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Cross-Cultural adaptation and assessment of the reliability and validity of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale

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UTS:HEALTH

Cross-Cultural adaptation and assessment of the reliability and validity of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale

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Learning Objective 1: The learner will be able to identify sociocultural factors to engage their appropriate cultural setting before adapting a translation of instruments.

Learning Objective 2: The learner will be able to use culturally appropriate and acceptable as well as reliable and valid instruments.
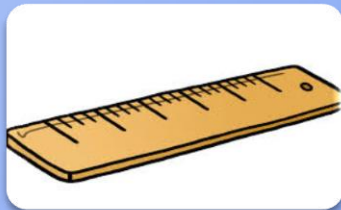
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Background

Hypertension

- Cardiovascular disease morbidity
- Disability
- Mortality

Strategies and outcomes

- Disease management
- Self-management

Tool

- The Hill-Bone Compliance to High Blood Pressure Therapy Scale

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The Hill-Bone Compliance to High Blood Pressure Therapy Scale: 14 items

medication taking subscale	9 items

reduced sodium subscale	3 items

appointment keeping subscale	2 items

low level of compliance (56 scores)

↓
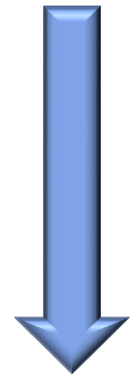
High level of compliance (14 scores)

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Method: The cross-cultural adaptation of the Hill-Bone HBP Compliance Scale
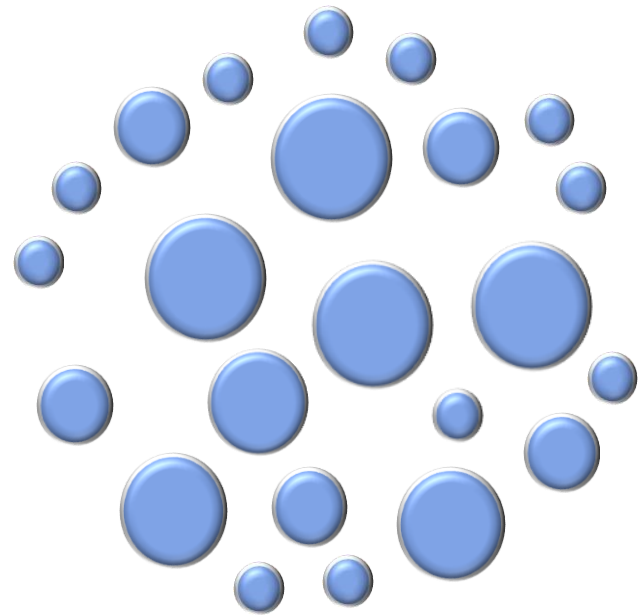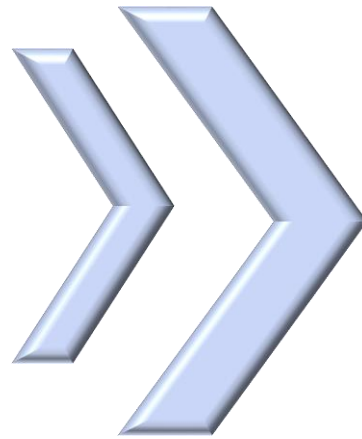
Original version

cross-cultural adaptation

Method: Beaton's Guideline

Stage I: Initial Translation

Stage II: Synthesis of the Translation

Stage III: Back Translation

Stage IV: Expert Committee Evaluation

Stage V: Test of the Pre-final Version

Stage VI: Submission to the Developers

(Beaton et al. 2002)

