

치매 선별을 위한 한국어판 간이 Blessed 검사의 신뢰도 및 타당도*

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Reliability and Validity of the Korean Version of Short Blessed Test(SBT-K) as a Dementia Screening Instrument*

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국문초록

연구목적 :

Short Blessed Test(SBT) ,
SBT(SBT - K) .

방 법 :

- SBT - K The Korean Version of Blessed Dementia Scale - Act-
ivity of Daily Living(BDS - ADL - K) Clinical Dementia Rating Scale(CDR) 224
191 , 324 (157 , 167) The Korean Vers-
ion of Consortium to Establish a Registry of Alzheimer 's Disease - Mini - Mental State Examination
(CERAD - MMSE - K) . SBT - K Crohnbach alpha
가 1 - . SBT - K

: 1998 9 20

: 1998 10 10

1996 1997

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CERAD - MMSE - K, BDS - ADL - K CDR
Receiver Operator Characteristic(ROC)
CERAD - MMSE - K
결 과 :
1) SBT - K 가 -
2) SBT - K CERAD - MMSE - K, BDS - ADL - K CDR , ROC
(10/11) 가 0.85, 0.90
3) ROC Area Under Curve(AUC) SBT - K CERAD - MMSE - K
결 론 :
SBT - K 가 ,
가
중심 단어 : SBT - K

서 론

가 가
17)
65 9.5%
1) 18) 가
2) 19)
가 3) Blessed (Short Blessed Test : SBT)
가 가 Orientation - Memory - Concentration Test(OM -
4) 60% 가 CT) , 가 Blessed De -
가 dementia Scale²⁰⁾ 가 27
Information - Memory - Concentration Test(IM -
CT) Katzman¹⁵⁾ , ,
가 6
5) SBT Information - Mem -
ory - Concentration Test
6)7) , Wechsler¹⁵⁾ , SBT
가 21)
가 15) SBT
가 5
11) , Dementia Rating Scale(DRS)¹⁴⁾
가 12)
13-16)
21)
SBT Consortium to Establish a Registry of Alz -
heimer's Disease (CERAD)²²⁾가

가 (Clinical and Neuropsychological Assessment Batteries) 14 (' say the months in reverse order ') (1 12)

CERAD 가 (The Korean Version of CERAD Assessment Packet : CERAD - K) SBT

SBT 2. SBT-K의 신뢰도 및 타당도 검증
1) 대상군의 설정 4
가 가 (consensus case conference)

1. SBT 번안 SBT(SBT - K) 50
, 20 1 Diagnostic and Statistical manual of Mental Disorders, 4 th edition(DSM -)²³⁾
, 5가 224

6 가 가 가 , Vit - B₁₂/folate
28 가 CERAD CT MRI

가 SBT CERAD 가 55 가
(67.212.4) 43 (68.512.3)

가 Duke CERAD headquarter 가 SBT - K()
' John Brown, 42 Market Street, Chicago ' , National Institute of Neurological and Communicative Disorders and Stroke - Alzheimer's Disease and Related Disorders Association(NINCDS - ADRDA)⁷⁾ probable Alzheimer's disease possible Alzheimer's disease Neuroepidemiology Branch of the National Institute of Neurological Disorders and Stroke - Association Internationale pour la Recherche et l'Enseignement en Neurosciences(NINDS -

AIREN)²⁴⁾ probable vascular de- MMSE CERAD - MM -
 mentia Clinical Dementia Rat - SE - K MMSE - K (26)
 ing Scale(CDR)²⁵⁾ 가 12) MMSE - K , ,
 (2) , 가
 , CERAD - MMSE - K MM -
 SE - K (,) ,
 (, ,)
 191 MMSE - K
 2
 가 CERAD - MMSE
 가

2) 신뢰도 검증 BDS - ADL - K(The Korean Version of Blessed
 SBT - K Dementia Scale - Activity of Daily Living)
 Cronbach alpha , BDS - ADL Blessed 1968
 가 23 (9 , 14 ADL 가
) 가 가 CERAD 가 가
 Pearson 8
 , , 3
 20 (10 , 10) 가 4 ADL 17 가 가 CER -
 가 가 ADL
 Pearson AD - K BDS - ADL
 BDS - ADL - K
 26)
 (2) SBT - K
 ANCOVA
 , SBT - K CERAD - MMSE - K BDS -
 ADL - K Pearson
 CDR SBT - K
 Spearman DSM -

3. 타당도 검증 415 SBT - K
 (Activity of Daily Living ; ADL) 가
 BDS - ADL(BDS - ADL - K)
 324 (157 ,
 167) SBT - K, BDS - ADL - K
 CERAD - K CERAD Mini -
 Mental State Examination(CERAD - MMSE -
 K)
 (1) 가
 CERAD - MMSE - K(The Korean Version of
 Consortium to Establish a Registry of Alzheimer 's
 Disease - Mini - Mental State Examination)
 CERAD - K CERAD , ROC (Ar -
 가 CERAD - ea Under Curve ; AUC) SBT -

