THESIS ON

Prevalence of Myopia and Dry Eye Disease among the Digital Device Users of Female Students at North South University

MASTER OF PUBLIC HEALTH PROGRAM

DEPARTMENT OF PUBLIC HEALTH

SCHOOL OF HEALTH & LIFE SCIENCES

NORTH SOUTH UNIVERSITY, DHAKA, BANGLADESH

Thesis on “Prevalence of Myopia and Dry Eye Disease among the Digital Device Users of Female Students at North South University”

MD TAMZID HASAN

ID: 213 5194 080

Department of Public Health

North South University, Dhaka, Bangladesh

WHAT IS.....

Myopia

Myopia is a prevalent condition of the eyes to see near objects clearly but blurry for distant objects, and nowadays, it's a pervasive vision problem for all ages. It develops rapidly during childhood.

Dry Eye Disease (DED)

Dry eye disease (DED) is a multifactorial disease of the ocular surface, and it occurs when tears are unable to provide adequate lubrication to the eye.

RESEARCH QUESTION

What is the burden of eye disease among the digital device users of university female students?

What is the prevalence of myopia among the digital device users of university female students?

What is the prevalence of dry eye disease among the digital device users of university female students?

RESEARCH METHODOLOGY

OBJECTIVE

General Objective

To assess the burden of eye disease among the university female students.

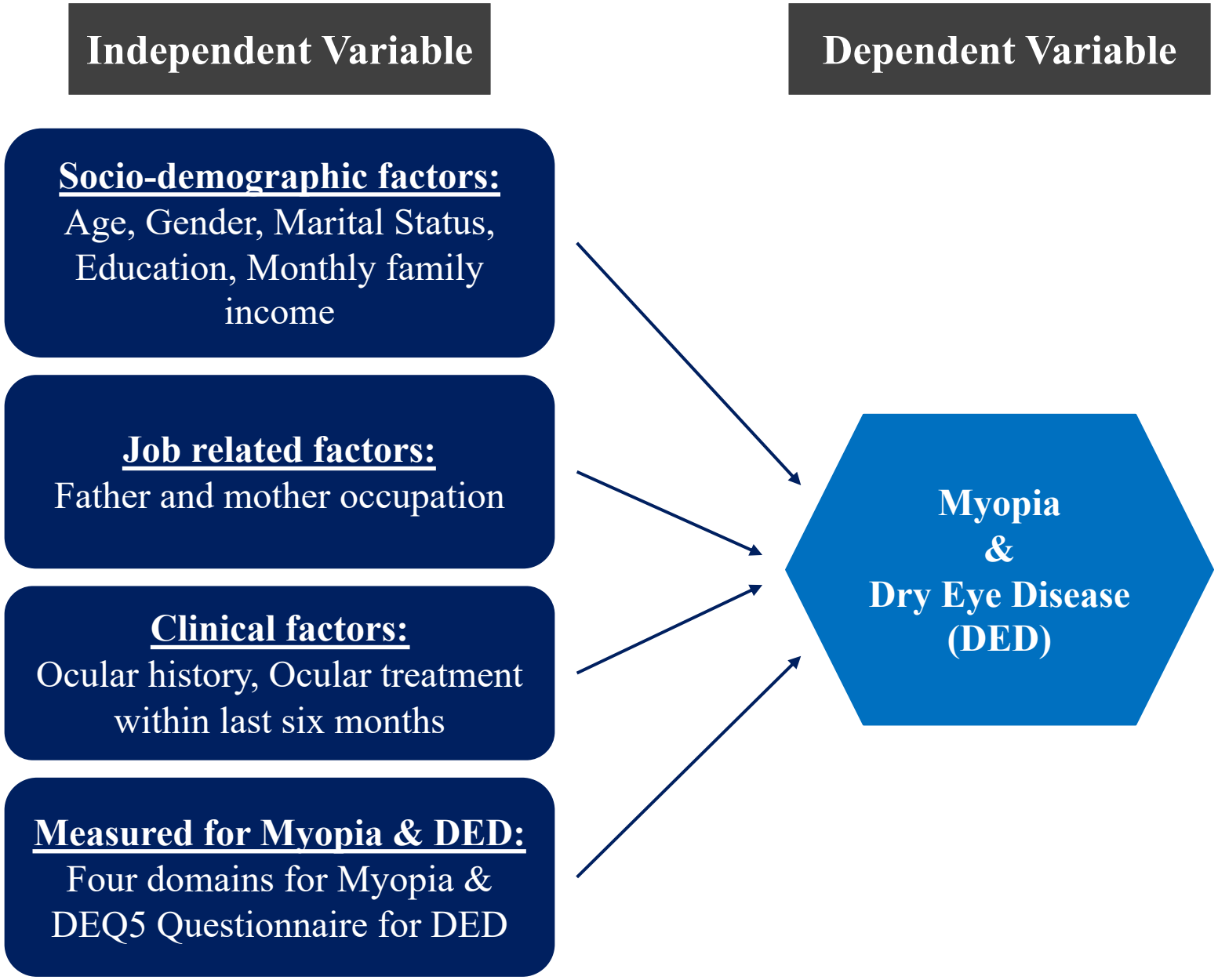
Specefic Objective

To determine the prevalence of myopia among the university female students.

To determine the prevalence of dry eye disease (DED) among the university female students.

To measure myopia and DED associate with duration of time spend with digital device uses among the university female students.

