

APPENDIX 1. Survey Instrument



Welcome Block and Part A – Determination of Eligibility

Welcome to this survey regarding the potential impact of increased eye strain during COVID-19!

You are invited to take part in a Brown University research study.

RESEARCHERS:

- Ian Saldanha, MBBS, MPH, PhD (Assistant Professor, Brown University School of Public Health) – *Principal Investigator*
- Prabjot Channa, MD (Associate Professor, Brown University Warren Alpert Medical School)
- Esen K. Akpek, MD (Professor, Johns Hopkins Wilmer Eye Institute)
- Rebecca Petris (Executive Director, Dry Eye Foundation)
- Matthew Makara, MPH (Director of Research and Scientific Affairs, Sjögren's Foundation)

PURPOSE: The study is about the impact of increased eye strain during COVID-19 on dry eye-related symptoms. You are being asked to participate in this study because of your potential interest in dry eye. For more details about dry eye, please visit the U.S. National Eye Institute (NEI) website on dry eye by clicking [here](#).

PROCEDURES: You will be asked to complete an online survey to provide us anonymous information about the amount of time you spend in front of electronic screens or reading, any symptoms you might be experiencing regarding your eyes, and a little information about yourself. You will be asked to confirm whether you are at least 18 years of age and whether you have been spending at least somewhat more time at home recently than you did before the coronavirus pandemic began.

TIME INVOLVED: The study will take no more than 15 minutes of your time.

COMPENSATION: You will not receive compensation for your time.

RISKS: We do not anticipate any risks to you during this brief survey. You may skip any question that you do not feel comfortable answering. You may discontinue the survey at

an time. Because this survey is being administered online (through a screen), there is a small possibility that you will experience visual discomfort, and this risk might be somewhat higher if you have dry eye. Should you have any COVID-19 stress or coping-related challenges, you may access resources from the U.S. Centers for Disease Control and Prevention (CDC) by clicking [here](#).

BENEFITS: You may not directly benefit from being in this research study. But, your contribution will help us understand the impact of sudden increased screen time and reading time on eyes and their function.

CONFIDENTIALITY: Your individual responses are being collected anonymously and will not be linked to you or shared with a third party. We will only use the aggregated results of all respondents to this survey.

VOLUNTARY: Your participation is voluntary. You do not have to be in this study if you do not want to be. Even if you decide to be in this study, you can change your mind and stop at any time.

CONTACT INFORMATION: If you have any questions about your participation in this study, you can call Dr. Ian Saldanha (email: ian_saldanha@brown.edu or call +1-401-863-6615).

YOUR RIGHTS: If you have questions about your rights as a research participant, you can contact Brown University's Human Research Protection Program at +1-401-863-3050 or email them at IRB@Brown.edu. This survey has been approved by the Brown University Institutional Review Board (IRB Number 2005002721).

CONSENT TO PARTICIPATE: Clicking the link below confirms that you have read and understood the information on this page, you are at least 18 years of age, and that you agree to volunteer as a research participant in this survey.

If you agree to the above, please click below to begin the survey.

As of today, are you at least 18 years old?
(*Select one*)

- Yes
- No

In this survey, we are interested in comparing your experience during the below two periods of time:

PERIOD 1: THE WEEK BEFORE stay-at-home and/or work-from-home restrictions were enforced because of the ongoing COVID-19 (coronavirus) pandemic. The approximate date on which stay-at-home and/or work-from-home restrictions were enforced in most locations was **March 20, 2020**. If the restrictions were enforced on a different date at your location, please instead consider the week before that date as Period 1.

PERIOD 2: THE MOST RECENT WEEK during which you spent a lot of time at home because of the ongoing COVID-19 (coronavirus) pandemic. If you are still currently spending as much time at home, consider this past week as Period 2. However, we recognize that some of you may have returned to your workplace already. If this is the case for you, please consider the week BEFORE you went back to work as Period 2.