Table 1. Demographic characteristics of dementia patients and control subjects

	Control (n=191)	Dementia (n=224)
Age (years)		
50 - 64	43(22.5)	54(24.1)
65 - 69	71(37.2)	27(18.5)
70 - 74	44(23.0)	50(22.3)
75 - 79	28(14.7)	43(19.2)
80 <	5(2.6)	40(17.9)
Mean ± SD	68.5 ± 5.8	71.1 ± 8.1*
Range	53 - 85	52 - 88
Sex		
Male	65(34.2)	78(34.8)
Female	126(65.8)	146(65.2)
Education		
0	23(12.1)	60(27.1)
1 - 6	92(48.3)	77(35.3)
7 - 9	25(13.2)	19(8.6)
10 - 12	25(13.3)	34(23.4)
13 <	25(13.1)	30(13.6)
Mean ± SD	7.3 ± 4.7	6.5 ± 5.5*
Range	0 - 20	0 - 20

Number (percent) of subject unless otherwise indicated
*Significantly different from control subjects by student t-test, two tailed (p<0.01)

K CERAD - MMSE - K

AUC가
27)

4) 통계분석 프로그램

SAS for Win, v6.12

결 과

1. 인구학적 변인(1)

415 68.5 ± 5.8 , 71.1 ± 8.1 (p<0.01).

(X² = 50.6 ; df = 4, p<0.01).

7.3 ± 4.7 , 6.5 ± 5.5 가

Table 2. SBT-K scores in the control and dementia groups

Test	Control (n=191)	Dementia (n=224)
MeanSD	3.49 ± 4.50	0 - 21
Range	20.67 ± 8.18*	0 - 28

Parentheses indicate the number of subjects
*Significantly different from control subjects by ANCOVA considering age and education as covariates (p<0.01)

Table 3. Correlations of SBT-K, CERAD-MMSE-K and BDS-ADL-K in the control and dementia groups together (above the diagonal) and in the dementia group only (below the diagonal)*

	SBT-K	CERAD-MMSE-K	BDS-ADL-K
SBT-K	-	-.903	.766
CERAD-MMSE-K	-.817	-	-.805
BDS-ADL-K	.536	-.649	-

All correlations are significant at the 0.01 level by Pearson correlation analysis

*The numbers of subjects are 415 (control 191, dementia 224) for the correlation of SBT-K with BDS-ADL-K, and 324 (control 167, dementia 157) for the correlations of CERAD-MMSE-K with SBT-K, and with BDS-ADL-K

(X² = 18.4 ; df = 4, p<0.01).

CDR 가

0.5 55 (24.6%), 1 67 (29.9%), 2 55 (24.6%), 3 37 (16.5%), 4 10 (4.5%)

probable

Alzheimer's disease 89 (40%), possible Alzheimer's disease 84 (37%), probable vascular dementia 28 (13%), other dementia 23 (10%)

2. 신뢰도

Cronbach alpha

가 0.931 , 가 1

Pearson

0.998 0.975(p<0.01)

3. 타당도

SBT - K 3.5 ± 4.5 , 20.7 ± 8.2

ANCOVA

(F = 237.6 ; df = 1, p<0.01, 2). SBT - K

CERAD - MMSE - K BDS - ADL - K

Pearson

SBT - K

CERAD - MMSE - K - 0.903, SBT - K

Table 4. The values of accuracy indices according to various cut-off scores of SBT-K (n=415)

Cut-off	SE	SP	PPV	NPV
5/6	.88839	.79167	.83264	.85876
6/7	.88839	.80208	.83966	.86034
7/8	.87946	.84375	.86784	.85714
8/9	.87500	.84896	.87111	.85340
9/10	.85268	.89583	.90521	.83902
10/11*	.84821	.90625	.91346	.83654
11/12	.82143	.95833	.95833	.82143
12/13	.79911	.96354	.96237	.80435

*Optimal cut-off score indicated by ROC curve analysis
 Cut-off : cut-off score, SE : Sensitivity, SP : Specificity, PPV : Positive predictive value, NPV : Negative predictive value

Table 5. The values of accuracy indices according to various cut-off scores of SBT-K and CERAD-MMSE-K (n=324)

Test	Cut-off	SE	SP	PPV	NPV	AUC
SBT-K						.938
	6/7	.85350	.80240	.80240	.85350	
	7/8	.84076	.85030	.84076	.85030	
	8/9	.83439	.85629	.84516	.84615	
	9/10*	.80892	.90419	.88811	.83425	
	10/11	.80255	.91018	.89362	.83060	
	11/12	.77070	.97006	.96032	.81818	
	12/13	.73885	.97605	.96667	.79902	
CERAD-MMSE-K						.947
	19/20	.65605	.98802	.98095	.75342	
	20/21	.70701	.96407	.94872	.77778	
	21/22	.75796	.95808	.94444	.80808	
	22/23*	.82166	.95210	.94161	.85027	
	23/24	.85350	.85629	.84810	.86145	
	24/25	.89172	.77246	.78652	.88356	
	25/26	.91083	.67665	.72589	.88976	

*Optimal cut-off score indicated by ROC curve analysis
 Cut-off : cut-off score, SE : Sensitivity, SP : Specificity, PPV : Positive predictive value, NPV : Negative predictive value, AUC : Area under the curve

