
	가	가	가
: 1999 7 1	1999 12 31	, 25	25
Anxiety Inventory ; STAI)	. STAI 40	Spielberg -	(Spielberg's State - Trait
20 (Trait Anxiety ; STAI - T)	20	(State Anxiety ; STAI - S)	
1 4 4			Beck
(Beck depression Inventory ; BDI)	21		0 3
:	가	가	가
15.72 ± 10.16	44.76 ± 13.64,	43.92 ± 11.66,	
± 4.92	34.64 ± 9.17, 34.84 ± 10.76, 8.44 ± 6.80 ,	35.56 ± 7.30, 34.52 ± 7.70, 8.76	
가	가	가	가
:			
<hr/>			
< 43(2):281 - 289, 2002 >			

	가	가	가
: 2001 5 9 ,	2002 1 9 >	, 25	25
		3	
:	가	가	가
1999 7 1	1999 12 31		
		Spielberg -	
		(Spielberg's State-Trait Anxiety	
		Inventory ; STAI)	STAI
		40 (State Anxiety ; STAI-S)	
		20 (Trait Anxiety	
		; STAI-T)	20
			1
		4 4	
	16-5		가

Tel : 82-41-550-6377, Fax : 82-41-561-0137
 E-mail : jonglee@anseo.dankook.ac.kr

Table 1. General characteristics of each studied group

Characteristic		Glaucoma	Cataract	Control	Statistical value
Occupation	Jobless	2(100.0%)			P=0.081
	Laborer	1(25.0%)	2(50.0%)	1(25.0%)	
	Office work	1(12.5%)	5(62.5%)	2(25.0%)	
	Business	3(37.5%)	3(37.5%)	2(25.0%)	
	Farming	6(37.5%)	7(43.8%)	3(18.8%)	
	Teacher	3(100.0%)			
	House wife	8(34.8%)	6(26.1%)	9(39.1%)	
Religion	Specialist	1(9.1%)	2(18.2%)	8(72.7%)	P=0.051
	Christian	7(36.8%)	2(10.5%)	10(52.6%)	
	Buddhism	7(21.9%)	16(50.0%)	9(28.1%)	
	Catholic	4(57.1%)	1(14.3%)	2(28.6%)	
economic level	No	7(41.2%)	6(35.3%)	4(23.5%)	P=0.469
	Low	5(83.3%)	1(16.7%)		
	Medium low	5(29.4%)	5(29.4%)	7(41.2%)	
	Medium	12(29.3%)	14(34.1%)	15(36.6%)	
	Medium high	2(28.6%)	3(42.9%)	2(28.6%)	
	High	1(25.0%)	2(50.0%)	1(25.0%)	

Table 2. Past medical history of each studied group

		Glaucoma	Cataract	Total	Statistical value
OP [†]	T ^{††}	10(40.0%)	-	10(40.0%)	-
	LI ^{†††}	5(20.0%)	-	5(20.0%)	
	T and LI	2(8.0%)	-	2(8.0%)	
	Not	8(32.0%)	-	8(32.0%)	
Position [‡]	R or L	3(12.0%)		3(12.0%)	
	B	22(88.0%)		22(88.0%)	
Syst.Ds [§]	DM ^{§§}	-	4(16.0%)	4(8.0%)	P=0.134
	HT ^{§§§}	5(20.0%)	4(16.0%)	9(18.0%)	
	TB	1(4.0%)	-	1(2.0%)	
	DM and TB	-	1(4.0%)	1(2.0%)	
	DM and HT	1(4.0%)	3(12.0%)	4(8.0%)	
	Not	18(72.0%)	13(52.0%)	31(62.0%)	

*P<0.01, **P<0.001

Op[†]: operation (T^{††}: trabeculectomy, LI^{†††}: laser iridotomy), Laterality[‡]: diseased eye (R : right, L :left, B : both) , Systemic Ds[§]: systemic disease (DM^{§§}: diabetes mellitus, HT^{§§§}: hypertension, TB : tuberculosis)

가 3 BDI 가 0~9
10~15
16~23 , 24~63
Cronbach's
Beck (Beck =0.8456, (STAI-S) Cronbach's =0.8165,
depression Inventory ; BDI) (STAI-T) Cronbach's =0.9333,
BDI 21 0 (BDI) Cronbach's =0.8523

Table 3. The degree of state anxiety, trait anxiety, and degree of depression according to general characteristics of the entire studied groups