CONCEPTUAL FRAMEWORK



STUDY PROCEDURE

Study Design	A Cross-sectional study
Target population	University female students
Study Site & Area	North South University, Dhaka, Bangladesh
Study Period	January 2023 to August 2023

SAMPLE SIZE

The sample size for this study has been calculated to precisely estimate the prevalence of Dry Eye Disease. After reviewing the literature, we assumed the prevalence in our population about 64.2% and computed the sample size using the following formula:

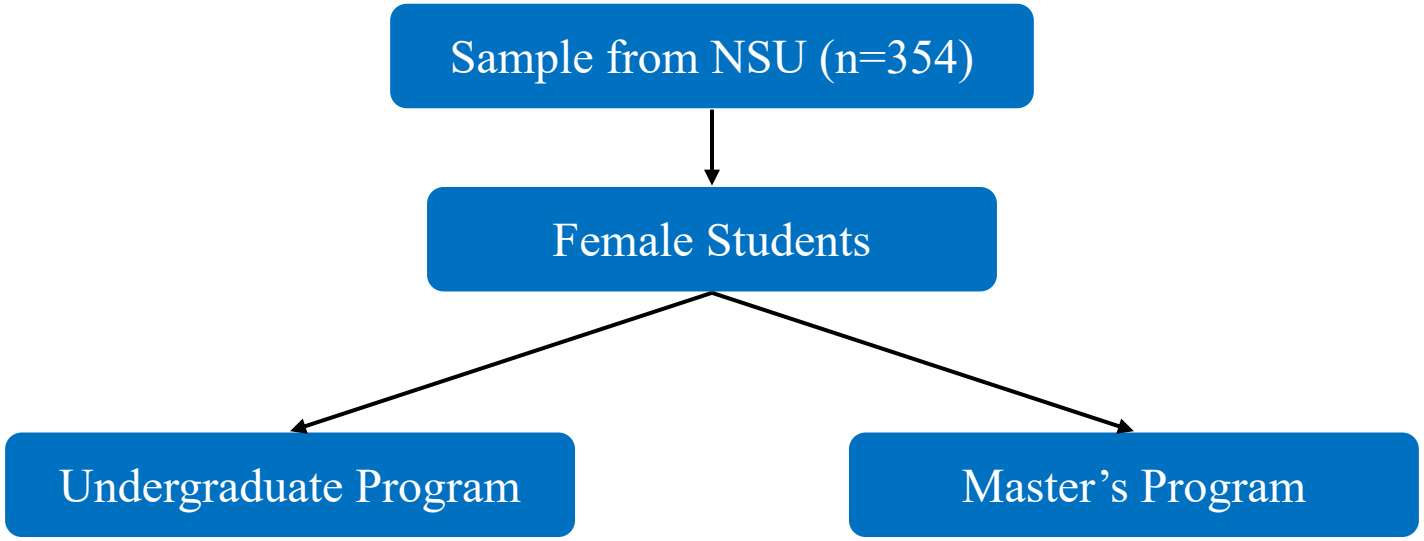
$$n = \frac{(z_{1-\frac{\alpha}{2}})^2 pq}{d^2}$$

Where,
n= Expected sample size
z= Statistics corresponding level of confidence
= 1.96 (95% confidence interval for both sided)
p= Anticipated prevalence of DED
= 64.2%
q= (1-p)= 1-0.642= 0.358
d= Precision= It would be 5%

From using this formula the sample size is approximately 354.

SAMPLING METHOD

A nonrandom quota sampling method was applied for this syudy

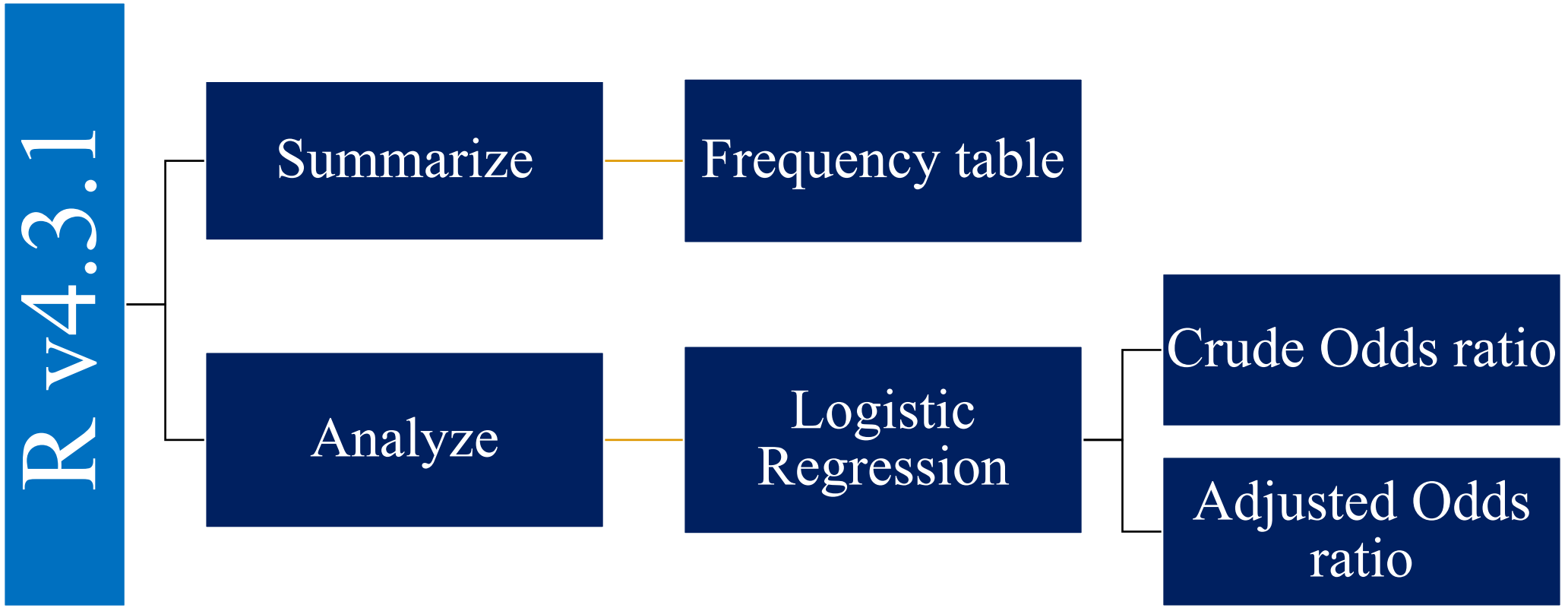


DATA COLLECTION TOOLS

An interviewer-administered questionnaire was developed to collect data from female student at North South University (NSU).

