

Higher risk of probable mental emotional disorder in low or severe vision subjects

Lutfah Rif'ati

National Institute for Health Research and Development, Ministry of Health of Indonesia

Abstrak

Latar belakang: Gangguan penglihatan berat dan kebutaan, belum menjadi prioritas masalah kesehatan di Indonesia, dapat menimbulkan gangguan mental emosional. Pada tulisan ini disajikan penilaian gangguan mental emosional yang berkaitan dengan gangguan penglihatan berat.

Metode: Analisis ini menggunakan sebagian data Riset Kesehatan Dasar (*Riskesdas*) 2007. Subjek untuk keperluan analisis ini ialah yang berusia 15 tahun atau lebih. Gangguan mental emosional diukur dengan *Self Reporting Questionnaire (SRQ) 20*. Subjek yang mungkin menderita gangguan mental emosional, jika hasil *SRQ* sebesar 6 atau lebih, dan sebaliknya. Tajam penglihatan ditentukan berdasarkan tes *Snellen chart*. *Visus normal/ringan* ialah 20/20 to 20/60, *visus rendah* ialah kurang dari 20/60-3/60, sedangkan buta dengan *visus* kurang dari 3/60 sampai 0/0.

Hasil: Di antara 972,989 subjek data *Rskesdas* 2007 terdapat 46,7% (554,886) yang berusia 15 tahun atau lebih. Subjek yang menderita gangguan mental emosional sebesar 11,4% (63,279/554,886), prevalensi *visus rendah* sebesar 5,1% dan kebutaan 0,9%. Subjek yang menderita *visus rendah* dibandingkan subjek yang normal atau dengan gangguan tajam penglihatan ringan mempunyai 75% lebih besar menderita risiko gangguan mental emosional [risiko relatif (*RRa*)=1,75; 95% interval kepercayaan (*CI*)=1,71-1,79]. Sedangkan subjek yang buta dibandingkan subjek yang normal atau dengan gangguan tajam penglihatan ringan mempunyai risiko 2,7 kali lipat menderita gangguan mental emosional (*RRa*= 2,69; 95% (*CI*)=2.60-2.78).

Kesimpulan: Subjek dengan gangguan penglihatan makin berat mempunyai risiko menderita gangguan mental emosional. Oleh karena itu subjek yang menderita gangguan penglihatan berat perlu diperhatikan mental emosionalnya. (*Health Science Indones 2011;2:9-13*)

Kata kunci: gangguan mental emosional, gangguan penglihatan, kebutaan

Abstract

Background: Severe visual impairments are able to induce psychological stress, especially among adults, which may stimulate mental emotional disorder (MED). Eye health problems are not a health problem priority in Indonesia. This paper presents an assessment of severe visual impairments related to the risk of MED.

Methods: This paper assessed a part of Basic Health Research (*Riskesdas*) 2007 data. For this assessment, subjects 15 years old or more had their visual acuity measured using the *Snellen chart* and their mental health status determined using the *Self Reporting Questionnaire (SRQ) 20*. A subject was considered to have probable MED if the subject had a total score of 6 or more on the *SRQ*. Based on the measure of visual acuity, visual acuity was divided into 3 categories: normal/mild (20/20 to 20/60); low vision (less than 20/60 to 3/60); and blind (less than 3/60 to 0/0).

Results: Among 972,989 subjects, 554,886 were aged 15 years or older. 11.4% of the subjects had probable MED. The prevalence of low vision and blindness was 5.1% and 0.9%, respectively. Compared to subjects with normal or mild visual impairments, subjects with low vision had a 74% increased risk for probable MED [adjusted relative risk (*RRa*)=1,75; 95% confidence interval (*CI*)=1,71-1,79]. Blind subjects had a 2.7-fold risk to be probable MED (*RRa*=2.69; 95% *CI*=2.60-2.78] compared to subjects with normal or mild visual impairments.

Conclusion: Visual impairment severity increased probable MED risk. Therefore, visual impairment subjects need more attention on probable MED. (*Health Science Indones 2011;2:9-13*)

Key words: mental emotional disorder, visual impairment, blindness

Submitted on 27 February, Reviewed on 13 March, Accepted on 11 April

It is well-known that blindness makes someone lose his independence, become less productive economically, and have a marginalized social life. In other words, people suffering from adventitious blindness are at a higher risk for depression, social withdrawal, and isolation.^{1,2} Every single blind person will affect the lives of at least two people who are needed as supporters by the person suffering blindness. According to *Riskesdas* 2007 report, the prevalence of probable MED among Indonesian is 11.6%, and this compares to a prevalence of 30.5% mental disorders in the United States in 2001-2003.³ Ademola-Popoola et al. reported 51% totally blind people in Nigerian City scored ≥ 5 on Self Reporting Questionnaire (SRQ) and were classified as probable psychiatric disorder cases.⁴