Characteristic		STAI-S ^s			STAI-T ^{ss}			BDI ^{sss}		
		M [†]	SD ^{††}	DMR [‡]	M	SD	DMR	M	SD	DMR
Occupation	Jobless	38.50	9.19		32.50	7.78	a	14.00	.00	
	Laborer	48.25	17.21		45.25	12.61	ab	16.00	13.49	
	Office work	37.63	9.61		35.13	7.38	a	7.38	5.13	
	Business	36.38	9.59		32.63	9.72	a	10.13	10.91	
	Farming	38.44	10.69		39.06	10.96	ab	10.50	5.33	
	Teacher	33.00	12.49		35.67	4.16	a	6.67	9.87	
	House wife	40.70	12.14		42.43	12.41	ab	14.17	9.51	
	Specialist	32.91	9.13		30.55	6.49	a	7.00	3.74	
	Statistical value	F=1.105 P=.370			F=2.201 *P=.045			F=1.547 P=.167		
Economic level	Low	56.00	15.18	b	56.83	15.56	b	27.33	13.32	b
	Medium low	40.24	9.44	a	38.29	7.78	a	11.82	7.03	a
	Medium	35.83	9.56	a	35.46	9.52	a	8.85	5.21	a
	Medium high	36.14	10.16	a	35.43	9.11	a	9.14	5.81	a
	High	33.00	6.68	a	34.50	5.80	a	7.75	7.63	a
	Statistical value	F=5.855 **P<0.001			F=6.790 **P<0.001			F=10.399 **P<0.001		
Sex	male	38.28	10.67		37.00	9.56		9.54	7.65	
	female	38.36	11.95	38.58	12.38		12.53	8.56		
	Statistical value	t=-.030 P=.976			t=-.623 P=.536			t=-1.588 P=.117		
Age	Thirties	36.00	9.19		33.50	6.35		5.67	5.24	
	Forties	43.00	19.40		42.00	16.00		14.00	12.00	
	Fifties	37.71	9.42		37.88	8.15		10.58	6.67	
	Sixties	38.10	10.45		36.33	9.48		9.76	5.63	
	Seventies	37.73	10.10		38.73	14.60		13.60	10.93	
	Statistical value	F=.471 P=.757			F=.670 P=.615			F=1.475 P=.219		
Education	No education	1.40	8.02		32.00	9.30		11.00	6.04	
	Elementary school	40.37	10.83		42.21	11.41		13.21	9.25	
	Middle school	39.06	12.68		37.56	14.03		11.38	8.39	
	High school;	39.40	13.05		36.87	9.81		10.93	9.55	
	College	38.67	9.46		38.33	7.92		10.50	8.34	
	University	35.86	9.94		34.71	8.31		7.71	5.51	
Statistical value	F=.669 P=.648			F=1.155 P=.340			F=.718 P=.612			
Marriage	Unmarried	36.33	3.79		37.00	9.54		9.33	4.51	
	Married	38.88	11.46		37.63	10.56		10.62	7.76	
	Berevement	36.30	12.20		38.80	14.81		14.60	11.64	
	divorced	34.50	10.61		37.50	12.02		6.00	.00	
	Statistical value	F=.259 P=.855			F=.036 P=.991			F=.967 P=.413		
Religion	Christian	38.47	8.27		37.58	6.59		10.11	6.77	
	Buddhism	35.72	10.49		36.47	11.35		9.13	6.49	
	Catholic	38.57	8.34		35.86	7.20		12.43	3.60	
	No	42.94	15.18		41.18	14.84		14.82	12.27	
	Statistical value	F=1.570 P=.204			F=.763 P=.518			F=2.000 P=.122		

*P<0.05 **P<0.001

M[†]:Mean , SD^{††}: Standard Deviation, DMR[‡]: Duncan's Multiple Range Test(a<b)

STAI-S^s: State Trait Anxiety Inventory-State, STAI-T^{ss}:State Trait Anxiety Inventory-Trait, BDI^{sss}: Beck Depression Inventory

Table 4. State and trait anxiety depending on the degree of depression in all studied group

		M [†] ±SD ^{††}	DMR [‡]	STAI-S [§]		STAI-T ^{§§}	
				M±SD	DMR	M±SD	DMR
BDI ^{§§§} group	Nondep	4.89±2.97	a	31.89±6.82	a	32.11±7.44	a
	Mild dep	11.96±1.46	b	39.67±8.88	b	38.67±8.47	ab
	Moderate dep	17.20±1.40	c	45.00±8.72	b	43.60±6.95	b
	Severe dep	32.17±6.94	d	59.33±11.50	c	57.33±15.15	c
Statistical value		F=171.690	*P<0.001	F=22.907	*P<0.001	F=17.475	*P<0.001