Firstly, the questionnaire developed in English and translated into Bengali. We have used the DEQ5 scale for Dry Eye Disease, which is standard for global use.

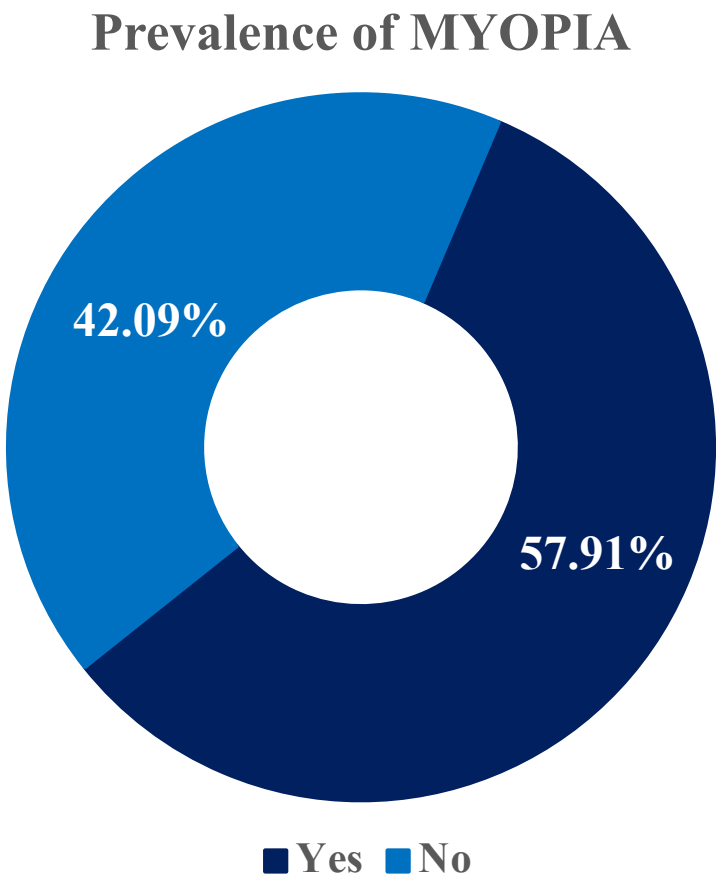
DATA ANALYSIS PLAN

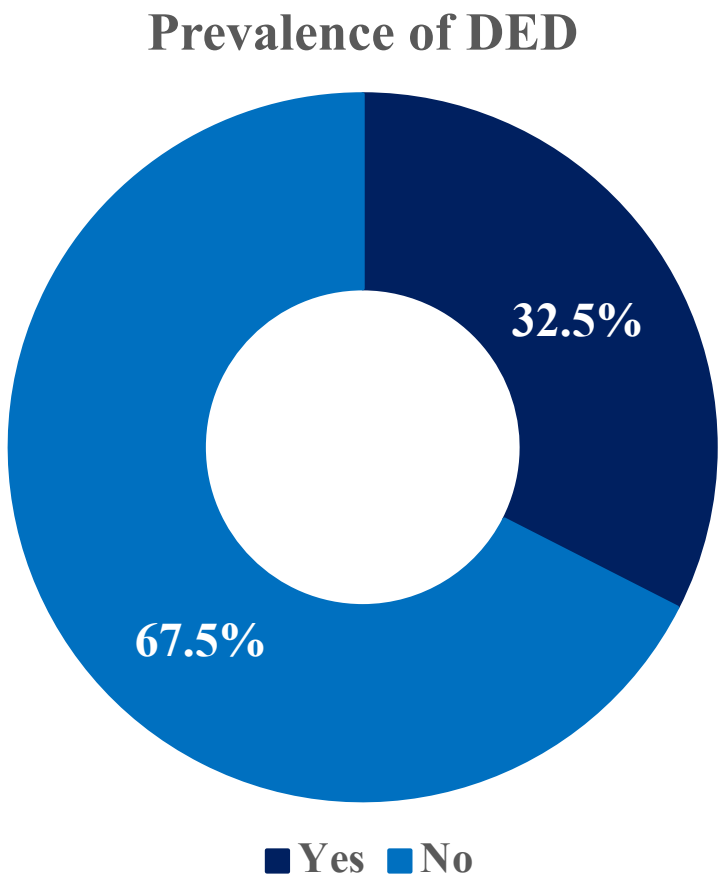


RESULTS

RESULTS

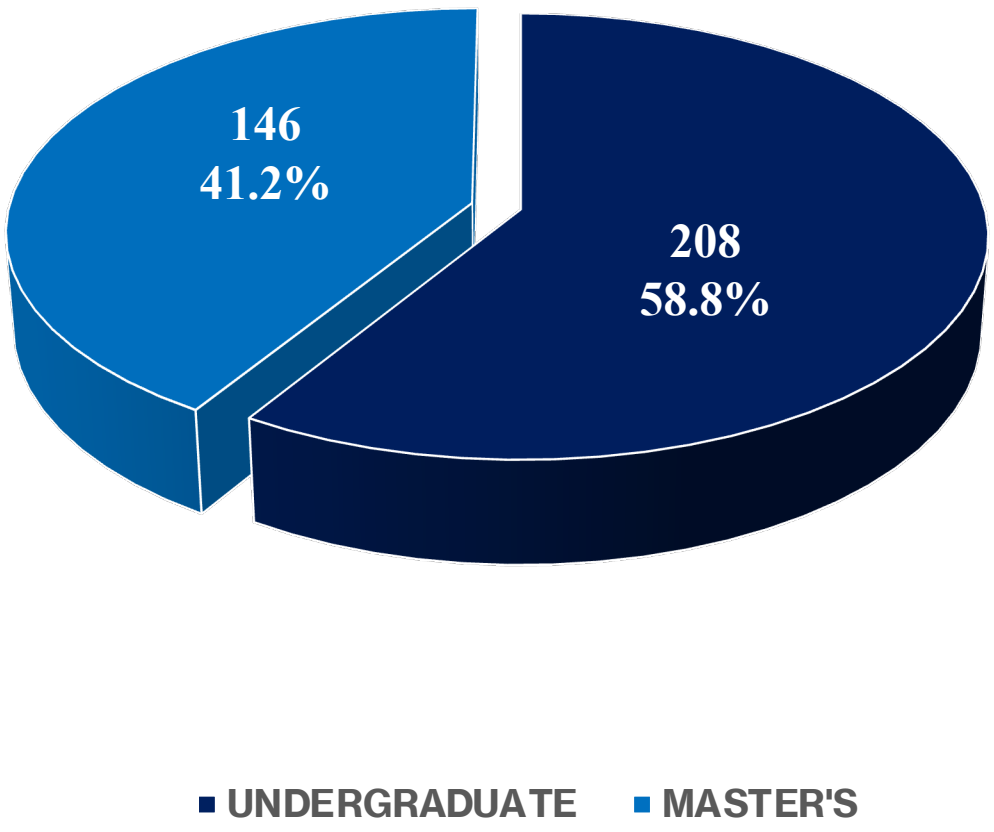
Prevalence of outcome variables



