	19	45	64
Both	4	8	12
Computer type			
Do not use computer	5	5	10
Pc	4	15	19
Laptop	68	139	207
Both	11	27	38
Computer screen distance			
Do not use computer	4	4	8
< = 50 cm	26	57	83
50–100 cm	57	121	178
> 100 cm	1	4	5
Uses screen saver			

Table 2 (continued)

Risk factor	Lens wearer	Non-wearer	Total no. of respondents
Do not use computer	4	5	9
Yes	41	77	118
No	29	78	107
Do not know	14	26	40
Screen brightness			
Do not use computer	4	4	8
Bright	72	152	224
Dim	12	30	42
Computer level Reference to eye level			
Do not usecomputer	4	5	9
Below	67	139	206
Above	17	42	59

Majority of the participants were using a screen filter. Participants using a computer with a screen filter had significantly higher OSDI scores than participants that stated they do not use a computer in the survey ($p=0.03$). Participants using a computer without a screen filter had also even greater statistically significant increase in OSDI scores when compared to participants that stated they do not use a computer in the survey ($p=0.01$). Participants which were not using screen filters had higher OSDI scores than participants who were using screen filters; however, this association was not found to be statistically significant.

Although participants using a computer with bright screens had significantly higher OSDI scores than non-computer users ($p=0.02$), there was no statistically significant difference between OSDI scores of participants using a computer with dark screens to those using bright screens.

It was showed that using a computer above the line of sight did not cause a significant effect on the OSDI score. However, participants using computers below the eye alignment had significantly higher OSDI scores than non-computer users ($p=0.02$).

Contact lens wearers cohort

Table 4 shows the various risk factors which had a statistically significant effect on OSDI scores of contact lens wearers (CLW) that was obtained from linear regression models. Participants stating a feeling of dryness in their eyes had significantly higher ODSI scores than participants who stated that they did not feel dryness ($p=0.02$). Females were likely to have higher OSDI scores than males and this was also statistically significant ($P=0.03$).

Using a tablet increased the ODSI score of CLWs significantly ($p=0.04$). Females who wore contact lenses and used a computer for more than three years had significantly higher OSDI scores than non-contact lens wearer females using a computer for more than three years ($p<0.001$).

The environment in which the computer is used had a statistically significant effect on OSDI scores of CLWs and using the computer in a dark environment increased the OSDI score ($p=0.02$). In addition, using a computer above the line of sight increased the OSDI score ($p=0.01$).

Discussion

The present study was based on a self-administrative survey including the OSDI questionnaire and conducted among young adults. The correlation of eye dryness with VDD use and contact lens wearing habits among young adults was assessed. It was found that the mean OSDI score of the participants who had been wearing contact lenses was increased to 34.36 from the value of 32.24 in non-wearer young adults. In addition to that, there was a statistically significant difference of OSDI scores was found between genders.

Table 3 Risk factors which had significant effect on OSDI scores, independent variables, ß coefficients, *P* values and confidence intervals (CI) [b]

Risk factor	Variable(*β*'s)	*β* Coefficients	CI	*P* value
Environment in which computer used				
	Age	0.20	0.06–0.33	< 0.01
	Gender (female)	1.75	0.95–2.55	< 0.01
	Lens usage (no)	− 0.16	− 0.85–0.53	0.65
	Bright environment	1.47	− 0.24–3.17	0.09
	Dim environment	2.32	0.53–4.11	0.01
	Both (dim and bright)	2.65	0.39–4.91	0.02
	Intercept[a]	4.29	2.37–6.21	< 0.01
Environment in which computer used; bright				
	Age	0.20	0.06–0.33	< 0.01
	Gender (female)	1.75	0.95–2.55	< 0.01
	Lens usage (no)	− 0.16	− 0.85–0.53	0.60
	Envr.; bright (dim)	0.85	0.09–1.62	0.03
	Envr.; bright (both)	1.19	− 0.40–2.77	0.10
	Envr.; bright (no comp.)	− 1.47	− 3.17–0.24	0.09
	Intercept[a]	5.75	4.69–6.82	< 0.01
Computer type				
	Age	0.16	0.03–0.30	0.02
	Gender (female)	1.70	0.91–2.50	< 0.01
	Lens usage (no)	− 0.19	− 0.88–0.51	0.59
	Computer type (pc)	1.36	− 0.71–3.43	0.20
	Computer type (laptop)	1.77	0.06–3.48	0.04
	Computer type (both)	2.65	0.77–4.52	0.01
	Intercept[a]	4.30	2.38–6.22	< 0.01
Computer screen distance (CSD)				
	Age	0.16	0.02–0.29	0.02
	Gender (female)	1.73	0.93–2.52	< 0.01
	Lens usage (no)	− 0.18	− 0.88–0.51	0.60
	CSD (< = 50 cm)	2.54	0.58–4.50	0.01
	CSD (50–100 cm)	1.90	− 0.01–3.81	0.05
	CSD (> 100 cm)	2.02	− 0.99–5.03	0.19
	Intercept[a]	4.05	1.97–6.14	< 0.01
Uses screen saver (SS)				
	Age	0.16	0.03–0.30	0.02
	Gender (female)	1.73	0.93–2.53	< 0.01
	Lens usage (no)	− 0.21	− 0.90–0.49	0.56
	Uses SS (yes)	1.97	0.15–3.79	0.03
	Uses SS (no)	2.37	0.54–4.21	0.01
	Uses SS (do not know)	1.63	− 0.31–3.58	0.10
	Intercept[a]	4.08	2.08–6.08	< 0.01
Screen brightness				
	Age	0.16	0.03–0.30	0.02
	Gender (female)	1.60	0.81–2.40	< 0.01
	Lens usage (no)	− 0.19	− 0.88–0.51	0.60
	Brightscreen	2.19	0.28–4.09	0.02

