A total of 354 female students at North South University were included in our study. And all participants were digital device (such as computer, laptop, mobile, tablet, etc.) users. The overall prevalence of Myopia was found to be 57.91% (n=205), shown in **Table 1**. Besides, the prevalence of dry eye disease was found to be 32.5% (n=115), shown in **Table 2**.

**Table 1:** Socio demographic and economic factor for Myopia

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Myopia** | | **P-value** |
| **Yes** | **No** |
| **Female students** | **354 (100%)** | **205 (57.91%)** | **149 (42.09%)** |  |
| **Age** | | | | |
| 18 – 23 years | 232 (65.5%) | 131 (56.5%) | 101 (43.5%) | 0.322 |
| 24 – 29 years | 94 (26.6%) | 60 (63.8%) | 34 (36.2%) |
| 30 – 35 years | 28 (7.9%) | 14 (50%) | 14 (50%) |
| **Educational Status** | | | | |
| Undergraduate | 208 (58.8%) | 115 (55.3%) | 93 (44.7%) | 0.279 |
| Master’s | 146 (41.2%) | 90 (61.6%) | 56 (38.4%) |
| **Father’s Occupation** | | | | |
| Government Job | 114 (32.2%) | 67 (58.8%) | 47 (41.2%) | 0.933 |
| Private Job | 92 (26%) | 54 (58.7%) | 38 (41.3%) |
| Business | 148 (41.8%) | 84 (56.8%) | 64 (43.2%) |
| **Mother’s Occupation** | | | | |
| Government Job | 58 (16.4%) | 38 (65.5%) | 20 (34.5%) | 0.342 |
| Private Job | 63 (17.8%) | 38 (60.3%) | 25 (39.7%) |
| Housewife | 233 (65.8%) | 104 (44.6%) | 104 (44.6%) |
| **Family Monthly Income (BDT)** | | | | |
| Below 100000 | 110 (31.1%) | 54 (49.1%) | 56 (50.9%) | **<0.009** |
| 100000 – 200000 | 150 (42.4%) | 93 (62%) | 57 (38%) |
| 200001 – 400000 | 71 (20.1%) | 49 (69%) | 22 (31%) |
| 400001 or More | 23 (6.5%) | 9 (39.1%) | 14 (60.9%) |

**Table 1** & **Table 2** both shows the socio-demographic and socio-economic information of the participants. In this study, 65.5% (n=232) participants belonged to the 18-23 years age group and 26.6% (n=94) of the participants from 24-29 years age group and 7.9% (n=28) were from 30-35 years age group. Among the participants, 58.8% (n=208) enrolled in undergraduate program and 41.2% (n=146) from master’s program. 32.2% (n=114) of their father’s main occupation was business, and government job (114, n=32.2%) holder were 6.2% more than whose did private job (92, n=26%). Most of the participants mothers were housewife (65.8%, n=233). And the participants monthly family income range was below 100000 BDT to more than 400000 BDT, majority of the participants (42.4%, n=150) belonged to 100000 BDT to 200000 BDT income group.

After bivariate analysis, we found that majority of the participants (56.5%, n= 131) were myopic whose age was 18 to 23 years, 55.3% (n=115) myopic students were from undergraduate program, and 61.6% (n=90) enrolled in master’s program. Majority of myopic participants (58.8%, n= 67) fathers did government job, while participants whose fathers did business (56.8%, n= 84) were 1.9% less myopic than whose fathers did private job (58.7%, n= 54). Myopic participants whose mothers did government (65.5%, n= 38) and private job (60.3%, n= 38)were 20.9% and 15.7% higher than whose mothers were housewife (44.6%, n=104). Family monthly income significantly associated with myopia found from my study. Participants (69%, n=49) from family monthly income group between 200001 BDT to 400000 BDT they were more myopic than participants in other income group, shown in **Table 1**.

