

# CHOROIDAL THICKNESS IN CORRELATION WITH AXIAL LENGTH AND MYOPIA DEGREE

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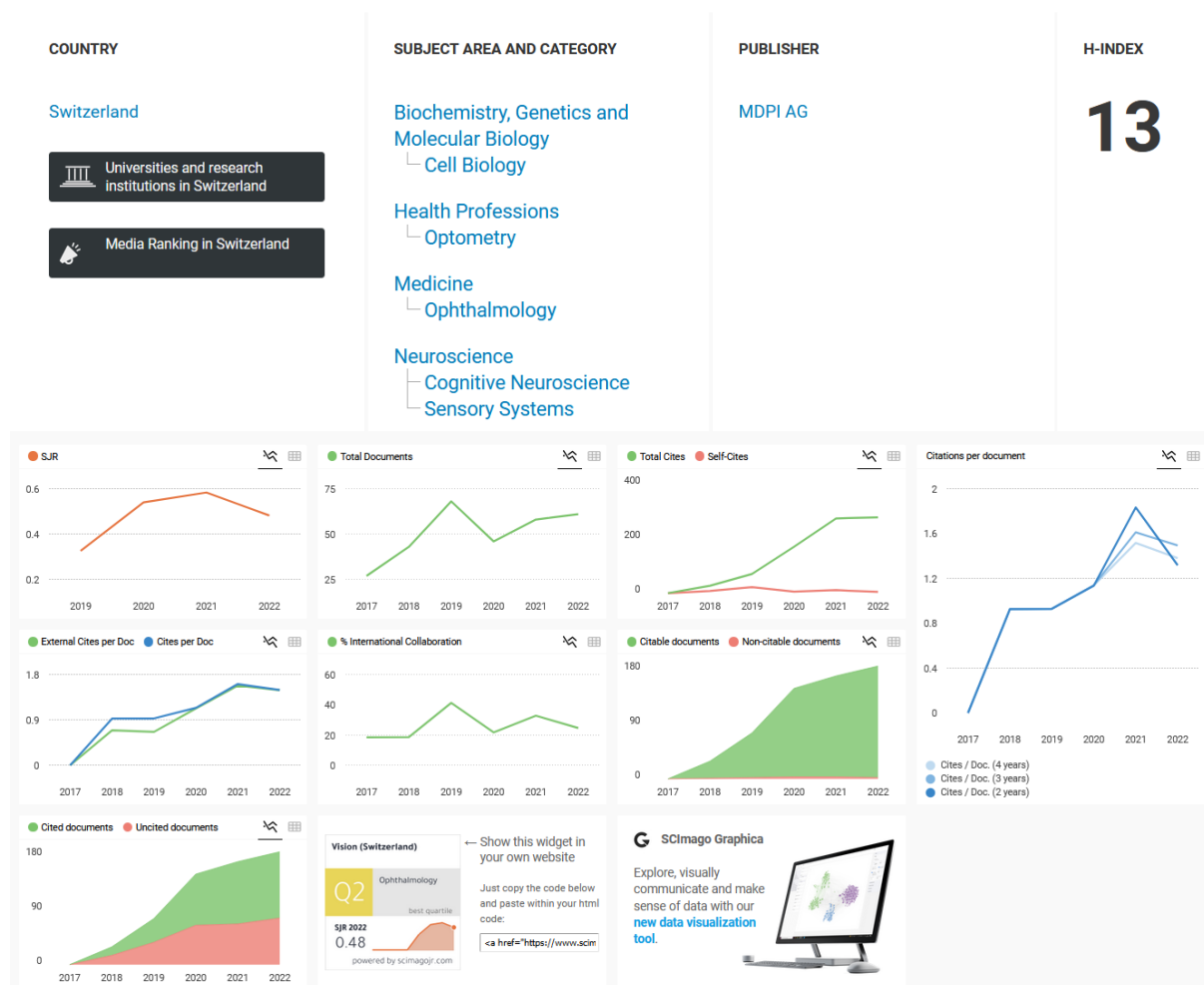
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## Riwayat korespondensi:

### Round 1

#### *Reviewer 1 Report*

The inclusion criteria should be specified in a more detailed manner. The type of OCT device should be indicated. The classification of myopia into degrees is presented differently in the Introduction (lines 42 - 43) and in the Results (lines 102-103) sections. The result is long time known and therefore predictable: higher degrees of myopia and longer axial lengths are associated with thinner choroids. However, the presentation of choroidal thickness according to the quadrant may be of some interest, especially in relation to the axial length. One important interpretation of the results which is revealed in the Discussion section is related to the role of choroid in modelling the retina and sclera in patients with myopia.

#### *Author Response*

##### RESPONSE TO REVIEWER 1 COMMENTS

**Point 1** = The inclusion criteria should be specified in a more detailed manner. The type of OCT device should be indicated.

##### Response 1:

We have added an explanation of the inclusion criteria to the main manuscript line 81 - 87, while an explanation of the types of OCT in line 101-103. In this study, our criteria for recruiting subjects were patients aged 20-50 years, had a refractive error  $\geq -0.5D$ , did not suffer from anterior segment abnormalities during examination, no history of eye infection or eye surgery. The type of OCT used in our study is Heidelberg Spectralis® OCT (3-mode), Germany (line 99-101).

**Point 2** = The classification of myopia into degrees is presented differently in the Introduction (line 42 - 43) and in the Results (line 102-103) section.

##### Response 2:

In the manuscript line 42-43 we cite the references by Kaiti et al. (2021) without changing its contents at all. However, in line 102-103 we refer to the standard of assigning myopia by Okafor et al. (2009) which states that low myopia ( $\leq -3.00 D$ ), moderate ( $-3.25$  to  $-6.00 D$ ), and high ( $> -6.00 D$ ) myopias. However, we agree with your input that all references should be done in line, therefore we replace the references in the introduction section from Kaiti's statement to Okafor's statement while in the method section we continue to use the criteria by Okafor as previously written.

**Pont 3** = The result is long time known and therefore predictable: higher degrees of myopia and longer axial lengths are associated with thinner choroids. However, the presentation of choroidal thickness according to the quadrant may be of some interest, especially in relation to the axial length. One important interpretation of the results which is revealed in the Discussion section is related to the role of the choroid in modeling the retina and sclera in patients with myopia.

##### Response 3:

We have added an explanation of the correlation between CT and retinal change on line 230-240, like explained below:

Based on Jin et al. (2016), the myopic retinas were thinner than those of emmetropic or hyperopic subjects, especially in the superior parafoveal and all 4 perifoveal subfields ( $p < 0.05$ ). But, the results of previous studies on factors influencing the thickness of the ganglion cell layer and nerve fiber layer have been conflicting. While some suggested that the thickness of the ganglion cell layer and peripapillary nerve fiber layer is correlated with spherical equivalent refraction and axial length in adults, others did not observe this relationship (line 234-240).

Karahan (2013) reported that choroidal change plays a major role in the development and progression of many retinal disease. Thickening of the choroid could affect the nutrition supply to the retina, because outer retina layer is nourished by the choroidal vasculature. Thus, choroidal thickness provides useful information to clinicians (line 241-244).

## Reviewer 2 Report

The authors report on a cross sectional study in subjects with myopia, where axial length and degree of myopia was correlated to choroidal thickness. Please find my comments below:

1. Introduction, line 32: Although both statements, that myopia is more likely to occur at young age and more frequent in people who are for example microscopists, it should be formulated differently. As it currently stands, it reads as if young people often work as microscopists.
2. Materials and methods section: The authors should add, as stated at the end of the manuscript, that informed consent was obtained, that the study was approved by an IRB and that the study adhered to the Declaration of Helsinki. The authors should also mention which software was used for statistical analysis.
3. Table 3: It would be of interest for the readers if a figure showing the most relevant correlations could be provided.
4. Maybe it would also be of interest to have a control group with no myopia.