*P<0.001

M[†]:Mean , SD^{††}: Standard Deviation, DMR[‡]: Duncan's Multiple Range Test(a<b<c<d)

STAI-S[§]: State Trait Anxiety Inventory-State, STAI-T^{§§}:State Trait Anxiety Inventory-Trait, BDI^{§§§}: Beck Depression Inventory
dep : depression

Table 5. The state anxiety, trait anxiety and degree of depression in each studied group

	M [†]	STAI-S [§]			STAI-T ^{§§}			BDI ^{§§§}	
		SD ^{††}	DMR [‡]	M	SD	DMR	M	SD	DMR
Glaucoma	44.76	13.64	b	43.92	11.66	b	15.72	10.16	b
Cataract	34.64	9.17	a	34.84	10.76	a	8.44	6.80	a
Control	35.56	7.30	a	34.52	7.70	a	8.76	4.92	a
Total	38.32	11.23		37.76	10.96		10.97	8.23	
Statistical value		F=7.262	*P=0.001		F=6.870	*P=0.002		F=7.316	*P=0.001

*P<0.01

M[†]:Mean , SD^{††}: Standard Deviation, DMR[‡]: Duncan's Multiple Range Test(a<b<c<d)

STAI-S[§]: State Trait Anxiety Inventory-State, STAI-T^{§§}:State Trait Anxiety Inventory-Trait, BDI^{§§§}: Beck Depression Inventory

SPSS 10.0 for

Windows

(%), (M: Mean)

(SD: Standard Deviation)

가 Fisher

13 , 12

Exact test

30 2 , 40 3 , 50 8 , 60 7

가 t , ANOVA , 70 5

, ANOVA 가 25 17

Duncan

12 , 6 ,

phrey autoperimetry
deviation index

Hum-
mean

3 , 4

0.01

가 (Table 1).

Table 2

가

0.05, 0.01, 0.001

가

Table 6. The state anxiety, trait anxiety and degree of depression

	CACG (n=12)	POAG (n=6)	NTG (n=3)	2nd (n=4)	Total (n=25)
STAI-S	43.75±14.57	43.17±10.25	42.67±17.90	51.75±15.56	44.76±13.64
Statistical value			F=.391 P=.761		
STAI-T	43.67±13.03	41.50±7.15	42.67±8.14	49.25±16.88	43.92±11.66
Statistical value			F=.347 P=.791		
BDI	17.00±12.23	15.50±7.53	12.00±8.72	15.00±10.52	15.72±10.16
Statistical value			F=.184 P=.906		

CACG[†]: chronic angle closure glaucoma, POAG^{††}:primary open angle glaucoma, NTG^{†††}: normal tension glaucoma

2nd[†]: secondary glaucoma, STAI-S[§]: State Trait Anxiety Inventory-State, STAI-T^{§§}:State Trait Anxiety Inventory-Trait,

BDI^{§§§}: Beck Depression Inventory

Table 7. Difference in the degree of depression depending on studied group

		Glaucoma	Cataract	Control	Total
BDI [§] group	Nondep ^{§§}	6(24.0%)	14(56.0%)	15(60.0%)	35(46.7%)
	Mild dep	8(32.0%)	8(32.0%)	8(32.0%)	24(32.0%)
	Moderate dep	7(28.0%)	2(8.0%)	1(4.0%)	10(13.3%)
	Severve dep	4(16.0%)	1(4.0%)	1(4.0%)	6(8.0%)
	Statistical value				*P=0.043

A Values are Frequency (Percent)

*P<0.05 **P<0.01 ***P<0.001 BDI[§]: Beck Depression Inventory, dep^{§§}: depression

Table 8. The degree of state anxiety and trait anxiety in relation to the degree of depression (BDI) in glaucoma patient

		M [†] ±SD ^{††}	DMR [‡]	STAI-S [§]		STAI-T ^{§§}	
				M±SD	DMR	M±SD	DMR
BDI ^{§§§} Group	Nondep	4.83±3.13	a	33.00±7.67	a	34.67±6.15	a
	Mild dep	12.75±1.49	a	43.13±11.90	ab	41.25±8.07	a
	Moderate dep	17.57±1.51	a	46.43±9.18	b	44.14±6.52	a
	Severe dep	34.75±6.90	b	62.75±13.02	c	62.75±11.18	b
Statistical value		F=71.467		F=6.592		F=10.927	
		**P<0.001		*P=0.003		**P<0.001	

*P<0.01 **P<0.001

M[†]:Mean , SD^{††}: Standard Deviation, DMR[‡]: Duncan's Multiple Range Test(a<b<c)

STAI-S[§]: State Trait Anxiety Inventory-State, STAI-T^{§§}:State Trait Anxiety Inventory-Trait, BDI^{§§§}: Beck Depression Inventory

dep : deepression

가 (Table 4). (P < 0.01), (P < 0.01)가 (Table 5, Fig. 1). (Table 3). 가 (Table 6).