**Table 2:** Socio demographic and economic factor for Dry Eye Disease

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Dry Eye Disease** | | **P-value** |
| **No** | **Yes** |
| **Female students** | **354 (100%)** | **239 (67.5%)** | **115 (32.5%)** |  |
| **Age** | | | | |
| 18 – 23 years | 232 (65.5%) | 160 (69%) | 72 (31%) | 0.722 |
| 24 – 29 years | 94 (26.6%) | 61 (64.9%) | 33 (35.1%) |
| 30 – 35 years | 28 (7.9%) | 18 (64.3%) | 10 (35.7%) |
| **Educational Status** | | | | |
| Undergraduate | 208 (58.8%) | 147 (70.7%) | 61 (29.3%) | 0.162 |
| Master’s | 146 (41.2%) | 92 (63%) | 54 (37%) |
| **Father’s Occupation** | | | | |
| Government Job | 114 (32.2%) | 75 (65.8%) | 39 (34.2%) | 0.743 |
| Private Job | 92 (26%) | 65 (70.7%) | 27 (29.3%) |
| Business | 148 (41.8%) | 99 (66.9%) | 49 (33.1%) |
| **Mother’s Occupation** | | | | |
| Government Job | 58 (16.4%) | 36 (62.1%) | 22 (37.9%) | 0.437 |
| Private Job | 63 (17.8%) | 46 (73%) | 17 (27%) |
| Housewife | 233 (65.8%) | 157 (67.4%) | 76 (32.6%) |
| **Family Monthly Income (BDT)** | | | | |
| Below 100000 | 110 (31.1%) | 82 (74.5%) | 28 (25.5%) | 0.072 |
| 100000 – 200000 | 150 (42.4%) | 100 (66.7%) | 50 (33.3%) |
| 200001 – 400000 | 71 (20.1%) | 40 (56.3%) | 31 (43.7%) |
| 400001 or More | 23 (6.5%) | 17 (73.9%) | 6 (26.1%) |

After bivariate analysis, we determined that dry eye disease was not significantly associated with participants age, educational status, father’s and mother’s occupation, and family monthly income. Most of the dry eye disease participants (35.7%) were from 30 to 35 years age group where 31% and 35.1% were from 18 to 23 years and 24 to 29 years age group, respectively. DED participants from master’s (37%, n=54) program were 7.7% higher than DED participants whose were from undergraduate (29.3%, n=61) program. Majority of the DED participants fathers (34.2%, n=39) and mothers (37.9%, n=22%) were doing government job. In contrast, maximum DED participants (43.7%, n=31) family’s monthly income between 200001 BDT to 400000 BDT and 66.7% (n=100) participants whose has no DED, their family’s monthly income between 100000 BDT to 200000 BDT, shown in **Table 2**.

**Table 3** and **Table 4** portrayed the clinical factor for myopia and dry disease among the participants. From this table we determined the acute ocular infection, conjunctivitis, other eye diseases, ocular medication uses history, ocular treatment, and their family member’s chronic disease distribution of myopia and DED among participants.

Participants in this study reported that 24.9% (n=88) had acute ocular infection, 40.1% (n=142) had conjunctivitis, 9% (n=32) had other eye diseases, and 48.9% (n=173) participants had taken ocular medication for treatment. **Table 3** and **Table 4** demonstrated that 40.2% more participants household members had chronic disease (70.1%, n=248) than participants whose household members had no chronic disease (29.9%, n=106). 34.5% (122) participants both father and mother had chronic disease and 24.9% (n=88) participants parents had no chronic disease was determined from participants self-reported responses. In our study, we identified that participants whose had ocular disease 35% (n=125) among them had ocular treatment within last six months.

**Table 3:** Clinical Factor for Myopia

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Myopia** | | **P-value** |
| **Yes** | **No** |
| **Female students** | **354 (100%)** | **205 (57.91%)** | **149 (42.09%)** |  |
| **Acute Ocular Infection** | | | | |
| Yes | 88 (24.9%) | 71 (80.7%) | 17 (19.3%) | **<0.000** |
| No | 266 (75.1%) | 134 (50.4%) | 132 (49.6%) |
| **Conjunctivitis** | | | | |
| Yes | 142 (40.1%) | 88 (62%) | 54 (38%) | 0.247 |
| No | 212 (59.9%) | 117 (55.2%) | 95 (44.8%) |
| **Other Eye Diseases** | | | | |
| Yes | 32 (9%) | 20 (62.5%) | 12 (37.5%) | 0.716 |
| No | 322 (91%) | 185 (57.5%) | 137 (42.5%) |
| **Ocular Medication Use** | | | | |
| Yes | 173 (48.9%) | 107 (61.8%) | 66 (38.2%) | 0.174 |
| No | 181 (51.1%) | 98 (54.1%) | 83 (45.9%) |
| **Household Member Chronic Disease** | | | | |
| Yes | 248 (70.1%) | 148 (59.7%) | 100 (40.3%) | 0.361 |
| No | 106 (29.9%) | 57 (53.8%) | 49 (46.2%) |
| **Who has Chronic Disease** | | | | |
| Mother | 46 (13%) | 20 (43.5%) | 26 (56.5%) | **<0.009** |
| Father | 98 (27.7%) | 58 (59.2%) | 40 (40.8%) |
| Both | 122 (34.5%) | 83 (68%) | 39 (32%) |
| Don’t have | 88 (24.9%) | 44 (50%) | 44 (50%) |
| **Ocular treatment within last six months of respondents** | | | | |
| Yes | 125 (35.4%) | 95 (76%) | 30 (24%) | **<0.000** |
| No | 228 (64.6%) | 110 (48.2%) | 118 (51.8%) |

