

Prevalence of Myopia among College going Adolescent Girls in Puducherry

M. Priyadharshini, V. Vinothini and Raji V. Sugumar*

Department of Home Science, Bharathidasan Government College for Women
(A NAAC Re-accredited Autonomous College affiliated to Pondicherry University) Puducherry – 605 003,
India; rajis207@gmail.com

Abstract

Published evidence indicates that myopia is common and increasing over time with apparent effects of race, location and generation. The progression of severity among the affected may lead to blindness. This study is designed to find the prevalence of myopia among adolescent girls. The sample size is 3836 college students. The prevalence was 13% with the highest among the science students and the least among the commerce students. An increasing trend was noticed when compared among the three classes.

Keywords: Myopia, Point Prevalence

1. Introduction

Myopia or near sightedness is a form of visual impairment in which distant objects appear blurred due to the mismatch between the refracting power of the eye and its optical axial length. It is predicted that by 2050 there will be 4758 million people with myopia (49.8% of the world population; 3620–6056 million (95% CI, 43.4%–55.7%) and 938 million people with high myopia (9.8% of the world population; 479–2104 million (95% CI, 5.7%–19.4%). (Holden BA, Fricke TR, et.al, 2016). Published evidence indicates that myopia is common and increasing over time with apparent effects of race, location and generation. In severe cases (progressive myopia) it causes blindness. With this background, this study proceeded with a single objective of finding the point prevalence of myopia among the college going adolescent girls in Puducherry.

Point Prevalence is a measure of the proportion of people in a population who have a disease or a condition

at a particular time. Point prevalence can be described by the formula: $\text{Prevalence} = \frac{\text{Number of existing cases on a specific date}}{\text{Number of people in the population on this date}}$.

2. Methodology

The oldest and biggest and the only Urban Government owned Arts and Science College for Women in Puducherry was selected for the study. Being a government college the reservation norms are in accordance with the proportion of population segment which adds value to the study. All the under graduate students between the age of 18-23 years from the 14 departments of the college on roll between the period of December 2018-April 2019 were taken for the study. The number surveyed was 3836 students. Students' using spectacles or contact lens for myopia was noted class wise and the point prevalence was calculated.

*Author for correspondence

3. Results and Discussion

The result of the study is tabulated below:

From the Table 1 it is inferred that 13% of the target population are myopic. The prevalence was the highest among 1st year students with 13.7% followed by 13.3% among 2nd year population and 13.1% among 3rd year

students. The year-wise comparison showed that year by year the prevalence rate soared though not significantly high. This analysis was taken with an assumption that it is a reflective of the age of the myopics. The difference between 1st and 2nd year was 0.4%, between first and 3rd year it was 0.6% and between 2nd and 3rd years it was 0.2%.

Table 1. Prevalence of myopia among the target population

Year of Study		I UGs			II UGs			III UGs			Total Yes Response in #	Prevalence/Strength of students x100
Presence of Myopia		Yes (W)	No (W)	Total (W)	Yes (W)	No (W)	Total (W)	Yes (W)	No (W)	Total (W)		
Departments												
Arts	#	33	207	240	31	169	200	13	158	171	77	77/611x100 = 12.6
	%	13.7	86.3	100	15.5	84.5	100	7.6	92.4	100		
Commerce	#	46	373	420	44	377	421	29	220	249	119	119/1090x100 = 10.9
	%	11.0	89	100	10.4	89.6	100	11.6	88.4	100		
Humanities	#	54	364	418	52	357	409	32	199	231	138	138/1058x100 = 13.0
	%	12.9	87.1	100	12.7	87.3	100	13.8	86.2	100		
Science	#	72	344	416	65	348	413	44	204	248	181	181/1077x100 = 16.8
	%	17.3	82.7	100	15.7	84.3	100	17.7	82.3	100		
Grand Total	#	205	1302	1494	192	1251	1443	118	781	899	515	515/3836 x 100= 13.0
	%	13.7	86.3/ 100		13.3	86.7/ 100		13.1	86.9/ 100			

W: Women, #: Number, UG – Under Graduates

Point prevalence (PP) = Number of persons with disease in a time interval ÷ Number of persons in the given population in a given time interval

$$\begin{aligned}
 PP &= (205+192+118) \div 3836 \\
 &= 515 \div 3836 \\
 &= 0.13 \text{ or } 13\%
 \end{aligned}$$

