



## THE EFFECT OF I-BLINK EXERCISES ON DRY EYE AMONG YOUNG ADULTS

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## ABSTRACT

**Background:** The COVID-19 pandemic led to a widespread shift to online education, significantly increasing screen time among students. This has contributed to a growing incidence of Dry Eye Disease (DED), particularly among young adults. Reduced blink rates during prolonged digital device use are a key factor in the onset of dry eye symptoms, which can adversely affect quality of life. This study aimed to evaluate the effectiveness of the i-BLINK exercise program in reducing dry eye symptoms among young adults attending online lectures. **Methods:** A quasi-experimental non-equivalent control group pre-test-post-test design was used. A total of 60 students aged 18–22 years, attending online lectures in selected colleges of a metropolitan city, were selected using purposive sampling. Participants with DEQ-5 scores between 6 and 12 were divided into an experimental group (n=30) and a control group (n=30). The experimental group performed i-BLINK exercises daily for 21 days, supported by instructional videos and self-report checklists. DEQ-5 assessments were conducted at baseline, Day 14, and Day 21 for the experimental group, and at baseline and Day 21 for the control group. **Results:** Baseline demographic variables showed no significant difference between groups. A significant improvement in dry eye symptoms was observed in the experimental group post-intervention, with a t-value of 3.8922 (df = 58), exceeding the critical value of 1.1391 (p < 0.05). The control group showed no significant change in DEQ-5 scores. The i-BLINK exercise program significantly reduced dry eye symptoms among young adults exposed to prolonged screen time during online education. These findings support the inclusion of blink training as a simple, cost-effective intervention for managing digital eye strain. Further large-scale studies are recommended to validate these outcomes and assess long-term benefits.

**KEYWORDS :** Dry Eye Disease (DED), i-BLINK exercises, digital eye strain, online education

## INTRODUCTION

The COVID-19 pandemic led to widespread lockdowns and a shift to remote work and online education, resulting in increased use of digital devices. This surge in screen time has been linked to a rise in dry eye disease (DED), a condition marked by tear film instability and ocular surface inflammation. Prolonged screen use reduces blink rate, contributing to symptoms such as eye discomfort, burning, and blurred vision. These symptoms can significantly affect quality of life. This thesis investigates the link between increased screen use during the pandemic and dry eye symptoms, aiming to identify risk factors and recommend strategies—such as blink exercises and screen time management—for prevention and relief.

## Background &amp; Need

Dry eye, once common in older adults, is now increasingly affecting younger individuals due to prolonged digital screen use. The shift to online education during the COVID-19 pandemic led to a significant rise in screen time among students, contributing to higher rates of dry eye symptoms. Studies report elevated OSDI scores, reduced blinking, and decreased tear film stability in students attending online classes. Interventions like blinking exercises show symptom improvement. Research from GSVM Medical College highlighted severe eye strain in many students due to extended screen exposure. This study aims to assess the impact of digital learning on students' eye health and promote preventive measures.

This quasi-experimental study aims to assess the effectiveness of 'i-BLINK exercises' in alleviating dry eye symptoms among young adults attending online lectures in selected colleges of a metropolitan city. With the increasing shift to digital education, particularly intensified during the COVID-19 pandemic, there has been a notable rise in screen time among students, which has led to a corresponding increase in dry eye symptoms. The primary objective of this study is to compare dry eye scores before and after the implementation of 'i-BLINK exercises' to evaluate their therapeutic effect. Additionally, the study seeks to identify the prevalence of dry eye among students engaged in online learning and to gather their opinions regarding the usefulness and feasibility of incorporating 'i-BLINK exercises' into their daily routines. Through this investigation, the study aims to contribute to evidence-based strategies for managing dry eye in the context of prolonged digital device usage.