In Indonesia, there are limited reports on blindness and low vision in the community at the national level. The last valid survey data released in 1997 revealed that the prevalence of blindness was 1.47%. Recently, National Basic Health Research (*Riskesdas*) 2007 as the first national survey involving nearly 1 million samples from throughout Indonesia showed the prevalence of blindness at 0.9%, while low vision prevalence is 4.8% among the population aged 6 years and above. The blindness prevalence increased sharply to 2.2% among the population aged 30 years and above. *Riskesdas* 2007 also provided data that indicated the prevalence of MED was 11.6%.⁵

Eye health problems are not a health problem priority in Indonesia, but mental health is one of the prioritized health problems that was included in the National Health System report officially released in 2010. This paper assesses the correlation between mild and severe visual impairments and MED.

METHODS

This assessment used a part of *Riskesdas* 2007 data. *Riskesdas* was a cross-sectional community-based study designed mainly to describe health problems of Indonesians in a comprehensive way and oriented to the interest of decision makers at administrative levels.

Riskesdas 2007 data highlighted various health problems, such as morbidity which covered prevalence of communicable and non communicable diseases, disability, and mental emotional health status.⁵

The *Riskesdas* 2007 sample frame was identical to that of the National Social-economic Survey (*Susenas*) 2007. The samples of household members were selected by proportional probability sample size calculation for the district/municipal population. Samples of *Riskesdas* 2007 consisted of 440 out of 456 districts/municipalities in all (thirty three) provinces in Indonesia.⁵

In general, *Riskesdas* based on 17,357 census block samples collected on *Susenas* 2007. For each block sixteen households were selected using simple randomized sampling.

On *Riskesdas*, there were 15 census blocks from 2 districts in Papua that were released by *Susenas* 2007. Overall, the number of household samples from 438 districts/municipalities from *Susenas* 2007 is 277,630, and *Riskesdas* 2007 has collected 258,284 (93%) household samples, including 182 households collected as additional from the two districts in Papua.⁵

Next stage, all members in selected household samples became individual observed unit was 1,134,225 samples of household's members. Finally, *Riskesdas* 2007 collected 972,989 (85.8%) individuals as chosen by *Susenas* 2007 sampling, added by 673 individual samples from the two districts in Papua.⁵

All subjects were interviewed using self-administered standardized questionnaires, including Self Reporting Questionnaire on MED (SRQ 20). The SRQ consisted of 20 questions. The answer for each question on SRQ was scored 0 or 1. In case the subjects had low vision or blind, or were illiterate or low education, the interviewers filled in the questionnaires. When a symptom was present during the past one month, the item scored was 1, thus the maximal score was 20.^{6,7}

A subject was determined to have probable MED if the total "yes" answers exceeded the set cutting-off point at 5/6.⁷ Therefore, those

who had total scores of 6 or more were considered to have probable MED.⁸

Visual acuity was measured using the Snellen chart with the standardized procedure, with or without pinhole. The examination was performed under natural illumination (sun rays) in open areas.

Based on the measurement of visual acuity, visual acuity was divided into 3 categories: normal/mild vision (20/20 to 20/60); low vision (less than 20/60 to 3/60); and blind (less than 3/60 to 0/0).⁹

Furthermore, several characteristics were divided: age (15-29/ 30-49, and 50 years or above); areas (urban/rural); formal education (9 years or lower/10 years or more). Based on quintile monthly household's expenditure, economic status divided into 3 categories: poor = quintile 1-3; rich = quintile 4 and 5; and unknown).

For this assessment, the subjects selected were those aged 15 years or above, answered SRQ

completely, and had valid visual acuity (without correction) data.

Relative risk (RR) was estimated by maximum likelihood method using STATA released 9 software. A risk factor was considered to be a potential confounder if in the univariate test, it had a P-value <0.25, and further would be selected as a candidate for the multivariate model along with all known risk factors for MED.

This *Riskesdas* 2007 study received ethical clearance from Ethics Committee of National Institute of Health Research and Development, Ministry of Health of Indonesia.

RESULTS

Out of 972,989 *Riskesdas* 2007 subjects, 554,886 subjects were included in this assessment. They consisted of 51.7% females, with ages ranging from 15 to 98 years and 62.6% were living in rural areas. Most subjects (56.8%) had 0 to 9 years of formal education,