Did you spend **at least somewhat more time at home** in Period 2 than in Period 1?
(*Select one*)

Yes

No

Part B - Employment Status

What was your employment (or student) status during **Period 2 (i.e., the most recent week)**?
(Select all that apply)

- Employed (including self-employment), full-time
- Employed (including self-employment), part-time
- Not employed
- Homemaker
- Retired
- Student, full-time (including vacation)
- Student, part-time (including vacation)
- Not listed above. Please specify:

What was your employment (or student) status during **Period 1 (i.e., the week BEFORE work-from-home/stay-at-home restrictions)**?
(Select all that apply)

- Employed (including self-employment), full-time
- Employed (including self-employment), part-time
- Not employed
- Homemaker
- Retired
- Student, full-time (including vacation)
- Student, part-time (including vacation)
- Not listed above. Please specify:

Would you say that the **change in your employment (or student) status between Period 1 and Period 2** was the result of the ongoing coronavirus pandemic?
(*Select one*)

- Yes
- No
- Not sure
- Not applicable because my employment (or student) status did not change

Now, please **compare Period 1 (i.e., the week BEFORE work-from-home/stay-at-home restrictions)** and **Period 2 (i.e., the most recent week)**.

Would you say that the **efficiency** of your work (either for employment or as a student) changed?
(*Select one*)

- My efficiency decreased
- No change
- My efficiency increased
- Not sure

Part C – Dry Eye Disease Status

Now we will ask you some questions to help us understand whether or not you have been seen by a healthcare professional (e.g., eye doctor/ophthalmologist, optometrist, primary care doctor, nurse practitioner) **for dry eye.**

Has a **healthcare professional EVER diagnosed** you with dry eye or have they **EVER recommended a treatment** (e.g., over the counter or prescription eye drops or other medication) for any symptoms related to **dry eye?**
(*Select one*)

- Yes
- No

I can't remember/Not sure

How long has it been since you were first diagnosed or treated for dry eye? If the years you were first diagnosed and first treated were different, think of the earlier year.

(Select one)

- Less than 1 year ago
- 1 to 2 years ago
- 3 to 5 years ago
- 6 to 9 years ago
- 10 or more years ago
- I can't remember/Not sure

In the 12 months before Period 1 (i.e., BEFORE work-from-home/stay-at-home restrictions), how many times did you **visit a healthcare professional** (e.g., eye doctor/ophthalmologist, optometrist, primary care doctor, nurse practitioner) for any symptoms related to **dry eye**?

(Select one)

- Never
- Once
- 2 or 3 times

- 4 or 5 times
- 6 or more times
- I can't remember/Not sure

Has a **healthcare professional** (e.g., eye doctor/ophthalmologist, optometrist, primary care doctor, nurse practitioner) **EVER** told you that you have been diagnosed with **Sjögren's Syndrome**?
(*Select one*)

- Yes
- No
- I can't remember/Not sure

Part D – Screen Time and Reading Time

Now we will ask you some questions about your **screen time and time that you spend reading or writing**.

"Screen time" is defined as time spent looking at electronic devices that have screens. Please try to be as accurate as you can in remembering your screen time and reading time.

During Period 2 (i.e., the most recent week), please

indicate the **average time per day** that you spent on each of the following activities. Please try your best to remember. Your best guess is fine.

(Select one for each)

I did not do this.	Less than 1 hour per day	1 to less than 5 hours per day	5 to less than 9 hours per day	9 to less than 13 hours per day	13 or more hours per day
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**Looking at a
cellphone** (e.g., for
reading, writing,
working, checking
email, using social
media, watching
movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**Looking at other
hand-held devices,
such as tablets**
(e.g., for reading,
writing, working,
checking email, using
social media,
watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**Looking at a laptop
computer** (e.g., for
reading, writing,
working, checking
email, using social
media, watching
movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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**Looking at a
desktop computer**
(e.g., for reading,
writing, working,
checking email, using
social media,
watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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		1 to less than 5 hours per day	5 to less than 9 hours per day	9 to less than 13 hours per day	13 or more hours per day
I did not do this.	Less than 1 hour per day				
I did not do this.	Less than 1 hour per day				

Watching

television (e.g., for watching movies, news, paid subscriptions such as Netflix®)

Looking at other types of electronic devices (e.g., for reading, watching movies)

Reading (or writing on) paper versions of newspapers, pamphlets, magazines, articles, or books

Now, think back to **Period 1 (i.e., the week BEFORE work-from-home/stay-at-home restrictions)**.

