ejpmr, 2021,8(8), 59-63.

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF MYOPIC SCHOOL GOING CHILDREN IN DHAKA CITY"

Nahid Sultana*[1], Mohammad Mazharul Islam[2] and Md. Shahidullah[3]

[1]Dhaka National Medical College, Dhaka, Bangladesh.
[2,3]Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

***Corresponding Author: Nahid Sultana**

Dhaka National Medical College, Dhaka, Bangladesh.

Article Received on 03/05/2021 **Article Revised on 24/06/2021** **Article Accepted on 15/07/2021**

ABSTRACT

Refractive error, especially myopia is the most common eye problem throughout the world. As a part of a cross-sectional comparative study among an add up to 1319 school going children,311were screened out as myopic from secondary school of Dhaka city through helpful examining methods to post their socio-demographic variety. Among the study population eye examination was done by retinoscope following standard procedure for detecting myopia. The mean age was 11.41±2.1 years of which 80% were within 8-13 year age group. This study showed that myopia was predominant in female than male. By occupation mothers of the subjects were mostly homemaker while fathers were found engaged with business followed by services. Of these children 85.53% were found not using any glass/spectacles. It was revealed that about half of the subjects were suffering from other eye problems mainly Blurred distal vision (57%), Eyeache (26%), watering (34%) and Headache (24%). Student as well as their parents were not aware about the vision problems among the children. Routine health checkup by school authorities including eye screening is highly recommended.

KEYWORDS: *Myopia, School going children*.

INTRODUCTION

Myopia or shortsightedness or nearsightedness is one of the foremost common sorts of refractive blunder all over the world especially among the children of 5 –15 years age, on the off chance that uncorrected may lead to cataract, glaucoma and retinal separation in more seasoned age (Gardiner,1955;Saxena and Vashist, 2013; Gomez-Salazar *et al.*, 2017). Myopia usually presents with blurred distance vision, itching, eye strain, eye rubbing and squeezing of the eyes. Anatomically myopia occurs due to too long axial length of eye ball or the optical power is too great or combination of both (Carney, Mainstone, & Henderson, 1997; Grosvenor & Scott, 1994; Mainstone et al., 1998; Strang et al., 1998).Myopic eyes are generally larger by equatorial, antero-posterior and vertical axes than normal eyes (Cheng et al. 1992) have been found to have steeper corneas (Carney et al., 1997; Grosvenor & Goss, 1998).

A precise survey of 145 studies ponders evaluated myopia in 22.9% of the world population and anticipated that it can be 49.8% by 2050(Fricke *et al.*, 2018).The predominance of myopia in youthful grown-up in urban East Asian nations has risen to 80–90% (Matsumura, 2020). In Bangladesh around 1.3 million children had refractive error, mostly were myopia (Quadir, 2016).

Numerous variables have been detailed for having conceivable association with dangerous such as parental myopia, gender, education, occupation, income and nutritional status of children as well for the advancement of myopia (Morgan A.2006;Wong TY 2003; Lim, H.T, 2012; Saxena.2013; Xiang F et al, 2012).

In Bangladesh, few studies have done on children Myopia(Muhit*et al.*, 2018 ;Raihan *et al.*, 2005; Rajib, Kishor and Jewel, 2015; Gardiner,1955).The main aim of this paper is to share the prevalence of myopia and associates socio-demographic information among the urban school going children in Dhaka city, the capital of Bangladesh.

MATERIALS AND METHODS

This study was a part of case-control study. Selecting the cases (myopia) and to discover its predominance, 1319 understudies from four conveniently chosen auxiliary co-education schools (grade I-IX) of Dhaka city, were included in this required. Participants underwent to an ophthalmic examination by qualified optometrist using retinoscope (Heine Beta 200 Led, Germany) following standard procedure (Elkington *et al.*, 1999) a semi-structured questionnaire was used to collect information of the subject's socio-demographic characteristics. Measurements of height and body weight were done by following standard procedure (WHO, 1995& The

Harmonized Training Package 2011).Permission was obtained from Institution of review board of Bangladesh University of Professional for ethical approval and from respective schools for conducting the research. Consent was taken from guardian of each individual prior to inclusion in this study after informing about the research objectives. Keeping all the proper take part within the think about with secrecy information was collected namelessly. After collection, all the data was checked and edited. SPSS software was used to analyze the data.