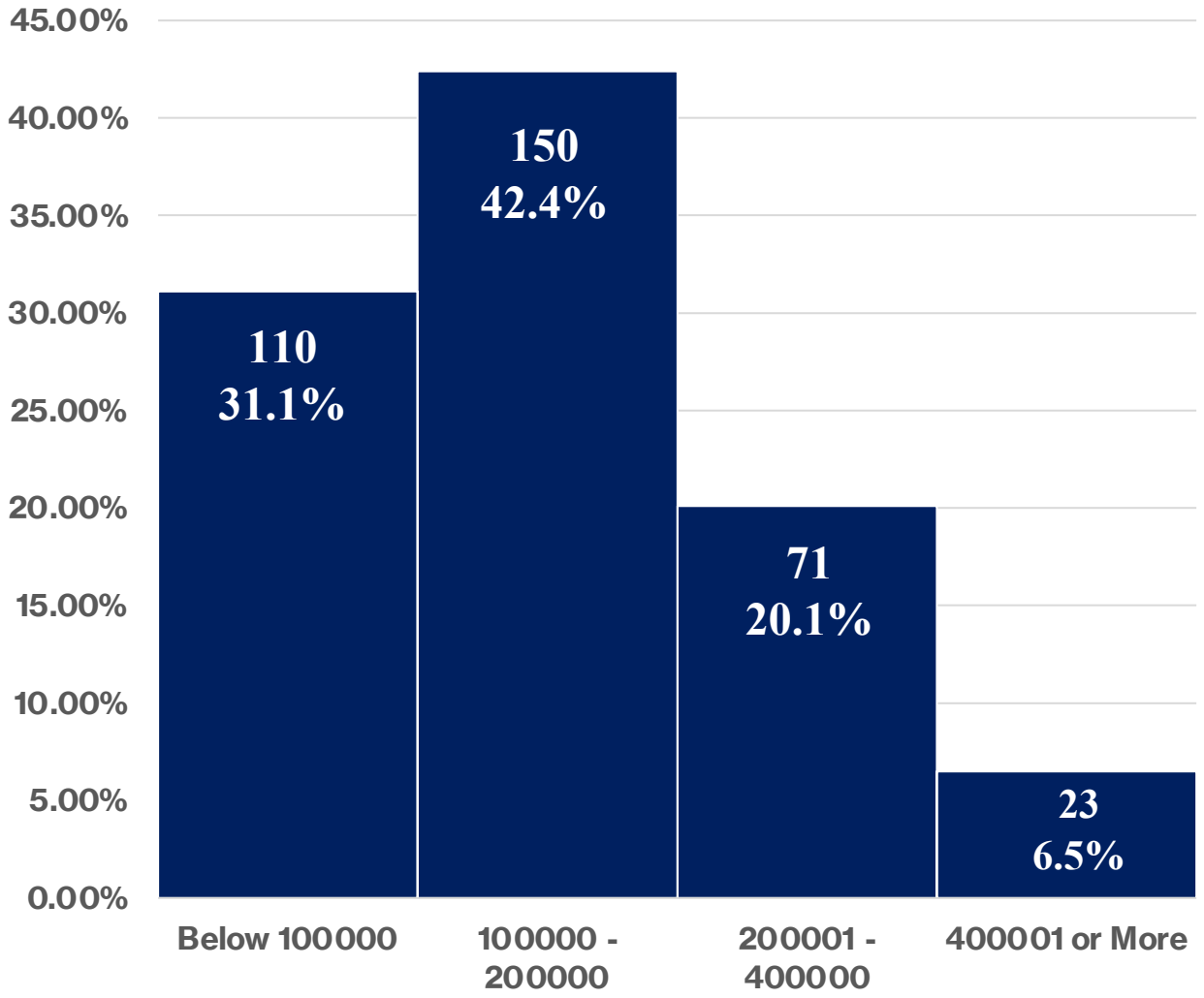


RESULTS

Respondents Distribution by Education

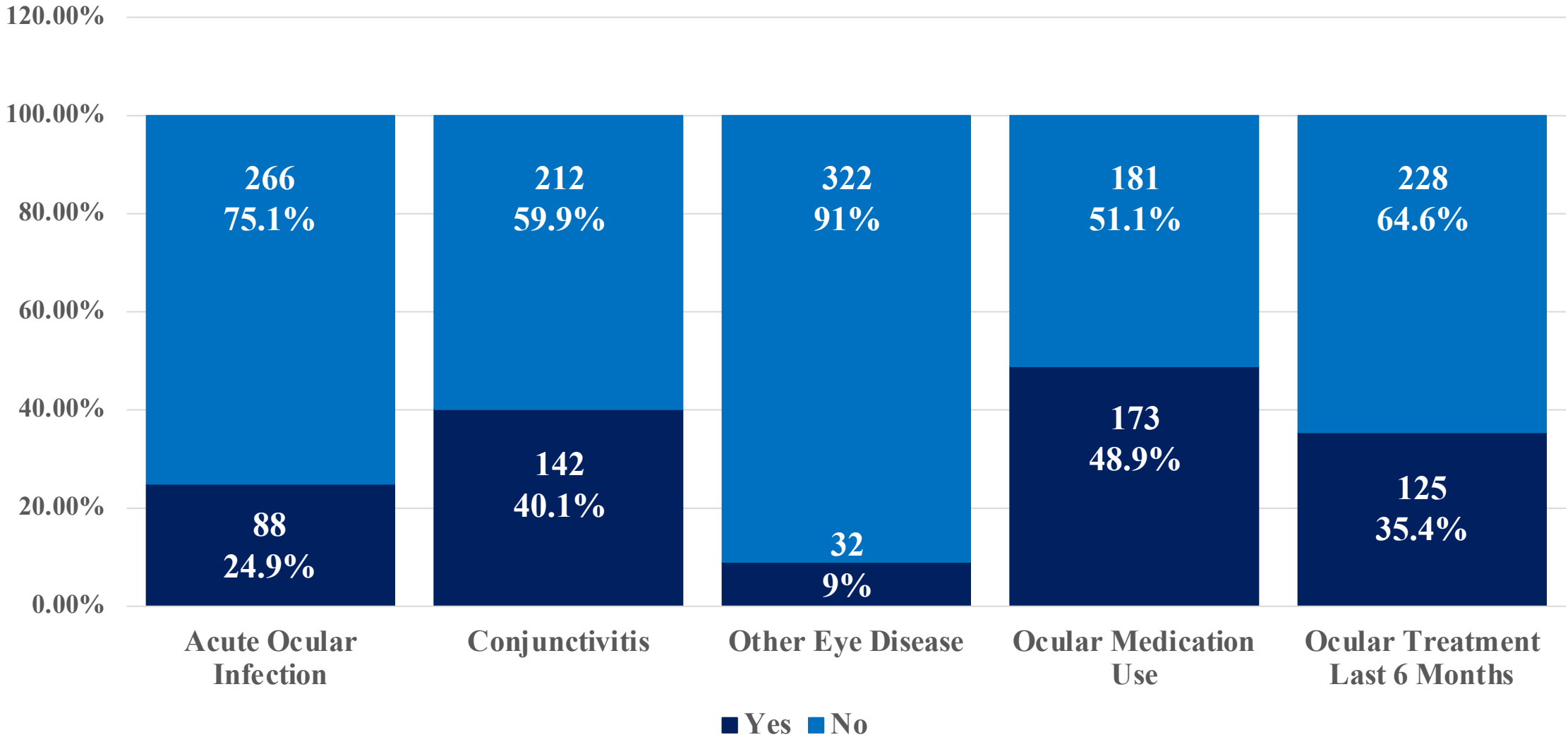


Family Monthly Income (in BDT)