가 56%, 60% 가 (P < 0.05, Table 7). 가 (P < 0.01), 가 (P < 0.001) 가 (Table 8). (+) (Table 9). (+) (r=0.815), r=0.766 (+) r=0.460

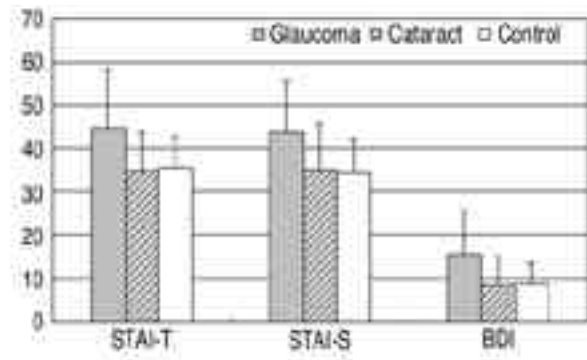


Figure 1. The comparison of STAI-S, STAI-T, BDI score in each groups. In glaucoma patient group, the averaged STAI-S, STAI-T, BDI scores are significantly higher compared with cataract patient and normal groups. (P<0.01) I : standard deviation.

Table 9. The correlation between STAI-S, STAI-T, BDI

<Total>	STAI-S	STAI-T	BDI
STAI-S	-		
STAI-T	.772***	-	
BDI	.726***	.739***	-
<Glaucoma>			
STAI-S	-		
STAI-T	.815***	-	
BDI	.660***	.770***	-
<Cataract>			
STAI-S	-		
STAI-T	.766***	-	
BDI	.720***	.755***	-
<Control>			
STAI-S	-		
STAI-T	.460*	-	
BDI	.628**	.357	-

A Values are Pearson's Linear Correlation Coefficient(r)
*p<.05 **p<.01 ***p<.001

Table 10. The severity of intraocular pressure, disc cupping, and visual field loss and its relationship with anxiety and depression

	STAI-S†	STAI-T††	BDI‡	IOP§.R	IOP.L	C/D .R	C/D.L	V.F#.R	V.F.L
STAI-S	-								
STAI-T	.815***	-							
BDI	.660***	.770***	-						
IOP.R	.146	.253	.170	-					
IOP.L	.391	.496*	.281	.528**	-				
C/D.R	.000	.052	.354	.194	-.168	-			
C/D.L	.093	.060	.164	.207	.025	.220	-		
V.F.R	.056	-.159	-.194	.004	.110	-.261	.340	-	
V.F.L	.046	.127	-.154	.018	.409	-.499*	-.634**	-.202	-

A Values are Pearson's Linear Correlation Coefficient(r)

*p<0.05 **p<0.01 ***p<0.001

STAI-S†: State Trait Anxiety Inventory-State, STAI-T: State Trait Anxiety Inventory-Trait, BDI‡: Beck Depression Inventory

IOP§: intraocular pressure (R: right, L: left), C/D : disc cup ratio, V.F#: visual field loss

(+) 가

(r=0.496)

Schoenberg¹³

(Table 10).