In Period 1, please indicate the **average time per day** that you spent on each of the following activities.

Please try your best to remember. Your best guess is fine.
(*Select one for each*)

		1 to less	5 to less	9 to less	13 or
	Less than	than 5	than 9	than 13	more
I did not	1 hour	hours	hours	hours	hours per
do this.	per day	per day	per day	per day	day

Looking at a cellphone (e.g., for reading, writing, working, checking email, using social media, watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Looking at other hand-held devices, such as tablets (e.g., for reading, writing, working, checking email, using social media, watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Looking at a laptop computer (e.g., for reading, writing, working, checking email, using social media, watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Looking at a desktop computer (e.g., for reading, writing, working, checking email, using social media, watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

		1 to less	5 to less	9 to less	13 or
	Less than	than 5	than 9	than 13	more
I did not	1 hour	hours	hours	hours	hours per
do this.	per day	per day	per day	per day	day

	I did not do this.	Less than 1 hour per day	1 to less than 5 hours per day	5 to less than 9 hours per day	9 to less than 13 hours per day	13 or more hours per day
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Watching

television (e.g., for watching movies, news, paid subscriptions such as Netflix®)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Looking at other types of electronic devices (e.g., for reading, watching movies)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Reading (or writing on) paper versions of newspapers, pamphlets, magazines, articles, or books

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Part E – Dry Eye Symptoms and Visual Function

Now we will ask you some questions regarding **some common symptoms related to dry eye**.

For each of the following symptoms, please **compare** how you felt during Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-home/stay-at-home restrictions). Please try your best to

remember.

(Select one for each)

	Not applicable (This is not normally a bothersome symptom for me)	Much worse in Period 2	Somewhat worse in Period 2	No change	Somewhat better in Period 2	Much better in Period 2
Dryness of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Burning of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Itching of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foreign body sensation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequent and/or rapid blinking of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sensitivity to light	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not applicable (This is not normally a bothersome symptom for me)	Much worse in Period 2	Somewhat worse in Period 2	No change	Somewhat better in Period 2	Much better in Period 2
Watering of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Redness of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tiredness/fatigue of the eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eye pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not applicable (This is not normally a bothersome symptom for me)	Much worse in Period 2	Somewhat worse in Period 2	No change	Somewhat better in Period 2	Much better in Period 2
Difficulty keeping eyes open because of symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blurry vision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not applicable (This is not normally a bothersome symptom for me)	Much worse in Period 2	Somewhat worse in Period 2	No change	Somewhat better in Period 2	Much better in Period 2
Fluctuating vision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Needed to increase the font size when reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Needed to brighten the screen or increase the room's lighting when reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eye symptoms interfered with electronic screen use, reading, or work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Headache because of eye symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not applicable (This is not normally a bothersome symptom for me)	Much worse in Period 2	Somewhat worse in Period 2	No change	Somewhat better in Period 2	Much better in Period 2
Difficulty concentrating because of eye symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now, think about the amount of time it takes you to **read a document from beginning to end**.