After bivariate analysis, we found that acute ocular infection, parents’ chronic disease, and ocular treatment within last six months of participants were strongly significant with myopia. Table 3 demonstrated that, 80.7% (n=71) participants were myopic whose had acute ocular infection while 50.4% (n=134) myopic participants whose had no acute ocular infection. 6.8% more myopic participants had conjunctivitis (62%, n=88) than myopic participants whose had no conjunctivitis (55.2%, n=117). Similarly, 5%, 7.7%, and 5.9% myopic participants had other ocular disease (62.5%, n=20), history of ocular medication use (61.8%, n=107), and presence of household members chronic disease (59.7%, n=148) than myopic participants whose had no ocular disease (57.5%, n=185), treatment history (54.1%, n=98) history and their household members (53.8%, n=57) had no chronic disease history, respectively. A majority of 68% (n=83) myopic participants parents had chronic disease and 50% (n=44) myopic participants parents had no chronic disease were significantly associated with myopia. Most of the myopic participants (76%, n=95) had ocular treatment within last six months and 24% (n=30) participants were vulnerable for myopia, shown in **Table 3**.

**Table 4:** Clinical Factor for Dry Eye Disease

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Dry Eye Disease** | | **P-value** |
| **No** | **Yes** |
| **Female students** | **354 (100%)** | **239 (67.5%)** | **115 (32.5%)** |  |
| **Acute Ocular Infection** | | | | |
| Yes | 88 (24.9%) | 46 (52.3%) | 42 (47.7%) | **<0.001** |
| No | 266 (75.1%) | 193 (72.6%) | 73 (27.4%) |
| **Conjunctivitis** | | | | |
| Yes | 142 (40.1%) | 81 (57%) | 61 (43%) | **<0.001** |
| No | 212 (59.9%) | 158 (74.5%) | 54 (25.5%) |
| **Other Eye Diseases** | | | | |
| Yes | 32 (9%) | 18 (56.2%) | 14 (43.8%) | 0.219 |
| No | 322 (91%) | 221 (68.6%) | 101 (31.4%) |
| **Ocular Medication Use** | | | | |
| Yes | 173 (48.9%) | 101 (58.4%) | 72 (41.6%) | **<0.001** |
| No | 181 (51.1%) | 138 (76.2%) | 43 (23.8%) |
| **Household Member Chronic Disease** | | | | |
| Yes | 248 (70.1%) | 159 (64.1%) | 89 (35.9%) | **<0.049** |
| No | 106 (29.9%) | 80 (75.5%) | 26 (24.5%) |
| **Who has Chronic Disease** | | | | |
| Mother | 46 (13%) | 41 (89.1%) | 5 (10.9%) | **<0.000** |
| Father | 98 (27.7%) | 67 (68.4%) | 31 (31.6%) |
| Both | 122 (34.5%) | 63 (51.6%) | 59 (48.4%) |
| Don’t have | 88 (24.9%) | 68 (77.3%) | 20 (22.7%) |
| **Ocular treatment within last six months of respondents** | | | | |
| Yes | 126 (35.6%) | 65 (51.6%) | 61 (48.4%) | **<0.000** |
| No | 228 (64.4%) | 174 (76.3%) | 54 (23.7%) |

After bivariate analysis, **Table 4** demonstrated that acute ocular infection, conjunctivitis, ocular medication use, household member chronic disease, parents’ chronic disease, and participants ocular treatment within last six months were strongly significant with dry eye disease. 20.3% more myopic participants who had acute ocular infection had dry eye disease where 27.4% (n=73) DED participants had no acute ocular infection, 43% (n=61) DED participants had conjunctivitis, and 41.6% (n=72) had taken ocular medication. Participants reported that, 35.9% (n=89) DED participants’ household members had chronic disease, whereas 22.7% (n=20) of their parents had no chronic disease and 48.4% (n=59) of their both parents had chronic disease. And only 48.4% (n=61) DED participants follow up their ocular treatment within last six months, respectively.

**Table 5** and **Table 6** shows the refractive error, family ocular history, near work, and outdoor activities associated with myopia and dry eye disease and as well as the distribution also demonstrated.