가

가

.¹⁻⁷

가

가

가

.⁸

가

가

가

가

가

Cohen

Hajoff¹⁰

52

.⁹

가

가

Croll¹⁴
가

Mamelok¹⁵

가

가

.¹⁰ Best

Taylor¹¹

1948

Ripley

Wolff¹⁶

18

가,

가,

가,

가

.¹²

가

가

Ripley
가

가

가
Batra¹⁷ 24

Erb

가

가

가

가

184

18

39% 가 2

가

가

가

가

가

가

가

가

가

가

- 1) Sklar LS, Anisman H. Stress and coping factors influence tumor growth. *Science* 1979;1205:513-5.
- 2) Glass DC. Stress, behavior patterns, and coronary disease. *Am Sci* 1977;65:177-87.
- 3) Engel GL. Studies in ulcerative colitis: the nature of the psychologic process. *Am J Med* 1955;19:231- 56.
- 4) Gottlieb RL. Neuropsychology of myopia. *J Optom Vis Devel* 1982;13:3-27.
- 5) Gawron VJ. Ocular accomodation, personality and autonomic balance. *Am J Optom Physiol Opt* 1983;60:630-9.
- 6) Groffman S. Psychological aspect of strabismus and amblyopia-a review of the literature. *J Am Optom Assoc* 1978;149:995-9.
- 7) Nawlatzki I, Avroudkine M. Psychogenic factors in disturbances of ocular muscle balance: Exophoria with convergence insufficiency. *Acta Med Orient* 1957;16:94-6.
- 8) B.G. Shily. Psychophysiological stress, elevated intraocular pressure, and acute closed-angle glaucoma. *Am J Optom Physiol Opt* 1987;64:866-70.
- 9) Hobbs HE. Principles of ophthalmology. London: Heinemann, 1965;145-56.
- 10) Cohen Si, Hajoff J. Life events and the onset of acute closed-angle glaucoma. *J Psychosom Res* 1972;16:355-41.
- 11) Best CH, Taylor NB. The physiological basis of medical practice, Baltimore: William Wood & Company, 1937;294-310.
- 12) Cannon WB. Bodily changes in pain, hunger, fear and rage, New York : D. Appleton and Company, 1920;86-94.
- 13) M.J. Schoenberg. Role of states of anxiety in the pathogenesis of primary glaucoma. *Arch . of Ophthalmol* 1940;23:76-90.
- 14) Croll M, Croll LJ. Emotional glaucoma. *Am J Ophthalmol* 1960;49:297-305.
- 15) Mamelok AE. Psychiatry and ophthalmology. In: Kaplan HI, Sadock BJ, eds. *Comprehensive Textbook of Psychiatry/4th, vol2*. Baltimore: Williams & Wilkins, 1985;1298-301.
- 16) Ripley HS, Wolff HG. Life situation, emotions and glaucoma. *Psychosom Med* 1948;12:215-24.
- 17) C. Erb, A. Batra. Psychological characteristics of patients with normal-tension glaucoma . *Graefe's Arch Clin Exp Ophthalmol* 1999;237:753-7.
- 18) , , . 1998;39:2145-51.

= ABSTRACT =

Observation on Anxiety and Depression of Glaucoma Patients

Myung Sook Ha, M.D., Moo Hwan Chang, M.D., Jong Hoon Lee, M.D.

Department of Ophthalmology, College of Medicine, Dankook University

Purpose : To determine whether correlation exists between anxiety/depression and the advent/progression of the disease in glaucoma patients. We compared the degree of anxiety and depression among 3 groups which consist of glaucoma patients, cataract patients, and healthy individuals.

Methods : Between July 1, 1999 and December 31, 1999, a written survey was conducted on three groups of people-glaucoma patients, cataract patients, and healthy individuals, who visited Dankook University Hospital's Ophthalmology Outpatient Department. Each group consists of 25 people. The Spielberg's State-Trait Anxiety Inventory (STAI) was employed to quantify the degree of anxiety. STAI consists of 40 questions; 20 questions were designed to measure State Anxiety (STAI-S) and 20 questions to measure Trait Anxiety (STAI-T). In each question, the participants were asked to give scores of 1 to 4. In order to measure the degree of depression, Beck Depression Inventory (BDI) was employed which consists of 21 questions with a 0 to 3 scoring scale for each question.

Results : In glaucoma patient group, the average STAI-S score was 44.76 ± 13.64 , STAI-T score 43.92 ± 11.66 , and BDI score 15.72 ± 10.16 . The obtained score was significantly higher compared to cataract patient group (34.64 ± 9.17 , 34.84 ± 10.76 , 8.44 ± 6.80) and normal group (35.56 ± 7.30 , 34.52 ± 7.70 , 8.76 ± 4.92) and such findings implied that the degree of anxiety and depression was significantly higher in glaucoma patient group. The severity of intraocular pressure, visual field, visual acuity, and cup to disc ratio did not seem to be correlated with anxiety and depression.

Discussions : In glaucoma patients, a psychological self training in daily life, in addition to surgical or medical treatment, which can help reduce anxiety and depression can be a useful complement to the conventional treatment modalities.

J Korean Ophthalmol Soc 43(2):281-289, 2002

Key Words : Anxiety, Depression, Glaucoma

Address reprint requests to **Jong Hoon Lee, M.D.**

Department of Ophthalmology, College of Medicine, Dankook University

#San 16-5 Anseo-dong, Cheonan, Chungnam 330-714, Korea

Tel : 82-41-550-6377, Fax : 82-41-561-0137, E-mail : jonglee@anseo.dankook.ac.kr