How would you **compare** that amount of time in Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-home/stay-at-home restrictions)?
(*Select one*)

- Much longer in Period 2
- Somewhat longer in Period 2
- No change
- Somewhat shorter in Period 2
- Much shorter in Period 2

Now, think about the amount of time during which you can **read (anything) without taking a break.**

How would you **compare** that amount of time in Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-home/stay-at-home restrictions)?
(*Select one*)

- Much shorter in Period 2
- Somewhat shorter in Period 2
- No change
- Somewhat longer in Period 2
- Much longer in Period 2

If your work (employment or student work) involves using a screen or reading for an extended duration, how would you **compare your work efficiency** during Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-home/stay-at-home restrictions)?
(*Select one*)

- Much worse in Period 2
- Somewhat worse in Period 2
- No change
- Somewhat better in Period 2
- Much better in Period 2

- Not applicable because my employment (or student) status was not the same in the two periods
- Not applicable because my work (employment or student work) does not involve using a screen or reading for an extended duration

Generally speaking, how would you **compare your eyes overall** during Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-home/stay-at-home restrictions)?
(*Select one*)

- Worse in Period 2
- No change
- Better in Period 2

Part F - Treatments for Dry Eye

Now we will ask you some questions regarding a few common **treatments and remedies for dry eye**.

For each of the following, please **compare your use** during Period 2 (i.e., the most recent week) versus Period 1 (i.e., the week before work-from-

home/stay-at-home restrictions).

(Select one for each)

	I do not normally use/undergo this.	Much more in Period 2.	Somewhat more in Period 2.	No change	Somewhat less in Period 2.	Much less in Period 2.
Over-the-counter lubricant drops, gels, or ointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescription eye drops, gels, or ointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Warm or cold compresses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dry eye goggles/glasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	I do not normally use/undergo this.	Much more in Period 2.	Somewhat more in Period 2.	No change	Somewhat less in Period 2.	Much less in Period 2.
Special contact lenses for dry eye	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-office treatments (e.g., Lipiflow®, Intense Pulsed Light [IPL] therapy, Meibomian gland probing, Blephex®)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TrueTear®	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking breaks to rest my eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

From the time when the coronavirus pandemic began until Period 2, did your **access** to your regular dry eye-related treatments or remedies change?

(Select one)

- No
- Yes
- Not applicable

How did your access to your regular dry eye-related treatments or remedies change?

(Select all that apply)

- The over-the-counter product(s) that I needed was/were not available.
- The over-the-counter product(s) that I needed was/were available, but I could not afford them.
- The prescription treatment(s) or device(s) that I needed was/were not available.
- The prescription treatment(s) or device(s) that I needed was/were available, but I could not afford them.
- The in-office treatment(s) that I needed (e.g., Lipiflow, Intense pulse light [IPL] therapy, Meibomian gland probing, Blephex) was/were not available.
- The in-office treatment(s) that I needed (e.g., Lipiflow, Intense pulse light [IPL] therapy, Meibomian gland probing, Blephex) was/were available, but I could not afford them.
- I did not have the time to pursue the treatment(s) I needed.

Not listed above. Please specify:

Part G - Demographic Characteristics

Now we will ask you some questions to place your responses in context. Remember that **all** your responses in this survey are **confidential** and will **only** be analyzed in the aggregate.

In which **country** did you live in Period 2 (i.e., the most recent week)?
(*Select one*)

- United States (U.S.)
- Canada
- Not listed above. Please specify:
- Prefer not to answer

In what **year** were you born?

Please enter a 4-digit birth year, e.g., 1979. If you prefer not to answer, please skip to the next question.

Which of the following best describes the **sex** assigned to you at birth?
(*Select one*)

We are asking this question because dry eye is known to be most common among individuals born female.

- Female
- Male
- Not listed above
- Prefer not to answer

What is your **race**?
(*Select all that apply. Note that ethnicity will be asked in the next question*)

- White
- Black or African American
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Other Pacific Islander
- Not listed above

Prefer not to answer

What is your **ethnicity**?
(*Select one*)

- Hispanic or Latino
- Not Hispanic or Latino
- Prefer not to answer

Do you have any **comments** about this survey generally or about any of your specific responses?
(*Select one*)

- No
- Yes, please specify:

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