RESULT

In this study prevalence of myopia was found 23.57%. Of the 311myopic children 47.26% were male and 52.73% were female. Among them 35% were in 8-10 age group, 45% were in 11-13 age group and 19.93% were in 14-16 age group (mean 11.41±2.17years). Primary grade students were 52.73% and 47.265 were in secondary grade. By anthropometric measurement, the myopic children had mean weight 46.64±12.45 kg, mean height 147.15±11.35 centimeter and mean BMI 21.33±4.38 and by nutritional status28.29% were under weight, 17.68% were overweight, 2.9% were obese and 51.12% had normal BMI.

Regarding the occupation of the mother 88.06% were homemaker, 10.28% were service holder and 0.64% were found engaged with business. Father of the subjects, 74.59 % was business man and 24.11% were service holder and 1.28% had no job. The educational level of the mother, 36.33% were graduate, 36.01 % had completed higher secondary, 24.75%had completed secondary level and 2.89% read up to primary level in myopic group. According to father's education 55.30 % were graduate, 31.83% had completed higher secondary level, 11.57% completed Secondary level and 1.28% read up primary level in myopic group.

Among these myopic children, 14.46% were found using spectacles. Family history of use of spectacles revealed that 53.05%parents used spectacles; (Father -26.0%. mother -22.42%and both parents- 51.51%). Among the participants 50.48% complaints of different types of eye problems namely blurred distal vision problem (57.32 %), eye watering (33.75%), eye ache (26.75%), headache (23.56%), itching (11.46%), burning of eyes (5.73%) and redness (2.54%).

Table 1: Socio-demographic characteristics of myopic children (n-311).

Variables	
Sex	
Male	147(47.26%)
Female	164(52.73%)
Age group	
8-10	109(35%)
11-13	140(45%)
14-16	62(19.93%)
Mean age	11.41±2.17
Education level	
Primary	164 (52.73%)
secondary	147(47.26%)
Weight in Kg	(median value-45)
<45	151 (48.55%)
>45	160 (51.44%)
Mean	46.64±12.45
Height in cm	median value-147
<147	153 (49.19%)
>147	158 (50.80%)
Mean	147.15±11.35
BMI	
under weight	28.29%
Normal	159(51.12%)
overweight	55(17.68%
obese	9 (2.9%
Mean	21.33±4.38
Education of Father	
Primary	4(1.28%)
Secondary	36(11.57%)
Higher secondary	99(31.83%)
Graduation	172(55.30%)
Education Mother	
Primary	9(2.89%)

Secondary	77(24.75%)
Higher secondary	112(36.01%)
Graduation	113(36.33%)
Occupation Father	
Business	232(74.59%)
Service	75(24.11%)
No work	4(1.28%)
Occupation mother	
Home maker	277(89.06%)
Service	32(10.28%)
Business	2(0.64%)

Table 2: Use of spectacles among the respondents.

Uses of glass	Myopia
Myopic children	45(14.46%)
Parents use glass	165(53.05%)
Father	43(26.0%)
Mother	37(22.42%)
Both	85(51.51%)

Table 3: Eye problems among the respondents.

Associate Eye problem	Frequency (%)
Yes	157 (50.48%)
Problems*	
Blurred distal vision	90 (57.32%)
Watering	53(33.75%)
Eye ache (pain)	42(26.75%)
Headache	37(23.56%)
Itching	18(11.46%)
Burning	9(5.73%)
Redeye	4(2.54%)

* Multiple responses

DISCUSSION

Prevalence of myopia among the children varies country to country and even within country. This study revealed the prevalence of myopia as 23.57% with female predominance which is much lower than the findings of other Bangladesh studies (Rajib, Kishor and Jewel, 2015; Das and Bari, 2020) and other countries (Matsumura, 2020) as well. This variation might be attributed to the differences in the operational definition, study population and cut-off points of RE. Female predominance in myopia also reported in Tamil Nadu, India (Chellavelet al., 2017) and Poland (Maciej et al 2019).