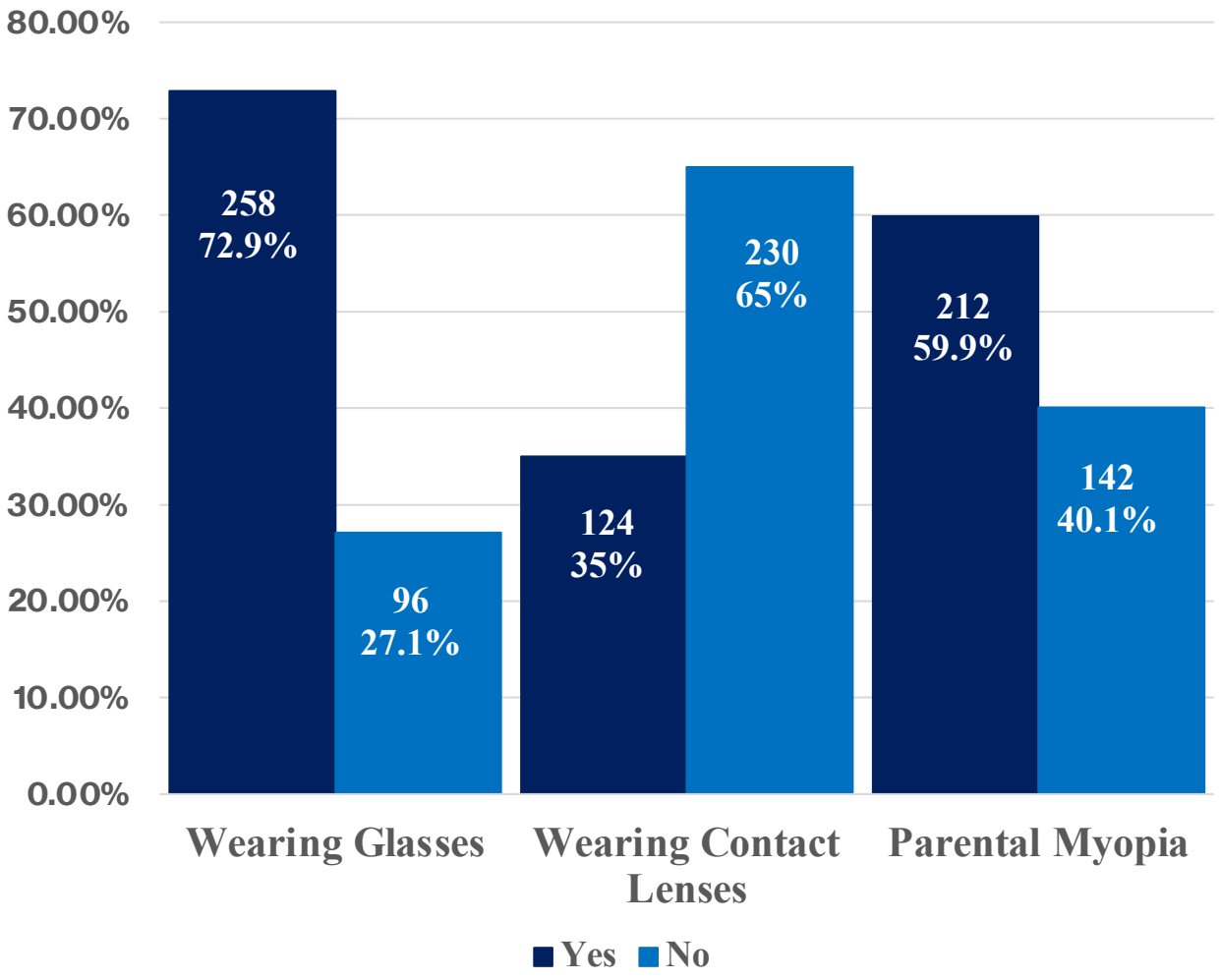
RESULTS

Distribution of Respondents Ocular History

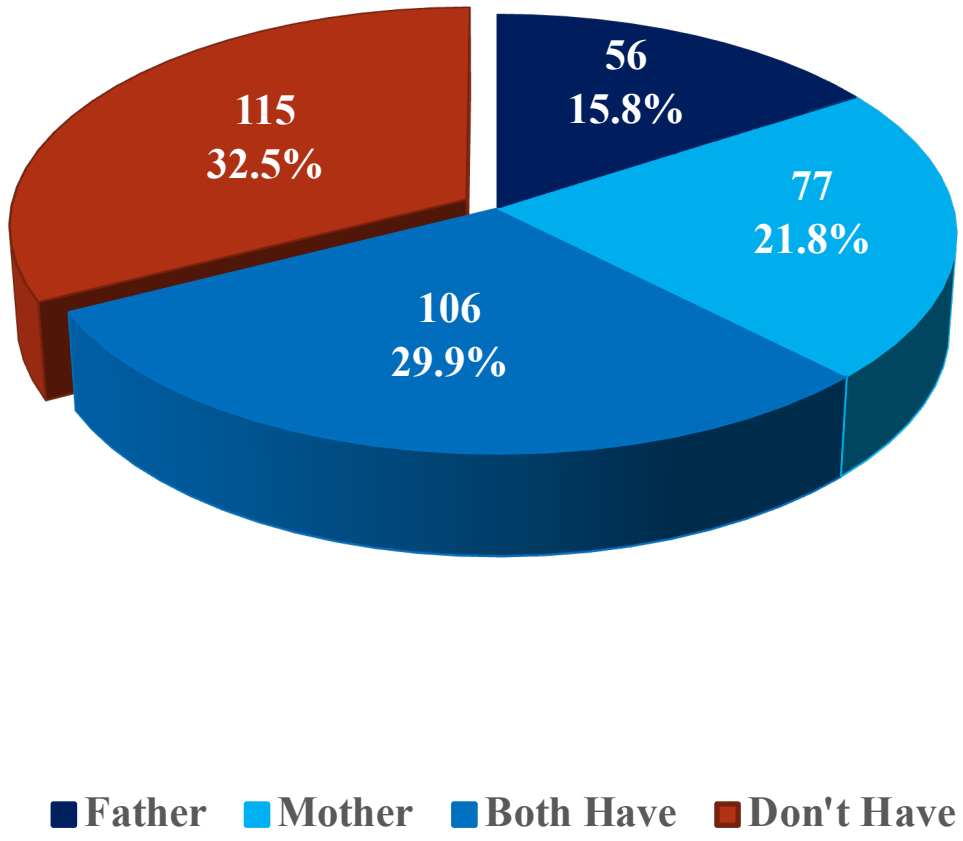


RESULTS

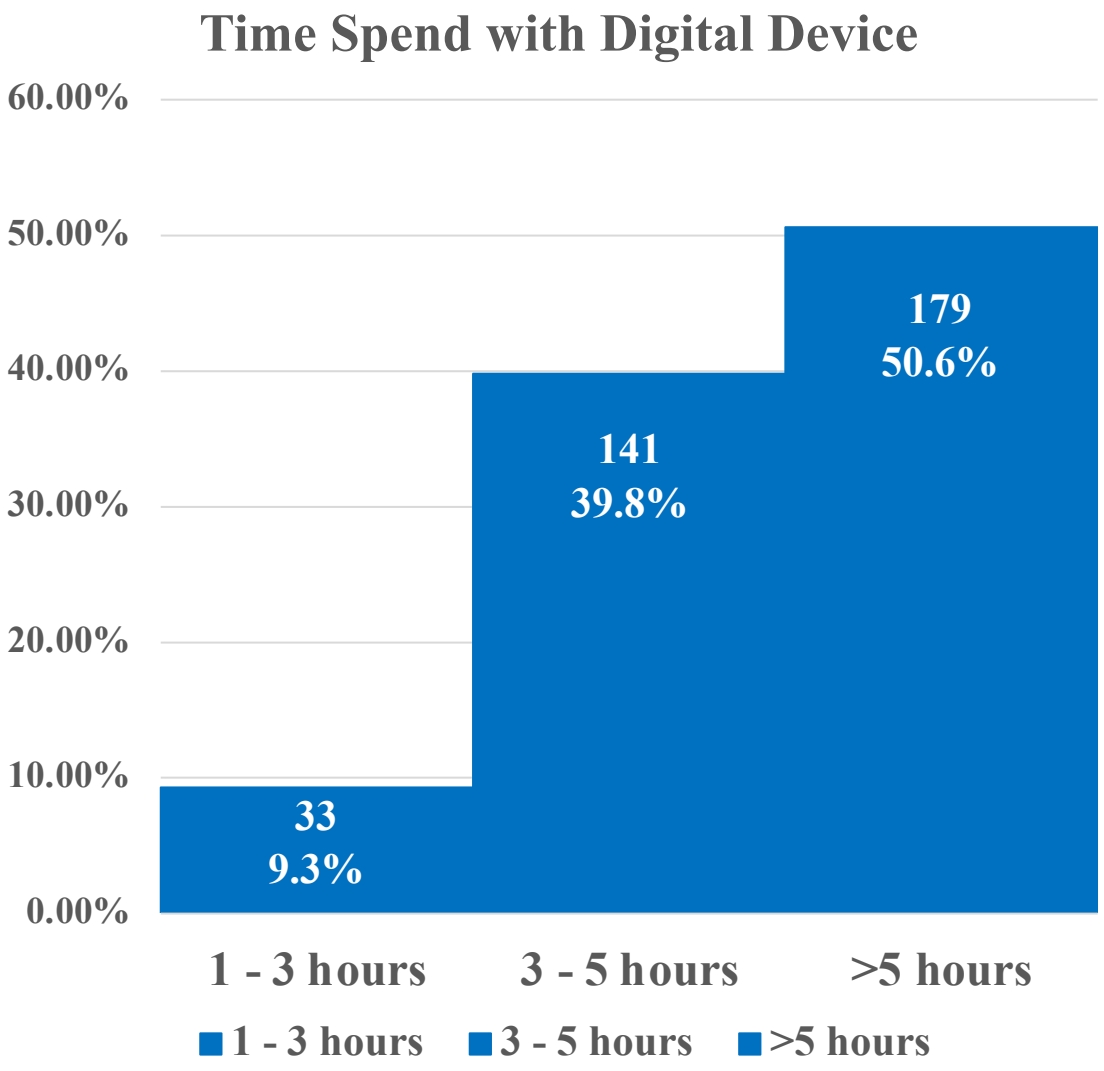
Prevalence of Wearing Glass, Wearing Contact Lenses, and Parental Myopia