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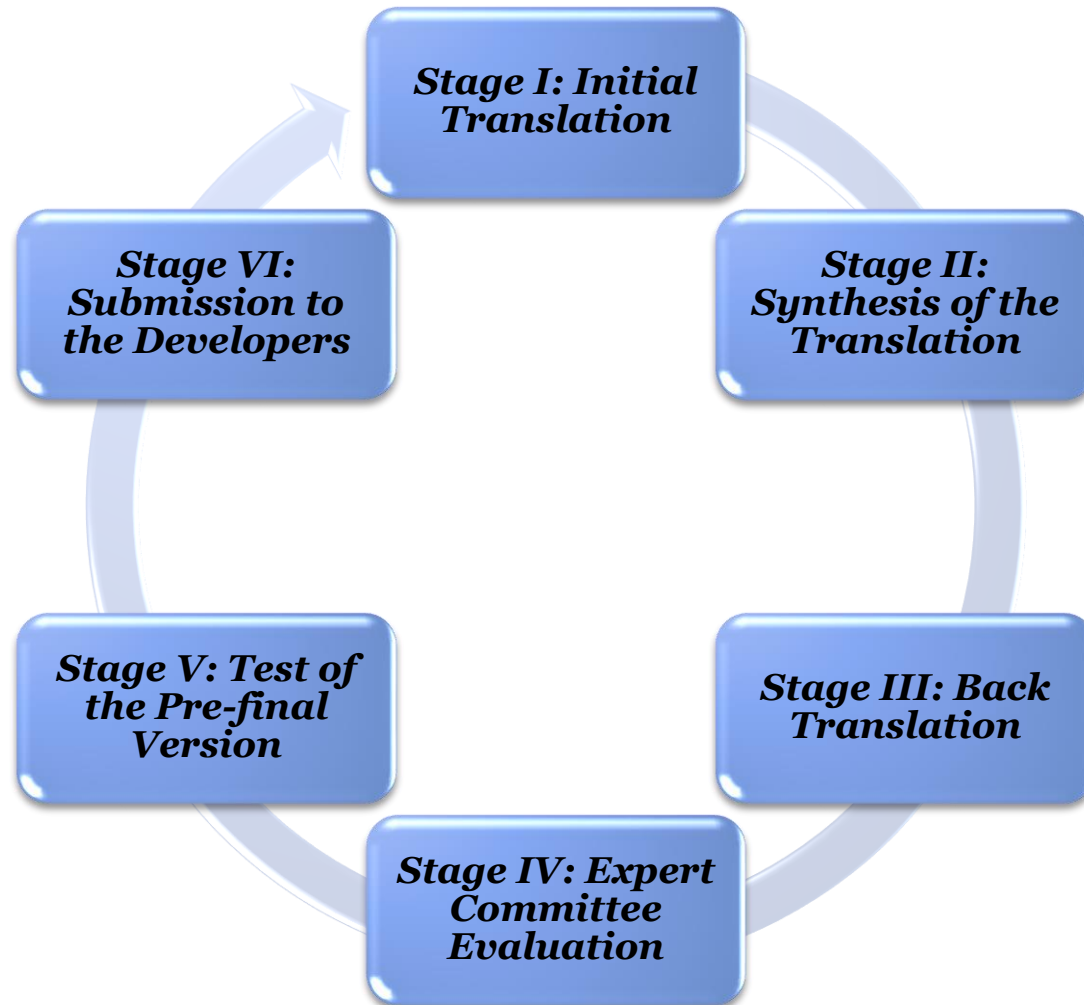
Method
Stage I: Initial Translation

English language (original version) to Thai language (target version)