Table 1. Sociodemographic variables and the risk of mental emotional disorder

	Mental emotional disorder				Crude relative risk	95% confidence interval	P
	Not probable (n=491,607)		Probable (n=63,279)				
	n	%	n	%			
Gender							
Male	244,519	91.2	23,473	8.8	1.00	Reference	
Female	247,088	86.1	39,806	13.9	1.58	1.56-1.61	0.000
Age group							
15-29 years	178,124	91.2	17,262	8.8	1.00	Reference	
30-49 years	201,880	90.2	21,892	9.8	1.11	1.09-1.13	0.000
50-98 years	111,603	82.2	24,125	17.8	2.01	1.97-2.05	0.000
Formal education							
10-18 years	136,828	92.6	10,980	7.4	1.00	Reference	
0-9 years	354,779	87.2	52,299	12.8	1.73	1.69-1.77	0.000
District							
Urban	185,716	89.4	22,005	10.6	1.00	Reference	
Rural	305,891	88.1	41,274	11.9	1.12	1.10-1.14	0.000
Economical status							
Rich	213,797	89.6	24,914	10.4	1.00	Reference	
Poor	276,094	87.9	38,070	12.1	1.16	1.14-1.18	0.000
Unknown	1,716	85.3	295	14.7	1.41	1.25-1.58	0.000

and were poor (56.8%). 11.4% of the subjects had probable MED. A small number (0.9%) of the subjects were blind, and 5.1% had low vision.

Table 1 shows that among low vision subjects,

25.2% had probable MED, while among blind people 41.4% had MED. Females, older people, those with less formal education, rural subjects, or poor subjects more likely to have probable MED compared to respective reference groups.

Table 2. Relationship between sociodemographic variables, visual impairments, and risk of mental emotional disorder

	Mental emotional disorder				Adjusted relative risk*	95% confidence interval	P
	Not probable (n=491,607)		Probable (n=63,279)				
	n	%	n	%			
Visual acuity							
Normal or mild visual impairment	467,396	89.6	54,005	10.4	1.00	Reference	
Low vision	21,181	74.8	7,132	25.2	1.75	1.71-1.79	0.000
Blind	3,030	58.6	2,142	41.4	2.69	2.60-2.78	0.000
Age group							
15-29 years	178,124	91.2	17,262	8.8	1.00	Reference	
30-49 years	201,880	90.2	21,892	9.8	1.09	1.07-1.11	0.000
50-98 years	111,603	82.2	24,125	17.8	1.62	1.59-1.66	0.000

*Adjusted each other between variables listed on this table, gender, education, and economical status

Compared to subjects with normal or mild visual impairments, subjects who were blind were more likely to have probable MED by 2.7-folds. The blind were also more likely to have probable MED compared to those subjects who had low vision. Compared to younger subjects, older subjects (50 to 98 years) were more likely to have probable MED by 1.6-folds.

DISCUSSION

The parent study of this analysis, *Riskesdas* 2007, involves the biggest sample size at the national level compared to any prior national health survey and, moreover, represents certain health status, such as the prevalence of visual impairments and probable MED of people in provincial community level. The abundant sample size raises some limitation, in particular related to restricted time and limited budget for more precise visual acuity examinations, which is ideally treating the study's subjects till they have a maximal correction for their refractive error.

Ageing is the prominent factor contributing to the development of visual loss^{10,11} and tends to increase the risk of MED s.^{12,13} Although older age increases the probable MED risk by two folds,⁸ apparently ageing is not the crucial risk factor, in line with the previous study by Kessler et al. which revealed that socio-demographic characteristics did not correlate with the prediction of mental disorder prevalence.³

There are 41.4% blind people also suffering from probable MED. This finding is slightly lower compared to the study by Ademola-Popoola et al.⁴ which reported the proportion of blind people at 51%. The proportion of people who had probable MED in this study, tends to correlate positively to the severity of visual impairment. The severity of visual impairment seems to play a main role in mental disorder development. Schinazi, in his working paper series, stated that several congenitally blind subjects felt better and well-adapted with the total loss of a sense and more comforting than having "something that did not function proper-

ly”, such as having low vision. That statement sounds contradictory to our findings, since those subjects had not experienced the worth of sight. Different ages of onset of observed subjects seems to correlate to the psychological mindset of each person.¹⁴

Most subjects in our study had adventitious blindness, not congenital. Severe visual impairment development can be accompanied by depression or psychological trauma that requires adjustment time by the affected people and their families. Family support will be meaningful for the recovery from psychological trauma while the affected person gets his or her positive self-development back and adapts to his current condition. In people who are blind or have low-vision, the normal appearance of the eyes can lead to a certain amount of confusion or unfair judgment about the degree of impairment by his social environment.¹⁴ This misjudging leads to inappropriate treatment and decreases the competitiveness of the affected person in obtaining a better job and to gain social achievements.

In conclusion, more severe visual impairment leads to an increased chance of people to get probable MED. Therefore, further investigation, such as a cohort study, is urgently needed to discover how co-morbidity of severe visual impairments and mental disorders impacts the quality of life of affected people and enhances the disease burden for them and their families. These advanced studies will give comprehensive information and evidence that neglected severe visual impairment could double the social burdens while co-morbid with MED.

Acknowledgements

The author wishes to thank Prof. Bastaman Basuki and his team for technical assistant during preparation of this paper, and to Dr. Elisabeth Emerson for reviewing and editing the final draft.

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