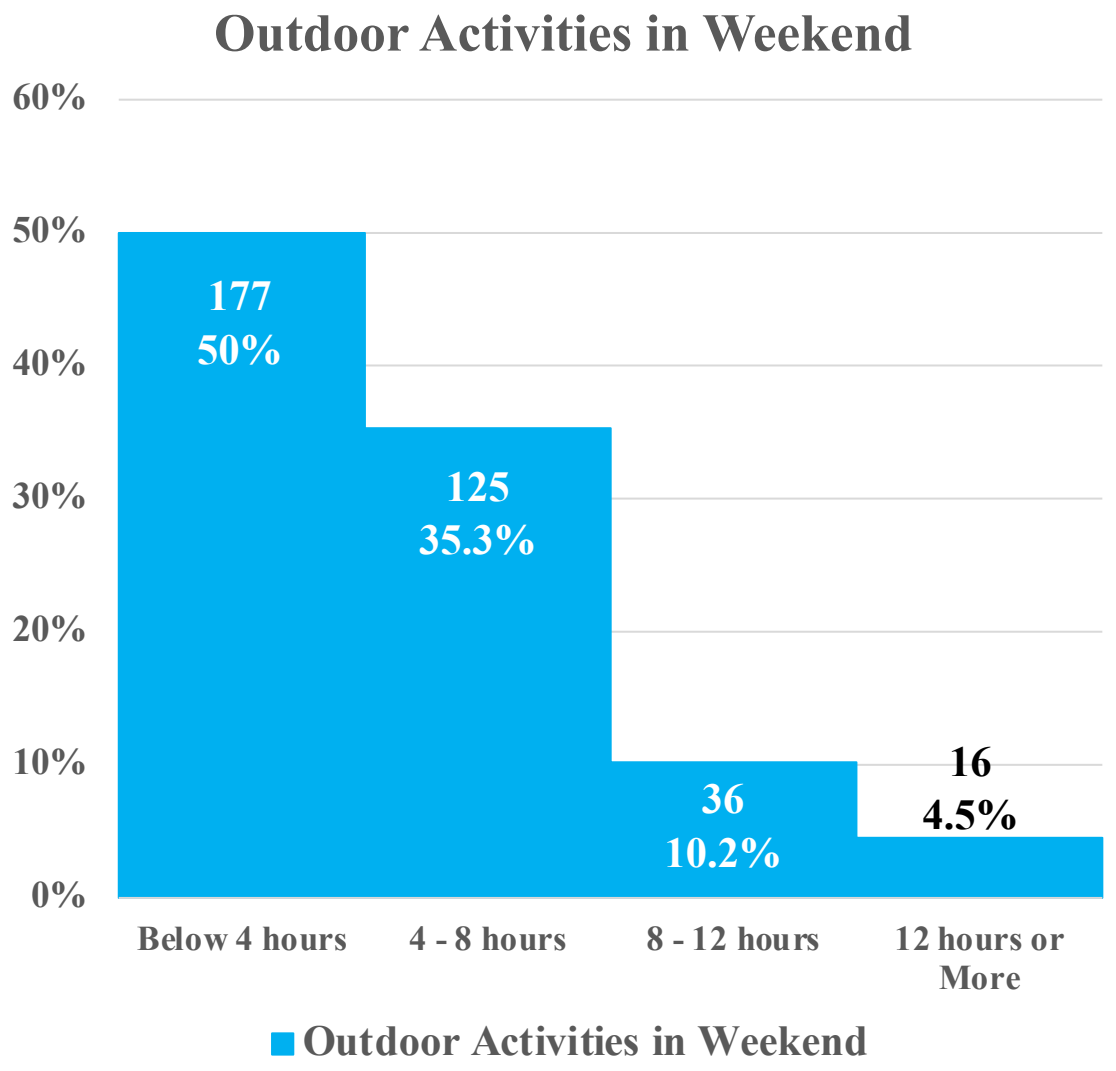


Prevalence of Myopia among the Parent's



RESULTS


Time Spend with Digital Device
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
33
9.3%
141
39.8%
179
50.6%
1 - 3 hours
3 - 5 hours
>5 hours
1 - 3 hours
3 - 5 hours
>5 hours