## Author Response

### RESPONSE TO REVIEWER 2 COMMENTS

**Point 1** = Introduction, line 32: Although both statements, that myopia is more likely to occur at young age and more frequent in people who are for example microscopists, it should be formulated differently. As it currently stands, it reads as if young people often work as microscopists.

Response:

Thank you, we agree with your comment. In the introduction, we have made a sentence change from "myopia is more likely to occur at young age and more frequent in people who are for example microscopists" become "Myopia is more likely to occur in several condition such as young age (mostly 8 to 15 years old), hereditary person with myopic parent, and persons who work extensively with the eyes such as microscopists, computer users, or university students" (line 33-35).

**Point 2** = Materials and methods section: The authors should add, as stated at the end of the manuscript, that informed consent was obtained, that the study was approved by an IRB and that the study adhered to the Declaration of Helsinki. The authors should also mention which software was used for statistical analysis.

Response:

We have added a sentence regarding the ethical statement according to the reviewer's input on the manuscript in line 109-112.

**Point 3** = Table 3: It would be of interest for the readers if a figure showing the most relevant correlations could be provided.

Response:

According to the reviewer's input, we have added "figure 5" as a form of visualization that depicts the correlation between choroidal thickness with axial length and choroidal thickness with myopia degree (line 174-175).

**Point 4** = Maybe it would also be of interest to have a control group with no myopia.

Response:

We have already added the examinations result of 10 healthy subjects (20 eyes) as control group. The results are presented in table 1 (line 135-136). We also attach normal OCT photo for figure 1 and figure 2 (line 125 and 130).

## *Reviewer 3 Report*

The paper of Habibah Setyawati Muhiddinn and coauthors reports relationships between axial length, choroidal thickness, and myopia. Unfortunately, these findings are well-studied and do not require additional confirmation obtained in a study with limited number of patients and I can't recommend this paper for publication.

" It occurs when there is an excessive and continuous expansion of the axial length (AL)" not only in this case

" resulting in a change in the secondary 10 fundus leading to visual impairment, choroidal neovascularization, retinal detachment, zonal areas 11 of chorioretinal atrophy, myopic macular schisis and hole." This occurs in minority of cases

The methods are poorly described. Especially CT measurement which was performed in manual manner (instead of semi-automatic manner stated) and which requires two graders to be done.

I see no new data from this manuscript.

## *Author Response*

### RESPONSE TO REVIEWER 3 COMMENTS

The paper of Habibah Setyawati Muhiddinn and coauthors reports relationships between axial length, choroidal thickness, and myopia. Unfortunately, these findings are well-studied and do not require additional confirmation obtained in a study with limited number of patients and I can't recommend this paper for publication.

**Point 1** = "it occurs when there is an excessive and continuous expansion of the axial length (AL)" not only in this case "resulting in a change in the secondary fundus leading to visual impairment, choroidal neovascularization, retinal detachment, zonal areas of chorioretinal atrophy, myopic macular schisis and hole." This occurs in minority of cases.

Response:

Thank you very much for your suggestion. We agree with your opinion. We wrote that statement based on the references we quoted from a combination of several manuscripts. However, in the abstract section we have made improvements by writing a general explanation of myopia in line 9-11: "Myopia is a condition in which the visual images come to a focus in front of the retina of the eye. This disease is a major cause of visual disability which present in 108 million persons globally".

**Point 2** = The methods are poorly described. Especially CT measurement which was performed in manual manner (instead of semi-automatically manner stated) and which requires two graders to be done.

Response:

We agree with your opinion. However, it is true that the tool we use is a semi-automatic machine, the type of machine we used is Heidelberg Spectralis® OCT, Germany, where the inspection was carried out by 2 technicians (two graders) then the results were blinded confirmed by the research team (authors: HSM and AMI).

For the method section, we have also provided additional detailed information regarding control subjects, inclusion criteria, examination techniques, ethical statements and data analysis techniques that we used (line 77-111).

**Point 3** = I see no new data from this manuscript.