This study revealed myopia as higher within the 11-13 years age group, supporting the findings of Fan, *et al.* (2004) research that correlated the increased prevalence of myopia with increasing manner of age with highest risk of myopia in children ages 11 years (Fan, 2004).

Researchers indicated that besides nutritional status, height and weight also have some effect in myopia development (Saxena, 2013; Song. et al 2007; Saw. et al 2002).

BMI of the respondents revealed 28.29% were under weight, 17.68% were overweight and 2.9% were obese. In another study on Ireland children showed that myopia prevalence was significantly related with obesity(Harrington, Stack and O'dwyer, 2019).This study also found that mean weight of myopic children was weight 46.64±12.45 kg, mean height 147.15±11.35 centimeter and mean BMI 21.33±4.38 and by nutritional status28.29% were under weight, 17.68% were overweight, 2.9% were obese and 51.12% had normal BMI.

Population-based prevalence studies showed increased prevalence of myopia in Singaporeans with higher levels of education And occupations associated with near work after adjusting for age and gender (Foster and Jiang, 2014). Higher odds for myopia were also found in Korean children from families of higher income.(Lim, H.T, 2012). In Nepal myopia was found significantly related to religion, level of parent's education, near work activities, and outdoor activities.(Mutti*et al.*, 2002).

This study revealed that among these myopic children only 14.46% use spectacles which denotes the overlooking the problem by the children to inform their parents. It is also noticeable that52.73% parents of these myopic children use glass, of them 51.51%were both parents, 22.42% mother and 26.0% were father.

Myopia usually presents with blurred distance vision, itching, eye strain, eye rubbing and squeezing of the eyes (Carney, Mainstone, & Henderson, 1997; Grosvenor & Scott, 1994; Mainstone et al., 1998; Strang et al., 1998).

CONCLUSION

This study was conducted to provide data about the prevalence of myopia in school going children in Dhaka city. From our study we can conclude that, parents need to be careful about the eye health of their kids, as most of the children did not understand their vision problem. Students, parents and teacher must be educated on early diagnosis of refractive error.

REFERENCES

1. Akinbinu, T.R. and Mashalla Y. J. "Impact of computer technology on health". *Computer vision Syndrome (CVS) academic journals*, 2014; 5(3): 20-30.
2. Alemam, M. A., Aldebasi, M. H., Rehmatullah, A., Alsaidi, R., &Tashkandi, I. Prevalence of Myopia

among Children Attending Pediatrics Ophthalmology Clinic at Ohud Hospital, Medina, Saudi Arabia. *Journal of ophthalmology*, 2018; 3708409. https://doi.org/10.1155/2018/3708409