Method
Stage II: Synthesis of the Translation

sematic equivalence,
idiomatic equivalence,
experiential equivalence
conceptual equivalence
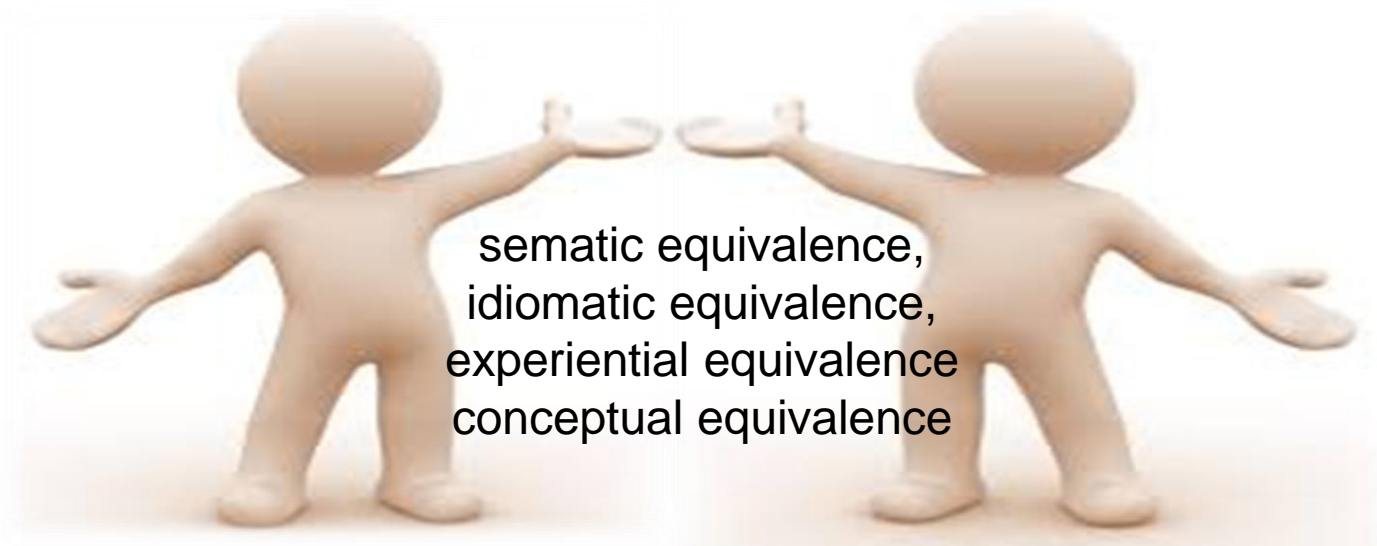
(Borsa et al. 2012, Guillemin et al. 1993)

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Method
Stage III: Back Translation
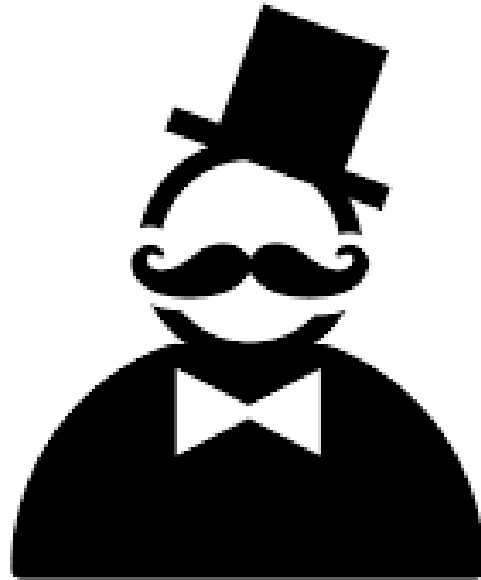
Thai to English language with blinding from the original version

Method
Stage IV: Expert Committee Evaluation

Face validity and Content validity

Method
Stage V: Test of the Pre-final Version

∞ **Psychometric Quality Analysis**

∞ **Reliability and accuracy**

∞ **Construct Validity**

∞ **Criterion Validity**

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Method

Stage VI: Submission of Documentation to the Developers or Coordination Committee for Appraisal of the Adaptation Process

The researcher discussed the back translated items with one of the original developers about the comparison between the original versions comparing to the target version.