Outdoor Activities in Weekend
60%
50%
40%
30%
20%
10%
0%
177
50%
125
35.3%
36
10.2%
16
4.5%
Below 4 hours
4 - 8 hours
8 - 12 hours
12 hours or More
Outdoor Activities in Weekend

RESULTS

Variables	Myopia vs Digital Device Users	
	AOR	95% CI
Family Monthly Income		
Below 100000	1	
100000 - 200000	0.797	0.347 – 1.826
200001 - 400000	0.639	0.214 – 1.821
400001 or More	3.015	0.662 – 13.663
Acute Ocular Infection		
Yes	0.687	0.258 – 1.763
No	1	
Who has Chronic Disease		
Mother	1.034	0.329 – 3.201
Father	1.538	0.592 – 4.073
Both	0.861	0.303 – 2.429

Variables	DED vs Digital Device Users	
	AOR	95% CI
Acute Ocular Infection		
Yes	0.988	0.488-1.978
No	1	
Conjunctivitis		
Yes	1.701	0.903-3.205
No	1	
Ocular Medication Use		
Yes	1.183	0.563-2.464
No	1	
Household Member Chronic Disease		
Yes	1.496	0.449-5.424
No	1	

RESULTS

Variables	Myopia vs Digital Device Users	
	AOR	95% CI
Don't have	1	
Ocular treatment within last six months		
Yes	0.864	0.384 – 1.916
No	1	
Wearing Glasses		
Yes	**0.046*** **	**0.008 – 0.204**
No	1	
Cosmetic Use		
Yes	1.112	0.429 – 2.768
No	1	
Refractive Error		
Yes	**0.179*** **	**0.065 – 0.452**

Variables	DED vs Digital Device Users	
	AOR	95% CI
Who has Chronic Disease		
Mother	0.192	0.033 – 0.992
Father	0.697	0.182 – 2.444
Both	1.133	0.249 – 4.794
Don't have	1	
Ocular treatment within last six months		
Yes	1.556	0.786 – 3.085
No	1	
Wearing Glasses		
Yes	0.645	0.230 – 1.741
No	1	
Refractive Error		

RESULTS

Variables	Myopia vs Digital Device Users	
	AOR	95% CI
No	1	
Therapeutical		
Yes	**0.091*** **	**0.065 – 0.452**
No	1	
Wearing Contact Lens		
Yes	0.594	0.081 – 4.405
No	1	
Cosmetic Use		
Yes	0.302	0.033 – 2.407
No	1	
Therapeutical		
Yes	0.353	0.031 – 3.306

Variables	DED vs Digital Device Users	
	AOR	95% CI
Yes	1.412	0.742 – 2.710
No	1	
Therapeutical		
Yes	1.444	0.725 – 2.877
No	1	
Wearing Contact Lens		
Yes	1.139	0.575 – 2.240
No	1	
Therapeutical		
Yes	1.387	0.543 – 3.553
No	1	
Who has Myopia		

RESULTS

Variables	Myopia vs Digital Device Users	
	AOR	95% CI
No	1	
Soft		
Yes	3.070	0.403-19.961
No	1	
RGP		
Yes	0.884	0.092 – 7.229
No	1	
Therapeutic		
Yes	1.799	0.181-12.508
No	1	
Time Spend with Digital Device		
1 – 3 hours	1	

Variables	DED vs Digital Device Users	
	AOR	95% CI
Father	0.542	0.221 – 1.262
Mother	1.198	0.573 – 2.496
Both	0.918	0.462 – 1.807
Don’t have	1	
Tablet		
Yes	1.388	0.814 – 2.362
No	1	
Time Spend with Digital Device		
1 – 3 hours	1.373	0.467 – 4.687
3 – 5 hours	2.612	0.908 – 8.826
>5 hours	1	

RESULTS

Variables	Myopia vs Digital Device Users	
	AOR	95% CI
3 – 5 hours	**0.188****	**0.052 – 0.636**
>5 hours	**0.240***	**0.071 – 0.772**
Dry Eye Disease		
No	1	
Yes	0.552	0.229 – 1.279

Variables	DED vs Digital Device Users	
	AOR	95% CI
Myopia		
Yes	**2.525***	**1.113 – 5.992**
No	1	

**p<0.05, **p<0.01, ***p<0.001*

AOR: Adjusted Odds Ratio; **CI:** Confidence Interval; **RC:** Reference Category

DISCUSSION

This study showed that participants who had used spectacles for correcting refractive error and therapeutic purpose they had lower chance of myopia compared to who had not use spectacles and participants who used spectacles for different purposes (like cosmetic use)

Our study found that time spend with digital device used rate higher among the participants who had used more than 5 hours compared to 1 to 3 hours digital device users as well as the participants who had used digital device 3 to 5 hours.

Myopic participants had more chance to develop dry eye disease and our study found the significant result compared to participants who had no myopia disease.

CONCLUSION
&
RECOMMENDATION

Although, near work induced myopia and more time spend with digital device use had greater relationship to develop myopia. And myopic patients were higher chances for developing dry eye disease.

Prevalence of wearing glasses has importance in planning service to reduce the myopia and DED. But in an increase of glass use may or may not have an impact on the prevalence of uncorrected refractive errors among the population.

The data were very few, and it is unclear if elements that affect peripheral retinal defocus, such as the power profile of the spectacle lenses. Its recommend to further research group, collect data with appropriate clinical setup to find out the actual scenario of myopia and dry eye disease among this target group of people.

Thank You

MD TAMZID HASAN
tamzid.hasan@northsouth.edu
+880 1711 927924