All participants self-reported that 72.9% (n=258) participants were wearing glasses ,whereas the 34.5% (n=122), 48.9% (n=173), and 30.2% (n=107) participants used glasses for cosmetic, correction of refractive error, and therapeutical purposes, respectively. Similarly, 35% (n=124) participants used contact lens for cosmetic (23.4%, n=83), correction of refractive error (13.6%, n=48), and therapeutical (5.9%, n= 21) purposes. They had used different types of contact lens. Participants mostly habituated with soft (20.9%, n=74), RGP (10.5%, n=37), and therapeutic (10.2%, n=36) type contact lens in their daily lifestyle. 19.8% more participants parents had myopia and 32.5% (n=115) had no myopia. In our study, 94.6% (n=335) and 99.7% (n=353) had computer/laptop and mobile, while only 41.8% (n=148) had tablet. Most of the participants (50.6%, n=179) had spent more than 5 hours for using the digital devices for different purposes. Only 9.3% (n=33) participants had spent less time into digital device; whereas 45.5% (n=161) participants weekdays outdoor activities were 2 to 5 hours and 21.8% (n=77) had spent more then 5 hours at outdoor. In weekend, most of the participants (50%, n=177) outdoor activities were below 4 hours and 4.5% (n=16) participants were 12 hours or more.

**Table 5:** Refractive error, Family history, Near work, and Outdoor activities for Myopia

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Myopia** | | **P-value** |
| **Yes** | **No** |
| **Female students** | **354 (100%)** | **205 (57.91%)** | **149 (42.09%)** |  |
| **Domain-I Refractive Error** | | | | |
| **Wearing Glasses** | | | | |
| Yes | 258 (72.9%) | 202 (78.3%) | 56 (21.7%) | **<0.000** |
| No | 96 (27.1%) | 3 (3.1%) | 93 (96.9%) |
| **Purpose of wearing glasses** | | | | |
| **Cosmetic Use** | | | | |
| Yes | 122 (34.5%) | 91 (74.6%) | 31 (25.4%) | **<0.000** |
| No | 232 (65.5%) | 114 (49.1%) | 118 (50.9%) |
| **Refractive Error** | | | | |
| Yes | 173 (48.9%) | 145 (83.8%) | 28 (16.2%) | **<0.000** |
| No | 181 (51.1%) | 60 (33.1%) | 121 (66.9%) |
| **Therapeutical** | | | | |
| Yes | 107 (30.2%) | 99 (92.5%) | 8 (7.5%) | **<0.000** |
| No | 247 (69.8%) | 106 (42.9%) | 141 (57.1%) |
| **Wearing Contact Lens** | | | | |
| Yes | 124 (35%) | 96 (77.4%) | 28 (22.6%) | **<0.000** |
| No | 230 (65%) | 109 (47.4%) | 121 (52.6%) |
| **Purpose of wearing contact lens** | | | | |
| **Cosmetic Use** | | | | |
| Yes | 83 (23.4%) | 65 (78.3%) | 18 (21.7%) | **<0.000** |
| No | 271 (76.6%) | 140 (51.7%) | 131 (48.3%) |
| **Refractive Error** | | | | |
| Yes | 48 (13.6%) | 37 (77.1%) | 11 (22.9%) | **<0.006** |
| No | 306 (86.4%) | 168 (54.9%) | 138 (45.1%) |
| **Therapeutical** | | | | |
| Yes | 21 (5.9%) | 18 (85.7%) | 3 (14.3%) | **<0.015** |
| No | 333 (94.1%) | 187 (56.2%) | 146 (43.8%) |
| **Type of contact lens** | | | | |
| **Soft** | | | | |
| Yes | 74 (20.9%) | 53 (71.6%) | 21 (28.4%) | **<0.011** |
| No | 280 (79.1%) | 152 (54.3%) | 128 (45.7%) |
| **RGP** | | | | |
| Yes | 37 (10.5%) | 30 (81.1%) | 7 (18.9%) | **<0.004** |
| No | 317 (89.5%) | 175 (55.2%) | 142 (44.8%) |
| **Therapeutic** | | | | |
| Yes | 36 (10.2%) | 33 (91.7%) | 3 (8.3%) | **<0.000** |
| No | 317 (89.5%) | 171 (53.9%) | 146 (46.1%) |
| **Domain- II Family History** | | | | |
| **Parental Myopia** | | | | |
| Yes | 212 (59.9%) | 121 (57.1%) | 91 (42.9%) | 0.781 |
| No | 142 (40.1%) | 84 (59.2%) | 58 (40.8%) |
| **Who has Myopia** | | | | |
| Father | 56 (15.8%) | 28 (50%) | 28 (50%) | 0.157 |
| Mother | 77 (21.8%) | 39 (50.6%) | 38 (49.4%) |
| Both | 106 (29.9%) | 68 (64.2%) | 38 (35.8%) |
| Don’t have | 115 (32.5%) | 70 (60.9%) | 45 (39.1%) |
| **Domain- III Near Work** | | | | |
| **Gadgets at Home** | | | | |
| **Computer/Laptop** | | | | |
| Yes | 335 (94.6%) | 195 (58.2%) | 140 (41.8%) | 0.810 |
| No | 19 (5.4%) | 10 (52.6%) | 9 (47.4%) |
| **Mobile** | | | | |
| Yes | 353 (99.7%) | 204 (57.8%) | 149 (42.2%) | 1.000 |
| No | 1 (0.3%) | 1 (100%) | 0 (0.0%) |
| **Tablet** | | | | |
| Yes | 148 (41.8%) | 93 (62.8%) | 55 (37.2%) | 0.138 |
| No | 206 (58.2%) | 112 (54.4%) | 94 (45.6%) |
| **Time Spend with Digital Device** | | | | |
| 1 – 3 hours | 33 (9.3%) | 9 (27.3%) | 24 (72.7%) | **<0.002** |
| 3 – 5 hours | 141 (39.8%) | 86 (61%) | 55 (39%) |
| >5 hours | 179 (50.6%) | 109 (60.9%) | 70 (39.1%) |
| **Domain- IV Outdoor Activities** | | | | |
| **Outdoor Activities Weekdays** | | | | |
| Below 2 hours | 116 (32.8%) | 65 (56%) | 51 (44%) | 0.293 |
| 2 – 5 hours | 161 (45.5%) | 100 (62.1%) | 61 (37.9%) |
| 5 hours or more | 77 (21.8%) | 40 (51.9%) | 37 (48.1%) |
| **Outdoor Activities Weekend** | | | | |
| Below 4 hours | 177 (50%) | 106 (59.9%) | 71 (40.1%) | 0.603 |
| 4 – 8 hours | 125 (35.3%) | 68 (54.4%) | 57 (45.6%) |
| 8 – 12 hours | 36 (10.2%) | 23 (63.9%) | 13 (36.1%) |
| 12 hours or more | 16 (4.5%) | 8 (50%) | 8 (50%) |