Table 3 (continued)

Risk factor	Variable(β's)	β Coefficients	CI	*P* value
	Dim screen	1.59	− 0.45–3.64	0.13
	Intercept[a]	4.16	2.07–6.24	< 0.01
Computer level reference to eye level				
	Age	0.14	0.00–0.28	0.05
	Gender (female)	1.65	0.86–2.44	< 0.01
	Lens usage (no)	− 0.20	− 0.89–0.50	0.58
	Below the line of sight	1.49	− 0.30–3.29	0.10
	Above the line of sight	2.27	0.37–4.17	0.02
	Intercept[a]	4.62	2.66–6.58	< 0.01

[a] (Age = 18; Gender = Male; Lens usage = Yes)

[b] How to interpret the table: In "Environment in Computer Used" subcategory, β_0 indicates the intercept, which is the mean OSDI scores of males who use contact lenses and are 18 years old. B_1indicates Age, and every one unit increase in age is associated with 0.2 increase in OSDI score and this is statistically significant. $\beta_2$indicates Gender. Females' mean OSDI score is 1.75units higher than males and this is statistically significant. β_3 indicates Lens Usage, non-lens users score 0.16 units lower in OSDI compared to lens users, but this difference is not statistically significant. β_4 indicates Bright Environment, and people who use computers in bright environments score 1.47 units higher in OSDI compared to non-computer users, but this difference is not statistically significant. β_5 indicates Dim Environment, people who use computer in dim environment compared to non-computer users score 2.32 units higher in OSDI and this difference is statistically significant. $\beta_6$indicates Both (Dim and Bright) Environments and people who use computers in both dim and bright environments score 2.65 units higher in OSDI and this difference is statistically significant. All results in other subcategories can be interpreted using this example

Higher OSDI scores in females compared with males were found in this cohort, and additionally, that eye dryness was more common in females. There were several different studies in English literature about the difference in the OSDI scores between males and females [3, 14]. Some of these studies indicated that males had a higher OSDI score [14, 15], while others supported our finding with the outcome that showed females having higher OSDI scores. [16, 17]

Our study showed that the distance to the computer screen had a statistically significant enhancing effect on OSDI score. Participants using a computer at a distance less than 50 cm showed higher OSDI scores and there were several studies supporting our findings [18]. The optimum distance was indicated by several authors as approximately 60–100 cm away from the computer screen to minimize the risk of developing DED [19, 20].

The use of a tablet or smartphone did not cause any significant change in OSDI scores of participants in terms of any parameter such as screen brightness, distance to the screen, and angle of gaze. This result might be related to using handheld devices in various gaze angles including small, most commonly, and high. It was shown that using a computer in higher gaze angles results in increased tear evaporation and therefore increased ocular discomfort symptoms [21]. Using devices in smaller gaze angles might be safer than using in high gaze angles. Yet, more investigation is required to be able to make comparisons. The studies conducted by Golebiowski et al. and Madudoc et al. also found no change in tear volume with the usage of tablets or smartphones, respectively. However, reduced tear volume is reported with computer use by many studies [22, 23].

The majority of the studies in the literature indicated that contact lens use is a furthermost reason for DED. [5, 24–26] We found significantly higher OSDI scores among the females wearing contact lenses longer than three years compared with the non-wearers in our study. Present study had shown that CLWs using a computer for more than three years have significantly higher OSDI scores than those using a computer for less than three years. There were similar studies supporting our study with similar results [27] as well as some opposing studies stating no correlation between using a computer and DED [24]. We believe that using a computer over a long term resulted in infrequent blinking that resulted in insufficient wetting of the ocular surface. [19]

It was found that the indoor environmental factors such as the brightness of the workplace had an

Table 4 Risk factors which had significant effect on OSDI scores, independent variables, ß Coefficients, P values and confidence intervals (CI) [b] of contact lens wearers