Results

Table 1 *Demographic and clinical status of participants (n=156)*

Characteristics	N	(%)	Range	Mean (SD)	Median (IQR)
Demographic data					
Age			60-88	70 (6.3)	
Gender					
Female	107	68.6			
Male	49	31.4			
Marital status					
Single	17	10.9			
Married	83	53.2			
Separated	4	2.6			
Divorced	5	3.2			
Widow	47	30.1			
Independent living situation					
Living Alone	25	16.0			
Living with spouse, carer or relative(s)	125	80.1			
Living with others	6	3.8			
Occupation					
Paid employment	11	7.1			
Home duties	124	79.5			
Retired/pensioner	21	13.5			
Educational					
No school certificate or other qualifications	10	6.4			
School or intermediate certificate	111	71.2			
Higher school or leaving certificate	25	16.0			
Trad/apprenticeship (e.g. hairdresser, chef)	2	1.3			
University degree or higher	8	5.1			
Clinical status					
Duration of diagnosed hypertension			1-40		9.0 (5-13)
Number of Comorbidity disease			0-4		1.0 (1-2)
Number of Medicines			0-11		4.0 (3-6)
Blood pressure					
Systolic Blood Pressure Level[a]			110-200	145.8 (13.2)	
Controlled (<140 mmHg)	52	33.3			
Uncontrolled ($\geq$140 mmHg)	104	66.7			
Diastolic Blood Pressure Level[a]			55-116	80.3 (10.4)	
Controlled (<90 mmHg)	131	84.0			
Uncontrolled ($\geq$90 mmHg)	25	16.0			

Note. [a]According to the Report of the JNC VII's guideline

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Results

Table 2 *Comparison of the Thai Hill-Bone HBP Compliance Scale and blood pressure control status (n=156)*

Factors	N	%	Total HB		Reduced sodium intake		Appointment keeping		Medication taking	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
SBP										
Control	46	29.5	17.9	3.1	5.0	1.7	2.4	0.8	10.5	2.3
Uncontrolled	110	70.5	17.6	3.1	4.7	1.6	2.4	0.9	10.5	2.0
DBP										
Control	126	80.8	17.6	3.1	4.8	1.7	2.4	0.9	10.4	2.1
Uncontrolled	30	19.2	18.0	3.0	4.8	1.4	2.4	0.8	10.8	2.0
Total	156	100	17.7	3.1	4.8	1.6	2.4	0.8	10.5	2.1

Highest total score = 56 mean non-compliant to high blood pressure therapy

Lowest total score =14 mean good-compliant to high blood pressure therapy

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Results

Table 3 *KMO measure of Sampling Adequacy and Bartlett's test of Sphericity*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (14-items)		.64
Bartlett's Test of Sphericity (14-items)	Approx. Chi-Square	422.91
	df	91
	Sig. (p-value)	<.0001
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (7-items)		.71
Bartlett's Test of Sphericity (7-items)	Approx. Chi-Square	254.49
	df	21
	Sig. (p-value)	<.0001

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Results

Table 4 *Factor analysis and corrected item to total correlation (n=156)*

Item	Factor	Model 1 Communalities Extraction (14 items)	Model 2 Communalities Extraction (7 items)
	Factor 1: Reduced sodium intake		
3*	*How often do you consume salty food or food that contains high levels of sodium?*	0.51	-
4*	*How often do you add fish sauce into the food that you are going to eat?*	0.64	-
5*	*How often do you eat a la cartes from food stands?*	0.62	-
	Factor 2: Appointment keeping		-
6*	*How often do you take an appointment card from the hospital or the clinic when you leave?*	0.45	-
7	*How often do you miss a doctor's appointment?*	0.64	0.73
	Factor 3: Medication taking		-
1*	*How often do you forget to take the HBP medicine?*	0.62	-
2	*How often do you decide not to take the HBP medicine?*	0.60	0.41
8	*How often do you forget to pick up or deliberately decide not to pick up the prescribed medicine?*	0.75	0.75
9	*How often do you run out of your HBP medicine?*	0.71	0.24
10	*How often do you decide to stop taking your HBP medicine a few days before seeing your doctor?*	0.66	0.63
11	*When you think that your condition has improved, how often do you stop taking the medicine?*	0.64	0.64
12	*When you think that your condition is bad, how often do you stop taking the medicine?*	0.73	0.71
13*	*How often do you take somebody else's HBP medicine?*	0.73	-
14*	*When you feel less bothered about your condition, how often do you skip taking the HBP medicine?*	0.46	-
	Eigenvalues	2.85	2.66
	Percentage of variance	20.32	37.96
	Standardized Cronbach's Alpha	0.64	0.71
	Range of inter-item correlation	-0.14-0.58	0.03-0.58
	Range of corrected item to total correlation	-0.03-0.42	0.29-0.58