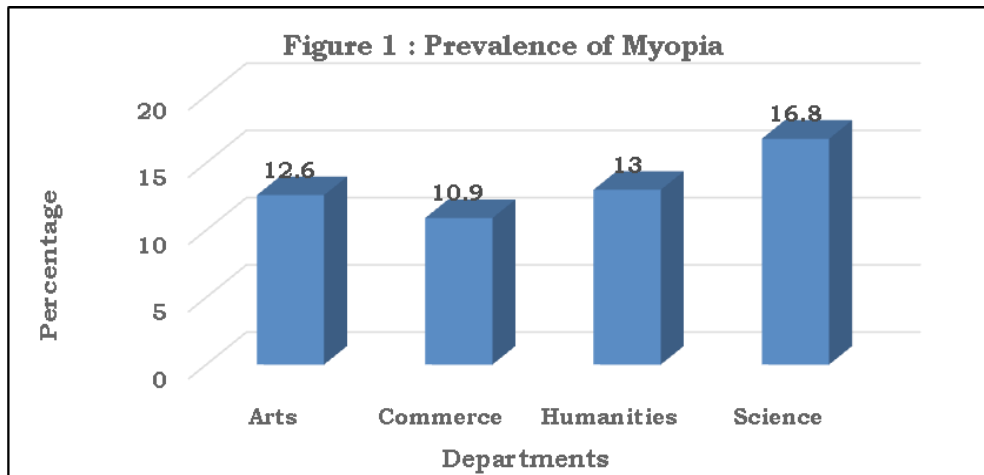


Figure 1. Prevalence of myopia.

When the department-wise prevalence was studied, the students from Sciences (Maths, Physics, Chemistry, Botany, Home Science, Computer Science and Zoology) had highest prevalence with 16.8% followed by students of Humanities viz. English, Tamil and French with 13%. Students of Arts (Economics and History) ranked 3rd with 12.6%. The lowest and healthier students were students from General Commerce and Corporate Secretaryship with lowest percentage of 10.9%.

To mention a few staggering statistics, Vishnuprasad R et.al (2017) has quoted the 2010 estimates by the World Health Organization “nearly 285 million (4.24% of total population) people of all ages worldwide are visually impaired. Almost 18.9 million children under 15 years of age are visually impaired globally. In developing countries, 7%–31% of childhood blindness and visual impairment is avoidable. Its prevalence is found to be high among children of Asian origin”.

The illustration above reflect the result.

In the words of Douglas Fredrick (2002) “Myopia is a leading cause of loss of vision throughout the world and its prevalence is increasing. Although most researchers agree that people’s refractive status is in large part genetically determined, a growing body of evidence shows that visual experiences early in life may affect ocular growth and eventual refractive status. This review describes recent human and animal research into the pathogenesis of myopia and discusses implications for the management of patients”.

4. Conclusion

The annual progression of Myopia has to be viewed seriously for which the life-style practices stand accountable with long exposure to digital/electronic gadgets like computer, TV, mobile phones etc. Screening for refractive errors should be made mandatory in schools to avoid progressive myopia and other problems related to vision. Thus myopia calls for a serious life style intervention and public attention by the policy makers.

5. References

1. Fredrick DR. Myopia. *BMJ*. 2002; 324(7347):1195–9. PMID: 12016188 PMCID: PMC1123161. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1123161/>. <https://doi.org/10.1136/bmj.324.7347.1195>
2. Holden BA, Fricke TR, Wilson DA, *et al*. Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. *Ophthalmology*. 2016; 123:1036–42. PMID: 26875007. <https://www.sciencedirect.com/science/article/pii/S0161642016000257> <https://doi.org/10.1016/j.ophtha.2016.01.006>
3. Vishnuprasad R, Bazroy J, Madhanraj K, Prashanth HR, Singh Z, Samuel AK, Muthukumar T. Visual impairment among 10-14 year school children in Puducherry: A cross-sectional study. *J Family Med Prim Care*. 2017; 6(1):58–62. PMID: 29026750 PMCID: PMC5629901. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5629901/> <https://doi.org/10.4103/2249-4863.214983>