After bivariate analysis, **Table 5** shows that wearing glasses, purpose of wearing glasses, wearing contact lens, purpose of wearing contact lens, type of contact lens, and time spend with digital device were highly significant with myopia. In our study we found that participants whose were wearing glasses among them 78.3% (n=202) had myopia. They had used glasses in different purposes, participants with myopia (74.6%, n=91) used glasses for cosmetic purpose. 50.7% more myopic participants (83.8%, n=145) used glasses to correct the refractive error, and 92.5% (n=99) used for therapeutic purpose. Similarly, 77.4% (n=96) myopic participants used contact lens for different purpose, and 5.2% had low risk of myopia whose had not wearing contact lens. 78.3% (n=65) used contact lens for cosmetic purposes where 85.7% (n=18) used for therapeutic. A majority 91.7% (n=33) myopic participants used therapeutic contact lens and 71.6% (n=53) participants contact lens was soft. Parental myopia was not found significant in our study. Participants reported that 2.1% more myopic participants had no parental myopia history and 64.2% (n=68) myopic participants both father and mother had myopia and other ocular history (such as glaucoma, cataract, retinal disease, etc.). Most of the participants home had computer/laptop, mobile, and tablet and they had used these devices in different purposes, in our study most of the myopic participants were found whose used digital devices more than 5 hours, where only 27.3% (n=9) had spent time to digital devices 1 to 3 hours. According to this study, we identified that 56% (n=65) myopic participants weekdays outdoor activities were below 2 hours and 51.9% (n=40) had more than 5 hours but in holiday their outdoor activities were 8 to 12 hours.