* corrected item to total correlation less than 0.25

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Results

Table 5 *Correlation between the Thai Hill-Bone HBP Compliance Scale total score and blood pressure level*

Variables	Systolic BP	Diastolic BP
Mean (SD)	145.83 (13.19)	80.27(10.40)
Thai Hill-Bone total score	r = .07	r = .11

Note. BP = Blood pressure; Thai Hill-Bone = the Thai Hill-Bone HBP Compliance Scale

Results

The Hill-Bone HBP Compliance Scale of the original version and the back-translation version.

Item	The source version	Back-translation version	Factor
1	How often do you forget to take your HBP medicine?	*How often do you forget to take the HBP medicine?*	Medication taking
2	How often do you decide not to take your HBP medicine?	*How often do you decide not to take the HBP medicine?*	Medication taking
3	How often do you eat salty food?	*How often do you consume salty food or food that contains high levels of sodium?*	Reduced sodium intake
4	How often do you shake salt on your food before you eat it?	*How often do you add fish sauce into the food that you are going to eat?*	Reduced sodium intake
5	How often do you eat fast food?	*How often do you eat a la cartes from food stands?*	Reduced sodium intake
6	How often do you make the next appointment before you leave the doctor's office?*	*How often do you take an appointment card from the hospital or the clinic when you leave?*	Appointment keeping
7	How often do you miss scheduled appointments?	*How often do you miss a doctor's appointment?*	Appointment keeping
8	How often do you forget to get prescriptions filled?	*How often do you forget to pick up or deliberately decide not to pick up the prescribed medicine?*	Medication taking
9	How often do you run out of HBP pills?	*How often do you run out of your HBP medicine?*	Medication taking
10	How often do you skip your HBP medicine before you go to the doctor?	*How often do you decide to stop taking your HBP medicine a few days before seeing your doctor?*	Medication taking
11	How often do you miss taking your HBP pills when you feel better?	*When you think that your condition has improved, how often do you stop taking the medicine?*	Medication taking
12	How often do you miss taking your HBP pills when you feel sick?	*When you think that your condition is bad, how often do you stop taking the medicine?*	Medication taking
13	How often do you take someone else's HBP pills?	*How often do you take somebody else's HBP medicine?*	Medication taking
14	How often do you miss taking your HBP pills when you are careless?	*When you feel less bothered about your condition, how often do you skip taking the HBP medicine?*	Medication taking

HBP = High Blood Pressure; *Reverse coding

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Discussion

∞ The reliability of overall items of the Thai scale shows 0.64 with standardized Cronbach's alpha, which is slightly lower than one in the original version scale (Cronbach's alpha = 0.74 and 0.84)

∞ Cronbach's alpha for all 14 items ranges from 0.43 to 0.82 *(Kripalani et al. 2009, Krousel-Wood et al. 2005, Lambert et al. 2006)*, the Thai scale showed 0.64

∞ The item analysis in this study indicates the inter-item correlations of 14-item ranges from -0.14 to 0.58 (average = 0.11), which is slightly lower than one in the original version scale (average of study 1 = 0.18, average of study 2 = 0.28)

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Thank you…

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