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PREVALENCE OF REFRACTIVE ERROR AT RURAL JUNIOR HIGH STUDENTS IN BADUNG DISTRICT

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ABSTRACT

Background: Refractive error is common in school age children. The prevalence of refractive error is 23-25% at 12-15 years of age. Refractive error is related with increasing of close range activities, use of gadgets, reading habits, and minimal outdoor activities. **Objective:** This research is a cross-sectional descriptive study to determine the characteristics of refractive error that occur in junior high school students in rural areas in Badung Regency. Method: The data obtained can be a reference for community eye health services and as a basis for increasing outdoor activities for school age children. Junior High School I, II, IV Petang is a junior high school located in a rural area in Badung Regency. **Result:** Two hundred twenty-two Petang I, II, IV Junior High School students was examined anterior and posterior segment of eyeball and found the prevalence of refractive error is was 13.96%, which 6.3% myopia, 1.8% myopia astigmat simplex (MAS), 3.15% myopia astigmat compositum (MAC), and 2.71% myopia and amblyopia. Seventy-seven percent of students who use glasses have optimal vision after using glasses (visual impairment). **Conclusion:** Rural areas, adequate outdoor activities, minimum close range activities are factors that can reduce the prevalence of refractive error in school aged children.

KEYWORD

Refractive Error, Rural, Petang Junior High School, Myopia, Prevalence

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Introduction

Refraction anomaly is a priority component at global initiative VISION 2020. 2,3 Nineteen million children under 15 years old predicted experience a visual disorder, twelve billion of them caused by refraction anomaly that uncorrected which offend children's study development determine career, and the chance of occupation in the future. More than one million of them experience lifetime blindness and need visual rehabilitation.1,2,5 There were no refraction anomaly screening on junior high school students in the rural region has been done in Bali.11 Badung regency is a regency that consists of 6 sub-district and 62 villages. Several junior high schools in Badung Regency are far from the central city. Based on the introduction above, the researcher intends to do the prevalence survey about refraction anomaly in Bali's rural junior high school students. The researcher also looks for the risk factor of refraction anomaly and to understanding whether refraction anomaly that occurs on the rural Badung's regency junior high school students have been corrected.

Methods

This study is an analytic observational study with a cross-sectional study. Prospective data collected. The study was conducted at Badung's regency rural region Junior high school, Bali, on the June-August 208. Sample in this study is junior high school students at the Badung's regency rural region, Bali, which fulfill the inclusion and exclusion criteria. The exclusion criteria were that experience infection at eyes, and respondent which not fill the questionnaire completely. The samples were selected by stratified random sampling method. All collected data were put in the working table and analyzed by SPSS program version 17.0

Result

Characteristic	(n)	(%)
Gender		
Male	103	23,2 %
Female	119	26,8 %
Age		
11-12 years old	65	29,27 %
12-13	60	27,02 %
13-14	50	22,52 %
14-15	47	21,17 %
Un Corrected Visual Acuity (UCVA)		
No Visual Impairment	191	86,03 %
Mild Visual Impairment	25	11,26 %
Moderate Visual Impairment	6	2,71 %
Severe Visual Impairment	-	-
Best Corrected Visual Acuity (BCVA)		
No Visual Impairment	24	77,41 %
Mild Visual Impairment	7	22,58 %
Moderate Visual Impairment	-	-
Severe Visual Impairment	-	-
Diagnosis		
Emmetropia	191	86,03 %
Myopia	14	6,3 %
Myopia Astigmat Simpleks (MAS)	4	1,8 %
Myopia Astigmat Compositum (MAC)	7	3,15 %
Myopia + Amblyopia	6	2,71 %

The risk factor of refraction anomaly		
Outdoor activities > 4 hours/day	115	51,81 %
Near activities > 3 hours/day	107	48,19 %

Discussion

The participation of this study was 222 students of Junior High School I, II, IV Petang, which most of the participated students were female 53.61% and age mostly 11-12 years old 29.27%. This study is an initial study to understanding the characteristic of refraction anomaly which occurred in the junior high school in the rural region in Badung's regency. 9 The prevalence of refraction anomaly in the junior high school in the city region were slightly higher than the rural region. The prevalence in the urban region about 20-25%.9 The prevalence in the rural region 12-15%.9 This study found if the prevalences of refraction anomaly in the Badung's regency junior high school students was 13.96% where 6.3% myopia, 1.8% myopia astigmatism simplex (MAS), 3.15% myopia astigmatism compositum (MAC), and 2.71% myopia and amblyopia.

The school in the rural region tend to have a variety of outdoor extracurricular than the schools in the urban region.3,9,10 Width area of school also as a protective factor that decreased refraction anomaly.8 Higher gadgets usage such as laptop, computer, tablets in the urban region rather than in the rural's region schools.3,10 The students mostly exposed by some gadgets in the long period has a higher refraction anomaly numbers.9,10 This study showed that the students of Junior High School I, II, IV Petang have more outdoor activities than near activities. Fifty-one percent of the students doing the outdoor activities more than 4 hours a day. Forty-eight percent of the students doing near activities more than 3 hours a day. The outdoor activities are a protective factor of refraction anomaly4,6.

Visual acuity examination divided into two, according to the WHO.1,4,6,24 Un Corrected Visual Acuity (UCVA) and Best Corrected Visual Acuity (BCVA). UCVA Visual acuity examination performed without correction so obtained a basic visual acuity and BCVA visual acuity examination with glasses best correction.

Visual acuity disorder classified to five, according to the WHO.1,4,6,7 They are No Visual Impairment, where there is no visual acuity decline (6/6) on the best eye with correction or pinhole; Early Visual Impairment (EVI), where the visual acuity <6/12-6/18 on the best eye with available correction or the best correction or pinhole; Moderate Visual Impairment (MVI), where visual acuity <6/18-6/60 on the best eye with available correction or the best correction or pinhole; Severe Visual Impairment (SVI), where visual acuity <6/60-3/60 on the best eye with correction or with the best correction or pinhole; and Blindness, where visual acuity <3/60 on the best eye with available correction or the best correction or pinhole.

Two hundred and twenty-two students from Junior High School I, II, IV Petang participated in this study and examined the anterior and posterior segments of the eyeball. Thirty-one children (13.96%) experienced refractive abnormalities consisting of myopia, MAS, MAC, and amblyopia. Twenty-four children of whom have used glasses and obtained optimal vision (6/6 BCVA) using glasses. Seven of them have used glasses and are included in the category of mild visual impairment (BCVA 6 / 20-6 / 7.5).

Most students who experience refractive disorders already have optimal vision. Characteristic data shows that in the UCVA group, there were six students in the category of moderate visual impairment. The BCVA group no longer found students who were in the category of moderate visual acuity. Explanation of this shows that students who experience refractive disorders have examined themselves and received glasses so that the students' vision is better.

Conclusion

Junior high school students in the rural region do more outdoor activities than near (close distance) activities. Outdoor activity is a protective factor for refractive abnormalities.

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