3. Basak, S,K. Essential of Ophthamology.6th edition.The Health Science Publisher. New Delhi., 2016.
4. Bourne, R. R. A. *et al.* 'Prevalence of refractive error in Bangladeshi adults: Results of the national blindness and low vision survey of Bangladesh', *Ophthalmology*, 2004; 111(6): 1150–1160. doi: 10.1016/j.ophtha.2003.09.046.
5. ChellavelGanapathi, K., Paul, A.V., Kokila, K., Kumar, B.S. A study on prevalence of myopia and its associated factors in school children of Salem, Tamil Naru.*International journal of Community Medicine and Public Health*, 2017; 4(8): 2741-4.
6. Das, A. and Bari, A. (2020) 'The Incidence of Refractive Error in Children 5-10 Years Age Due to Excess Use of Smart Phone and Computer in 200 Cases', 6, December 2018; 2018–2021. doi: 10.21276/ijmrp.2020.6.1.004.
7. Fan, *et al.* 'Prevalence, incidence, and progression of myopia of school children in Hong Kong', *Investigative Ophthalmology and Visual Science*, 2004; 45(4): 1071–1075. doi: 10.1167/iovs.03-1151.
8. Foster, P. J. and Jiang, Y. 'Epidemiology of myopia', *Eye (Basingstoke)*, 2014; 28(2): 202–208. doi: 10.1038/eye.2013.280.
9. Fricke, T. R. *et al.* 'Global prevalence of visual impairment associated with myopic macular degeneration and temporal trends from 2000 through 2050: Systematic review, meta-analysis and modelling', *British Journal of Ophthalmology*, 2018; 102(7): 855–862. doi: 10.1136/bjophthalmol-2017-311266.
10. Gammoh, Y.S. Myopia: Etiology, Epidemiology and Management Strategy. *Sudanese journal of Ophthalmology*, 2018; 10(1): 1-7.
11. GARDINER P. A. Physical growth and the progress of myopia. *Lancet (London, England)*, 1955; *269*(6897): 952–953. https://doi.org/10.1016/s0140-6736(55)92792-6
12. 2000 through 2050. *Ophthalmology*, *123*(5): 1036–1042. https://doi.org/10.1016/j.ophtha.2016.01.006
13. Harrington, S. C., Stack, J. and O'dwyer, V. 'Risk factors associated with myopia in schoolchildren in Ireland', *British Journal of Ophthalmology*, 2019; 103(12): 1803–1809. doi: 10.1136/bjophthalmol-2018-313325.
14. Liu S, Ye S, Xi W, Zhang X. Electronic devices and myopia refraction among Children aged 6-14 years in urban areas of Tianjin, China. Ophthalmic PhysiolOpt., 2019; 39(4): 282-293.
15. Lin, L. L., Shih, Y. F., Hsiao, C. K., & Chen, C. J. Prevalence of myopia in Taiwanese schoolchildren: 1983 to 2000. *Annals of the Academy of Medicine, Singapore*, 2004; *33*(1): 27–33..
16. Lim, H. T., Yoon, J. S., Hwang, S. S., & Lee, S. Y. Prevalence and associated sociodemographic factors of myopia in Korean children: the 2005 third Korea National Health and Nutrition Examination Survey (KNHANES III). *Japanese journal of ophthalmology*, 2012; *56*(1): 76–81. https://doi.org/10.1007/s10384-011-0090-7
17. Matsumura S., Ching-Yu C., Saw SM. (2020) Global Epidemiology of Myopia. In: Ang M., Wong T. (eds) Updates on Myopia. Springer, Singapore. https://doi.org/10.1007/978-981-13-8491-2_2
18. Mohammed Alemam, A. *et al.* (2018) 'Prevalence of myopia among children attending pediatrics ophthalmology clinic at ohud hospital, Medina, Saudi Arabia', *Journal of Ophthalmology*, 2018. doi: 10.1155/2018/3708409.
19. Morgan, A., Young, R., Narankhand, B., Chen, S., Cottriall, C., & Hosking, S. Prevalence rate of myopia in schoolchildren in rural Mongolia. *Optometry and vision science : official publication of the American Academy of Optometry*, 2006; *83*(1): 53–56. https://doi.org/10.1097/01.opx.0000195567.88641.af
20. Morgan IG, Ohno-Matsui K, Saw SM. Myopia. Lancet, May 5, 2012; 379(9827): 1739-48. doi: 10.1016/S0140-6736(12)60272-4. PMID: 22559900.
21. Mutti, D.O., Mitchell, G.L., Moeschbergel, M.L., Jones, L.A.,Zasnik, K. Parental myopia, near work, school achievement, and childrens refractive error.*Invetigative Ophthalmology &VisualScience*, 2002; 43(12): 3633-3640.
22. Narankhand, B. *et al.* 'Rural Mongolia', *Optometry and Vision Science*, 2006; 83(1): 53–56.
23. Ongaro, D. (2014). Your child's phone and tablets could be harming their eyes, expert warns." *The Daily Telegraph*, August 25. (https;//www.goldsteinreport.com> article.)
24. Pan, C. W., Ramamurthy, D., & Saw, S. M. Worldwide prevalence and risk factors for myopia. *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians (Optometrists)*, 2012; *32*(1): 3–16. https://doi.org/10.1111/j.1475-1313.2011.00884.x
25. Physical Status: The Use and Interpretation of Anthropometry - Report of a WHO Expert Committee (WHO, 1995; 460.
26. Quadir, M.A., Munifa, P.J., Akhter, S. "Study of refractive status of school going children aged between 10-15 yrs in KishorgonjDistricy of Bangadesh." *Shaheed Syed Nazrul Islam Medical College journal*, 2016; 1(2): 88-92.
27. Raihan, A. *et al.* 'Prevalence of significant refractive error, low vision and blindness among children in Bangladesh', *International Congress Series*, 2005; 1282: 433–437. doi: 10.1016/j.ics.2005.05.111.
28. Rajib, H., Kishor, K. S. and Jewel, D. G. 'Pattern of Refractive Error, Knowledge, Attitude and Practice about Eye Health among the Primary School Children in Bangladesh', *World Academy of Science, Engineering and Technology International Journal of Medical and Health Sciences*, 2015; 9(12): 1. Available at:

http://waset.org/pdf/books/?id=37712&pageNumber=1.

29. Rose, K. I. G. &Morgan, J.I. "Outdoor activities reduce the prevalence of myopia in children." *Ophthalmology*, 2008; 115(8): 1279-1285.
30. Rudnica. A.R., KapetanaKis,V.V. and Wathern, A. "Global variations and time trends in the prevalence of childhood myopia, a systematic review and quantitative Meta-analysis: implications for aetiology and early prevention. *British Journal of Ophthalmology*, 2016; 100(7): 939.
31. Song, H. T., Kim, Y. J., Lee, S. J., & Moon, Y. S. Relations between age, weight, refractive error and eye shape by computerized tomography in children. *Korean journal of ophthalmology: KJO*, 2007; *21*(3): 163–168. https://doi.org/10.3341/kjo.2007.21.3.163
32. Saw, S. M. *et al.* 'Eye growth changes in myopic children in Singapore', *British Journal of Ophthalmology*, 2005; 89(11): 1489–1494. doi: 10.1136/bjo.2005.071118.
33. Saw, S.M., Hong, m.Z, elal Near-work activity and myopia in rural and urban schoolchildren in child. Journal of pediatric ophthalmology and strabismus, 2001; 38: 149-155.
34. Saw, S. M., Chua, W. H., Hong, C. Y., Wu, H. M., Chia, K. S., Stone, R. A., & Tan, D. Height and its relationship to refraction and biometry parameters in Singapore Chinese children. *Investigative ophthalmology & visual science*, 2002; *43*(5): 1408–1413.
35. Saxena R, Vashist P, Menon V. Is myopia a public health problem in India?. Indian J Community Med [serial online] 2013 [cited 2021 Mar 4], 2013; 38: 83-5. Available from: https://www.ijcm.org.in/text.asp?2013/38/2/83/112436
36. Theanphanous.C, Modjtahedi.B.S, and Fong, C.D.S. Myopia prevention and risk factors in children. Clin ophthalmomol, 2018; 12: 1581-1587.
37. Xiang, F., He, M., & Morgan, I. G. The impact of parental myopia on myopia in Chinese children: population-based evidence. *Optometry and vision science: official publication of the American Academy of Optometry*, 2012; *89*(10): 1487–1496.
38. Xiang, F., He, M., & Morgan, I. G. The impact of severity of parental myopia on myopia in Chinese children. *Optometry and vision science: official publication of the American Academy of Optometry*, 2012; *89*(6): 884–891. https://doi.org/10.1097/OPX.0b013e318255dc33
39. The ENN and NutritionWorks (2014). Harmonised Training Package (HTP) version 2. www.ennonline.net/resources/htpversion2