**Table 6:** Refractive error, Family history, Near work, and Outdoor activities for Dry Eye Disease

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Dry Eye Disease** | | **P-value** |
| **No** | **Yes** |
| **Female students** | **354 (100%)** | **239 (67.5%)** | **115 (32.5%)** |  |
| **Domain-I Refractive Error** | | | | |
| **Wearing Glasses** | | | | |
| Yes | 258 (72.9%) | 159 (61.6%) | 99 (38.4%) | **<0.000** |
| No | 96 (27.1%) | 80 (83.3%) | 16 (16.7%) |
| **Purpose of wearing glasses** | | | | |
| **Cosmetic Use** | | | | |
| Yes | 122 (34.5%) | 83 (68%) | 39 (32%) | 0.975 |
| No | 232 (65.5%) | 156 (67.2%) | 76 (32.8%) |
| **Refractive Error** | | | | |
| Yes | 173 (48.9%) | 102 (59%) | 71 (41%) | **<0.001** |
| No | 181 (51.1%) | 137 (75.7%) | 44 (24.3%) |
| **Therapeutical** | | | | |
| Yes | 107 (30.2%) | 55 (51.4%) | 52 (48.6%) | **<0.000** |
| No | 247 (69.8%) | 184 (74.5%) | 63 (25.5%) |
| **Wearing Contact Lens** | | | | |
| Yes | 124 (35%) | 72 (58.1%) | 52 (41.9%) | **<0.008** |
| No | 230 (65%) | 167 (72.6%) | 63 (27.4%) |
| **Purpose of wearing contact lens** | | | | |
| **Cosmetic Use** | | | | |
| Yes | 83 (23.4%) | 50 (60.2%) | 33 (39.8%) | 0.138 |
| No | 271 (76.6%) | 189 (69.7%) | 82 (30.3%) |
| **Refractive Error** | | | | |
| Yes | 48 (13.6%) | 26 (54.2%) | 22 (45.8%) | 0.050 |
| No | 306 (86.4%) | 213 (69.6%) | 93 (30.4%) |
| **Therapeutical** | | | | |
| Yes | 21 (5.9%) | 11 (52.4%) | 10 (47.6%) | 0.198 |
| No | 333 (94.1%) | 228 (68.5%) | 105 (31.5%) |
| **Type of contact lens** | | | | |
| **Soft** | | | | |
| Yes | 74 (20.9%) | 45 (60.8%) | 29 (39.2%) | 0.213 |
| No | 280 (79.1%) | 194 (69.3%) | 86 (30.7%) |
| **RGP** | | | | |
| Yes | 37 (10.5%) | 24 (64.9%) | 13 (35.1%) | 0.859 |
| No | 317 (89.5%) | 215 (67.8%) | 102 (32.2%) |
| **Therapeutic** | | | | |
| Yes | 36 (10.2%) | 18 (50%) | 18 (50%) | **<0.029** |
| No | 318 (89.8%) | 221 (69.5%) | 97 (30.5%) |
| **Domain- II Family History** | | | | |
| **Parental Myopia** | | | | |
| Yes | 212 (59.9%) | 144 (67.9%) | 68 (32.1%) | 0.932 |
| No | 142 (40.1%) | 95 (66.9%) | 47 (33.1%) |
| **Who has Myopia** | | | | |
| Father | 56 (15.8%) | 45 (80.4%) | 11 (19.6%) | **<0.045** |
| Mother | 77 (21.8%) | 50 (64.9%) | 27 (35.1%) |
| Both | 106 (29.9%) | 63 (59.4%) | 43 (40.6%) |
| Don’t have | 115 (32.5%) | 81 (70.4%) | 34 (29.6%) |
| **Domain- III Near Work** | | | | |
| **Gadgets at Home** | | | | |
| **Computer/Laptop** | | | | |
| Yes | 335 (94.6%) | 224 (66.9%) | 111 (33.1%) | 0.399 |
| No | 19 (5.4%) | 15 (78.9%) | 4 (21.1%) |
| **Mobile** | | | | |
| Yes | 353 (99.7%) | 238 (67.4%) | 115 (32.6%) | 1.000 |
| No | 1 (0.3%) | 1 (100%) | 0 (0.0%) |
| **Tablet** | | | | |
| Yes | 148 (41.8%) | 87 (58.8%) | 61 (41.2%) | **<0.004** |
| No | 206 (58.2%) | 152 (73.8%) | 54 (26.2%) |
| **Time Spend with Digital Device** | | | | |
| 1 – 3 hours | 33 (9.3%) | 28 (84.8%) | 5 (15.2%) | **<0.007** |
| 3 – 5 hours | 141 (39.8%) | 102 (72.3%) | 39 (27.7%) |
| >5 hours | 180 (50.8%) | 109 (60.6%) | 71 (39.4%) |
| **Domain- IV Outdoor Activities** | | | | |
| **Outdoor Activities Weekdays** | | | | |
| Below 2 hours | 116 (32.8%) | 84 (72.4%) | 32 (27.6%) | 0.389 |
| 2 – 5 hours | 161 (45.5%) | 105 (65.2%) | 56 (34.8%) |
| 5 hours or more | 77 (21.8%) | 50 (64.9%) | 27 (35.1%) |
| **Outdoor Activities Weekend** | | | | |
| Below 4 hours | 177 (50%) | 120 (67.8%) | 57 (32.2%) | 0.412 |
| 4 – 8 hours | 125 (35.3%) | 82 (65.6%) | 43 (34.4%) |
| 8 – 12 hours | 36 (10.2%) | 28 (77.8%) | 8 (22.2%) |
| 12 hours or more | 16 (4.5%) | 9 (56.2%) | 7 (43.8%) |

Refractive error, purpose of wearing glasses, type of contact lens, family history of myopia, and near work were significantly associated with dry eye disease found from bivariate analysis, shown in Table 6. Only 38.4% (n=99) DED participants were using glasses and 41.9% (n=52)

used contact lens. DED participants used glasses to correct the refractive error (41%, n=71) and therapeutic purposes (48.6%, n=52). 50% (n=18) DED participants used therapeutic contact lens alternative to glasses. Parental myopia history also significant with dry eye disease of the participants. 32.1(n=68)% DED participants responded that their parents had myopia, where 40.6% (n=43) DED participants both father and mother had myopia.