Risk factor	Variable (β's)	β Coefficients	CI	*P* value
Dry eye symptoms				
	Age	0.21	− 0.04–0.46	0.09
	Gender (female)	1.87	0.22–3.52	0.03
	Symptoms (none)	− 1.51	− 2.74–− 0.28	0.02
	Intercept[a]	6.14	4.40–7.87	0
Weekly tablet usage in days				
	Age	0.19	− 0.06–0.44	0.13
	Gender (female)	1.55	− 0.11–3.20	0.07
	Usage (> 0 days)	1.13	0.08–2.19	0.04
	Intercept[a]	5.59	3.80–7.37	< 0.01
Computer usage in years				
	Age	0.16	− 0.08–0.41	0.19
	Gender (female)	1.94	0.30–3.58	0.02
	Usage(> 3 years)	2.21	-0.62–3.80	0.01
	Intercept[a]	3.92	1.66–6.19	< 0.01
Environment in computer used; bright				
	Age	0.24	− 0.01–0.49	0.06
	Gender (female)	1.55	− 0.12–3.21	0.07
	Usage (dim)	1.60	0.30–2.90	0.02
	Intercept[a]	5.58	3.82–7.35	< 0.01
Computer level reference to eye level; below				
	Age	0.18	− 0.06–0.43	0.14
	Gender (female)	1.67	− 0.03–3.31	0.05
	Usage (above)	1.72	0.39–3.05	0.01
	Intercept[a]	5.72	3.98–7.47	< 0.01

[a](Age = 18; Gender = Male; Lens Usage = Yes)

[b]How to interpret the table: In "Environment in Computer Used" subcategory, β_0 indicates the intercept, which is the mean OSDI scores of males who use contact lenses and are 18 years old. B_1indicates Age, and every one unit increase in age is associated with 0.2 increase in OSDI score and this is statistically significant. $\beta_2$indicates Gender. Females' mean OSDI score is 1.75units higher than males and this is statistically significant. β_3 indicates Lens Usage, non-lens users score 0.16 units lower in OSDI compared to lens users, but this difference is not statistically significant. β_4 indicates Bright Environment, and people who use computers in bright environments score 1.47 units higher in OSDI compared to non-computer users but this difference is not statistically significant. β_5 indicates Dim Environment, people who use computer in dim environment compared to non-computer users score 2.32 units higher in OSDI and this difference is statistically significant. $\beta_6$indicates Both (Dim and Bright) Environments and people who use computers in both dim and bright environments score 2.65 units higher in OSDI and this difference is statistically significant. All results in other subcategories can be interpreted using this example

effect on OSDI scores of CLWs. Using a computer in a dark environment increased the OSDI score significantly so CLWs using a computer in a bright environment had a decreased risk of DED. However, there were very limited studies that were concerned about the brightness of the environment; one study pointed out that there was no association between the brightness of the environment and the OSDI scores. [28] On the other hand, another study stated that the weak lighting condition could affect the presence of complaints related to the CVS. [29]

Line of sight was stated as another risk factor that had a possible impact on the OSDI scores of CLWs. The current study showed that using a computer above the line of sight increased the OSDI score. Additionally, some studies lined up with a statistically significant relationship between OSDI scores and angle of gaze [19, 30, 31], although some limited studies asserted that there was no association between the line of sight and DED [3]. We believe that using the computer in a proper position is important to avoid DED. Therefore, the upper part of the ocular surface was protected under the effect of the upper eyelid in case of using a computer below the line of sight. [32]

This study was one of the most comprehensive studies in terms of the number of variables tested. In contrast to the extensive literature on computer usage habits, there is limited literature on handheld electronic devices assessed in the context of CVS. This study contributed to the literature by a detailed investigation of ocular disturbances related to both computer and handheld electronic devices among the young adults. However, one limitation of our study was that there was a disparity in numbers between the number of male and female participants due to non-homogeneous gender distribution in this institute.

However, our study has several limitations. First, our study cohort is consisted of graduate and undergraduate students, academic staff, and administrative staff of Acibadem University, where female population is dominant. That is why number of female participants overrides the number of male participants in our study. Therefore, it may be necessary to expand the range of participants in future studies. Second, we analyzed each variable separately to determine their effect on OSDI score by using a univariate model. Multivariate analysis should be done for the variables which have significant effects, with a larger study cohort, in future studies.

Conclusions

In the present study, we found that the female gender has a greater tendency for developing DED. In our contact lens wearer cohort; duration of computer use (years), brightness or darkness as an indoor condition, and angle of gaze were found to have a statistically significant relation with the development of VDD-associated eye dryness.

Author contributions: All authors contributed to the study conception and design. Material preparation and data collection were performed by EA. The analysis was performed by AE. The first draft of the manuscript was written by EA and all authors commented on previous versions of the manuscripts. All authors read and approved the final manuscript.

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Declarations

Conflicts of interest All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Ethics approval The study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Acibadem University (2015–12/8). All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Declaration of Helsinki and its later amendments. Date and Reference number of Ethical Committee Approval:

22.10.2015
2015–12/8

Animal and human participant This article does not contain any studies with animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

Consent for publication Patients gave informed consent for their anonymized data to be used for audit and publication.

Appendix

https://docs.google.com/forms/d/e/1FAIpQLSeCoGtn_7N5UC5ZXIG-FwxvJjcOwYWE9GVi0S237RzaSKm-EA/viewform

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