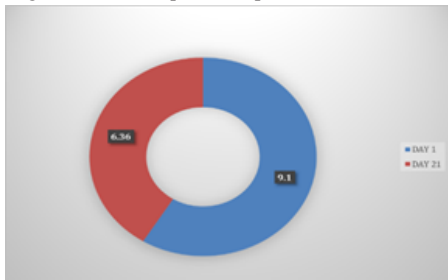
## Methodology

A quantitative quasi-experimental non-equivalent control group pre-test-post-test design was used for this study. The population included students attending online lectures in selected colleges of a metropolitan city. Subjects were selected using random sampling. Data were collected through a structured questionnaire comprising two sections: demographic details and assessment of dry eye symptoms in both experimental and control groups. Data analysis was conducted using descriptive and inferential statistics to evaluate the study objectives and hypotheses. The sample for this study comprised young adults attending online lectures

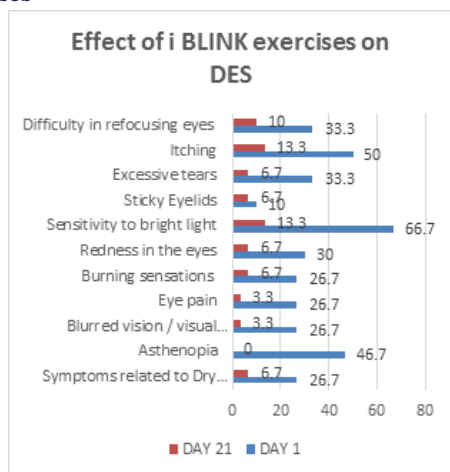
from selected colleges in a metropolitan city, chosen based on defined inclusion criteria. A total of 60 participants were selected as the sample size. The sampling technique employed was non-probability purposive sampling. Inclusion criteria for participants included young adults aged 18-22 years who were willing to participate, attending online lectures for more than 4 hours daily, and having a DEQ-5 score between 6 and 12, indicating mild to moderate dry eye symptoms. Exclusion criteria included individuals wearing contact lenses, undergoing treatment for dry eye, having a history of eye surgery, diagnosed with glaucoma, or those on medications such as antihypertensive, antihistamines, and antidepressants that could influence ocular health.

## RESULTS

The findings of this quasi-experimental study indicate no statistically significant differences in the demographic variables between the experimental and control groups, confirming baseline comparability.



**Mean Pre-test and Post-test DEQ scores among the experimental group after implementation OF i-BLINK exercises**



## Effect of i-BLINK exercises on DES

However, a statistically significant difference was observed in the dry eye knowledge scores between the two groups following the intervention. Specifically, the experimental group showed a marked improvement in pre-test and post-test scores after participating in the i-BLINK exercise program. The calculated t-value for post-test scores was 3.8922, exceeding the tabulated t-value of 1.1391 at a degree of freedom (df) of 58, indicating a statistically significant improvement ( $p < 0.05$ ). These results support the hypothesis (H1) that the i-BLINK exercises effectively reduce dry eye symptoms among young adults attending online lectures.

## DISCUSSION:

The study demonstrates that the i-BLINK exercise program has a positive effect on alleviating dry eye symptoms among students engaged in prolonged screen use. The significant improvement in post-intervention scores in the experimental group suggests that regular blink exercises can enhance ocular comfort and potentially improve tear film stability. While the results are promising, the researcher acknowledges

the need for larger-scale studies to validate these findings and to evaluate the long-term benefits and adherence to blinking exercises in preventing or managing dry eye disease in digital screen users.

## CONCLUSION:

This quasi-experimental study evaluated the effectiveness of the i-BLINK exercise program in reducing dry eye symptoms among young adults attending online lectures in a metropolitan city. A total of 60 participants, identified based on inclusion and exclusion criteria and DEQ-5 scores between 6 and 12, were divided equally into experimental ( $n=30$ ) and control ( $n=30$ ) groups. The experimental group practiced the i-BLINK exercises for 21 days, supported by instructional videos, reminders, and a self-report checklist, while the control group received no intervention. DEQ assessments were conducted at baseline and post-intervention for both groups, with an additional mid-test for the experimental group.

Statistical analysis revealed a significant improvement in DEQ scores in the experimental group after the intervention, indicating a reduction in dry eye symptoms. In contrast, no significant change was observed in the control group. These findings suggest that the i-BLINK exercise program is an effective, non-invasive strategy to alleviate dry eye symptoms in young adults with prolonged digital screen exposure. Further large-scale studies are recommended to confirm these results and explore long-term adherence and outcomes.

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