All most participants had computer/laptop, mobile, and other digital devices at their home. Nearly used of digital devices had more chances to develop dry eye disease. In our study we found that 15% more tablet user had DED where 26.2% (n=54) DED participants had no tablet device. And daily more than 5 hours 39.4% (n=71) DED participants had spent their time into digital device uses **(Table 6).**

**Table 7:** Dry Eye Disease (DED) for Myopia

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Myopia** | | **P-value** |
| **Yes** | **No** |
| **Female students** | **354 (100%)** | **205 (57.91%)** | **149 (42.09%)** |  |
| **Dry Eye Disease** | | | | |
| No | 239 (67.5%) | 115 (48.1%) | 124 (51.9%) | **<0.000** |
| Yes | 115 (32.5%) | 90 (78.3%) | 25 (21.7%) |

**Table 7** shows that DED prevalence was 32.5% (n=115) among the participants of this study. After bivariate analysis of participants self-reported data, we found that 30.2% less myopic participants (57.91%, n=205) had no DED where 78.3% (n=90) had DED. And 21.7% (n=25) DED participants had no myopia. Result found the highly significant with myopia where p<0.000.

**Table 8:** Myopia and Dry Eye Disease (DED)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Total**  **n(%)** | **Dry Eye Disease** | | **P-value** |
| **No** | **Yes** |
| **Female students** | **354 (100%)** | **239 (67.5%)** | **115 (32.5%)** |  |
| **Myopia** | | | | |
| Yes | 205 (57.9%) | 115 (56.1%) | 90 (43.9%) | **<0.000** |
| No | 149 (42.1%) | 124 (83.2%) | 25 (16.8%) |

**Table 8** shows that myopia prevalence was 57.9% (n=205) among the participants of this study. After bivariate analysis of participants self-reported data, we found that 27.1% more DED participants (32.5%, n=115) had myopia where 83.2% (n=124) had no myopia and DED. Result found the highly significant with DED where p<0.000.

**Table 9** shows the binary logistic regression analysis result where our outcome variable was myopia and significant independent variables were found from bivariate analysis. After analysis we found wearing glasses for refractive error, purpose for wearing glasses, and time spend with digital device were more significant for digital device users to develop myopia disease.

**Table 9:** Binary logistic regression for Myopia

|  |  |  |
| --- | --- | --- |
| **Variables** | **Myopia vs Digital Device Users** | |
| **AOR** | **95% CI** |
| **Socio Demographic & Economic** | | |
| **Family Monthly Income (BDT)** | | |
| Below 100000 (RC) | 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 |
| **Clinical Treatment Information** | | |
| **Acute Ocular Infection** | | |
| Yes | 0.687 | 0.258 – 1.763 |
| No (RC) | 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 |
| Don’t have (RC) | 1 |  |
| **Ocular treatment within last six months of respondents** | | |
| Yes | 0.864 | 0.384 – 1.916 |
| No (RC) | 1 |  |
| **Domain-I Refractive Error** | | |
| **Wearing Glasses** | | |
| Yes | **0.046\*\*\*** | **0.008 – 0.204** |
| No (RC) | 1 |  |
| **Purpose of wearing glasses** | | |
| **Cosmetic Use** | | |
| Yes | 1.112 | 0.429 – 2.768 |
| No (RC) | 1 |  |
| **Refractive Error** | | |
| Yes | **0.179\*\*\*** | **0.065 – 0.452** |
| No (RC) | 1 |  |
| **Therapeutical** | | |
| Yes | **0.091\*\*\*** | **0.029 – 0.242** |
| No (RC) | 1 |  |
| **Wearing Contact Lens** | | |
| Yes | 0.594 | 0.081 – 4.405 |
| No (RC) | 1 |  |
| **Purpose of wearing contact lens** | | |
| **Cosmetic Use** | | |
| Yes | 0.302 | 0.033 – 2.407 |
| No (RC) | 1 |  |
| **Refractive Error** | | |
| Yes | 0.625 | 0.075 – 4.549 |
| No (RC) | 1 |  |
| **Therapeutical** | | |
| Yes | 0.353 | 0.031 – 3.306 |
| No (RC) | 1 |  |
| **Type of Contact Lens** | | |
| **Soft** | | |
| Yes | 3.070 | 0.403 – 19.961 |
| No (RC) | 1 |  |
| **RGP** | | |
| Yes | 0.884 | 0.092 – 7.229 |
| No (RC) | 1 |  |
| **Therapeutic** | | |
| Yes | 1.799 | 0.181 – 12.508 |
| No (RC) | 1 |  |
| **Domain- III Near Work** | | |
| **Time Spend with Digital Device** | | |
| 1 – 3 hours (RC) | 1 |  |
| 3 – 5 hours | **0.188\*\*** | **0.052 – 0.636** |
| >5 hours | **0.240\*** | **0.071 – 0.772** |
| **Dry Eye Disease (DED) for Myopia** | | |
| **Dry Eye Disease** | | |
| No (RC) | 1 |  |
| Yes | 0.552 | 0.229 – 1.279 |
| *\*p<0.05, \*\*p<0.01, \*\*\*p<0.001*  **AOR:** Adjusted Odds Ratio; **CI:** Confidence Interval; **RC:** Reference Category | | |