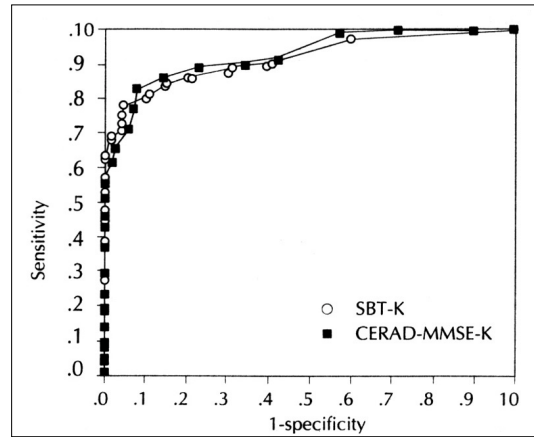


Fig. 1. Receiver operator characteristic(ROC) curves of SBT-K and CERAD-MMSE-K (N=324).

4
 415 ROC SBT - K
 10/11
 0.85, 0.90 SBT - K CER -
 AD - MMSE - K 324 SBT -
 K CERAD - MMSE - K
 ROC AUC
 5 ROC
 1 SBT - K
 415 1
 9/10 (0.81, 0.90).
 CERAD - MMSE - K 22/23
 (0.82, 0.95). SBT - K CER -
 AD - MMSE - K AUC 0.938, 0.947
 28)29) 가

고 찰

BDS - ADL - K 0.766,
 - 0.817, 0.536
 (P<0.01) (3). CDR
 가 SBT - K
 Spearman 0.82
 가 SBT - K
 415

가 가
 가
 30)
 SBT
 가 , 가 ,
 SBT - K 가 가
 Brislin³¹⁾

가 DSM - , ICD - 10⁴²⁾ , 가 SBT - K 가

ROC

191 224 SBT - K
10/11 (0.85, 0.90)

SBT - K CERAD - MMSE - K
167 157
9/10 (0.81,
0.90) . Katzman¹⁵⁾ 90%
6 10

Davous³⁴⁾ SBT 10/11
(0.88, 0.94)

SBT 가
ROC AUC

²⁸⁾²⁹⁾ SBT - K AUC 0.938,
CERAD - MMSE - K 0.947
가 AUC가 0.85
²⁷⁾ SBT - K가 6
5 , 19 5 15
CERAD - MMSE - K
가
SBT MMSE
가 가 , 가
)가 가
³⁴⁾

SBT - K 가
(15%) (10%)

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ABSTRACT

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Reliability and Validity of the Korean Version of Short Blessed Test(SBT-K) as a Dementia Screening Instrument

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We aimed to develop the Korean version of Short Blessed test(SBT-K) by analyzing its reliability and validity, showing its usefulness as a dementia screening instrument.

The translation, including back translation procedure, was carried out, keeping the basic structure of SBT. SBT-K. The Korean Version of Blessed Dementia Scale-Activity of Daily Living(BDS-ADL-K) and Clinical Dementia Rating Scale(CDR) were administered to 224 dementia patients and 191 control subjects, and The Korean Version of Consortium to Establish a Registry of Alzheimer's Disease-Mini-Mental State Examination(CERAD-MMSE-K) was to 157 patients and 167 controls. The correlation of SBT-K scores between two raters, correlation between the test and retest after one month, and its internal consistency were analyzed. To verify the concurrent validity of SBT-K, its correlation with each test : CERAD-MMSE-K, BDS-ADL-K, and CDR was analyzed. The sensitivity and specificity for each cut-off point of SBT-K were calculated and the Receiver Operator Characteristic(ROC) curve analysis was done to get its optimal cut-off point.

SBT-K was found to have significantly high internal consistency, inter-rater reliability, and test-retest reliability. The significant correlation of SBT-K with each test described above was also shown. Its optimal cut-off point was estimated as 10/11, and the sensitivity and specificity were 0.85 and 0.90, respectively. The ROC curve analysis indicated that the diagnostic efficiency of SBT-K was comparable with CERAD-MMSE-K. We conclude that SBT-K has not only high reliability and validity, but also usefulness as a screening instrument for dementia.

KEY WORDS : Dementia · Screening instrument · SBT-K · Reliability · Validity.

□ 부 록 □

한국어판 간이 Blessed 검사
(The Korean version of Short Blessed Test : SBT-K)

- “ . ”
- (가 가 . 0 가 28 가 .)
1. 가 ? 1 × 4 = _____
2. ? 1 × 3 = _____
- “ , , 14 , ” “ . ”
- (Number of trials to learning) :
- (3 “9” .)
3. , . 1 × 3 = _____
- : _____
- : _____
4. 20 1 . (.) (가 0 ; 가 1 ; 가 2) 2 × 2 = _____
- 20 19 18 17 16 15 14 13 12 11
- 10 9 8 7 6 5 4 3 2 1
5. , () () 2 × 2 = _____
- () · 가 () · () · ()
6. , , 14 , 5 × 2 = _____
- : _____