According to result shows in **Table 9**, we found that participants who wore glass (AOR: 0.046, 95% CI: 0.008 – 0.204) were 95.4% lower likelihood to myopia disease compared to who did not wear glass. Myopia disease was 82.1% lower for participants who used glass to correct the refractive error (AOR: 0.179, 95% CI: 0.065 – 0.452) compared to who did not. Similarly, participants who therapeutically used the glass (AOR: 0.091, 95% CI: 0.029 – 0.242) were 0.091 times lower chance to develop myopia compared to who used glass in other purposes. Moreover, myopia disease was higher among the participants whose daily digital device spent time were 3 to 5 hours (AOR: 0.188, 95% CI: 0.052 – 0.636) and more than 5 hours (AOR: 0.240, 95% CI: 0.071 – 0.772) compared to those who were spent time 1 to 3 hours.

**Table 10** shows the binary logistic regression analysis result for dry eye disease (DED) and only significant variable was myopia.

**Table 10:** Binary logistic regression for Dry Eye Disease

|  |  |  |
| --- | --- | --- |
| **Variables** | **Dry Eye Disease vs Digital Device Users** | |
| **AOR** | **95% CI** |
| **Clinical Treatment Information** | | |
| **Acute Ocular Infection** | | |
| Yes | 0.988 | 0.488 – 1.978 |
| No (RC) | 1 |  |
| **Conjunctivitis** | | |
| Yes | 1.701 | 0.903 – 3.205 |
| No (RC) | 1 |  |
| **Ocular Medication Use** | | |
| Yes | 1.183 | 0.563 – 2.464 |
| No (RC) | 1 |  |
| **Household Member Chronic Disease** | | |
| Yes | 1.496 | 0.449 – 5.424 |
| No (RC) | 1 |  |
| **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 (RC) | 1 |  |
| **Ocular treatment within last six months of respondents** | | |
| Yes | 1.556 | 0.786 – 3.085 |
| No (RC) | 1 |  |
| **Domain-I Refractive Error** | | |
| **Wearing Glasses** | | |
| Yes | 0.645 | 0.230 – 1.741 |
| No (RC) | 1 |  |
| **Purpose of wearing glasses** | | |
| **Refractive Error** | | |
| Yes | 1.412 | 0.742 – 2.710 |
| No (RC) | 1 |  |
| **Therapeutical** | | |
| Yes | 1.444 | 0.725 – 2.877 |
| No (RC) | 1 |  |
| **Wearing Contact Lens** | | |
| Yes | 1.139 | 0.575 – 2.240 |
| No (RC) | 1 |  |
| **Type of contact lens** | | |
| **Therapeutic** | | |
| Yes | 1.387 | 0.543 – 3.553 |
| No (RC) | 1 |  |
| **Domain- II Family History** | | |
| **Who has Myopia** | | |
| Father | 0.542 | 0.221 – 1.262 |
| Mother | 1.198 | 0.573 – 2.496 |
| Both | 0.918 | 0.462 – 1.807 |
| Don’t have (RC) | 1 |  |
| **Domain- III Near Work** | | |
| **Gadgets at Home** | | |
| **Tablet** | | |
| Yes | 1.388 | 0.814 – 2.362 |
| No (RC) | 1 |  |
| **Time Spend with Digital Device** | | |
| 1 – 3 hours (RC) | 1 |  |
| 3 – 5 hours | 1.373 | 0.467 – 4.687 |
| >5 hours | 2.612 | 0.908 – 8.826 |
| **Myopia and Dry Eye Disease (DED)** | | |
| **Myopia** | | |
| Yes | **2.525\*** | **1.113 – 5.992** |
| No (RC) | 1 |  |
| *\*p<0.05, \*\*p<0.01, \*\*\*p<0.001*  **AOR:** Adjusted Odds Ratio; **CI:** Confidence Interval; **RC:** Reference Category | | |

According to result we determined that, participants whose had myopia disease (AOR: 2.525, 95% CI: 1.113 – 5.992) were 2.525 times likely to be dry eye disease compared to participants who had no myopia **(Table 10).**