World Cultural Psychiatry Research Review
OFFICIAL JOURNAL OF
WORLD ASSOCIATION OF CULTURAL PSYCHIATRY

Original Paper

Validation in Lao of an instrument for measuring depression

Phitsada Siphantong, Marc Corbière, Aina Harimanana, Daniel Reinharz

Abstract. ***Introduction:*** *No instrument for measuring depression has been validated in the Lao language.* ***Objective:*** *To validate the Beck Depression Inventory (BDI-II) in the Lao language, in order to produce a short questionnaire, easily useable by any person in charge of detecting or managing health problems in the Lao PDR.* ***Methodology:*** *A translation-back-translation procedure of the BDI-II questionnaire with validation of content was performed prior to being administered to 210 patients with chronic rheumatic pain. Of these, 34 patients received a psychiatric diagnosis. Construct validity was assessed using exploratory factor analyses (principal component analyses with varimax rotation). Criterion validity was assessed by analyzing the association with the psychiatric diagnosis of depression, while convergent validity was assessed by analyzing the association with the intensity of pain measured using the Lao-validated Short-Form McGill Pain Questionnaire. Reliability was assessed through an inter-judge correlation.* ***Results:*** *Adaptation of the BDI-II in Lao produced an instrument with 3 dimensions (somatic, affective and cognitive) and 12 items. This instrument presented a high reliability and criterion validity. Furthermore, the results suggest a threshold score for the diagnosis of depression.* ***Conclusion:*** *A valid instrument for measuring the intensity of depression has been produced in the Lao language.*

Keywords: Depression, Beck Depression Inventory, Validation, Lao language, Intercultural Adaptation

WCPRR December 2010: 49-56. **© 2010 WACP**
ISSN: 1932-6270

INTRODUCTION

Depression is the fourth major cause of the global burden of disease (DALYs) and could become the second leading cause among 15-44 year-old persons of both sexes by 2020 (Murray & Lopez, 1997; Lopez & Mathers, 2006). It affects psychological (emotional and behavioral), physical and cognitive spheres, profoundly impacting the lives of the person affected as well as his/her family and environment (Dore & Romans, 2001; Suppes *et al*, 2001; Calabrese *et al*, 2003; Calabrese *et al*, 2004; Casey *et al*, 2004; Meyer *et al*, 2004; Kolotkin *et al*, 2006).

In low and middle income countries, depression is a largely neglected disease, even though treatment is affordable (Patel, 2007). For example, the nearly six million inhabitants of the Lao People's Democratic Republic (Lao PDR) must rely on only two psychiatrists, no psychologists and no psychiatric nurses. There is also no instrument to identify people at high risk of suffering from depression and to evaluate symptoms of depression that warrant intervention. In this context of scarcity combined with little knowledge about depression, providing health care professionals with a validated short questionnaire as a tool to screen for depression or assess depressive symptoms could contribute to better awareness of this disease by the healthcare system.

Correspondence to: Daniel Reinharz, MD, PhD, Département de médicine sociale et préventive, Pavillon Vandry, Université Laval.
Cité universitaire, Québec G1K 7P4, Canada.

mailto: Daniel.Reinharz@msp.ulaval.ca

Received March 9th, 2010. Accepted August 28th, 2010.

This study will address this need by validating the Beck Depression Inventory (BDI-II) (Beck *et al*, 1996a) in the Lao language. The BDI-II was selected because it was recently revised to correspond to DSM-IV criteria and because it has been used and validated in a population suffering from rheumatic pain, similar to this study's participants (Beck *et al*, 1996a; Harris & D'Eon, 2008). The BDI-II measures the presence and severity of 21 symptoms of depression, based on the diagnostic criteria of DSM-IV (American Psychiatric Association, 1994). Each item has 4 scores that determine the level of severity for a particular symptom (0 = minimal; 3 = severe). The BDI-II has excellent psychometric properties (Beck *et al*, 1988).

CONTEXT OF THE STUDY Lao PDR is a landlocked country situated in South-East Asia. Culturally, the country has been strongly influenced by Hindu culture brought through Siam and Khmer influence, as well as by Theravada Buddhism. Politically, the drive toward a sense of nation that led to its independence was primarily driven by the French colonizers, eager to limit Siam influence in Indochina (Evans, 1999).

Lao PDR is officially composed of 47 ethnic groups, commonly divided into 3 major categories: 1) the Lao Loum, or plain Lao, who represent 68% of the population and who gather ethnic groups that speak Lao or Thai languages; 2) the Lao Theung, or mountainside Lao, who represent 22% of the population and who speak a Môn-Khmer language; 3) the Lao Sung, or summit Lao, who represent 10% of the population and who speak either a Hmong-Mien or a Tibeto-Birma language (Mouvement lao pour les droits de l'homme, 2002).

The search for Lao-*ness* in such a diverse country has been a major concern since the early time of the colonization in the 19th century by the French. The French saw the emergence of a Lao-*ness* as a necessity to counter imperialistic tendencies, particularly of the Siam kingdom eager to gather under its own authority all territories speaking a Thai-related language (as were French-dominated Lao states). Threats of Siam invasions threatened the major purpose of the colonization of Lao territories, i.e. building a buffer state susceptible to protect French interests in Vietnam. Promoting a sense of Lao distinctiveness was seen as a hopeful strategy to justify the maintenance of this buffer-state. Among possible strategies to reach this goal, supporting the formalization of a national language inside the Tai-Kadai Tai linguistic group and not a mere Thai dialect, was deemed as the most promising. The long process of building a proper vocabulary, grammar and script culminated in 1975 with the seizure of power by the communist faction who was able to finally impose on the entire country a Lao Grammar specifically designed by the revolutionary movement to contribute to the unity of the nation under socialism (Enfield, 1999; Ivarsson, 1999). With the event of the Lao PDR, "speaking Lao [has come to] symbolize Lao-ness" (Evans, 1999). For the health care system as for any social system, considering the Lao language specificities in the evaluation of the population health can no longer be ignored.

MATERIALS AND METHODS

Translation of the BDI-II in Lao and study design

The French version of BDI-II (Beck *et al*, 1996b) was translated into Lao by one of the authors (PS) and translated back into French by a second translator not involved in the study. The French version was selected because, as a result of the colonization, many Lao colleagues speak this language and because of our own experience with the validated French version (Bonneville-Roussy *et al*, in press; Corbière *et al*, in press). The original and the back-translated versions were then compared by two researchers to produce a new version in Lao. Two Lao doctors not involved in the study and 5 patients evaluated the relevance of the items and their understanding of the resulting questionnaire. This new version was further validated on a sample of patients (n=210) with respect to its construct and criterion validities, as well as its reliability. This study was authorized by the ethics committees of Mahosot, Mittaphab and Setthathirat hospitals.

Participants

The sample was defined using ten patients per item for factor analyses. Since too few Lao PDR patients have a diagnosis of depression due to the shortage of mental health professionals and very poor training of these professionals in mental disorder management, patients suffering from chronic pain were considered to be the most suitable to allow us to have a reasonable percentage of depressive symptoms in the sample. All in-patients and out-patients with chronic pain (more than three months) who had been seen at any of the three targeted hospitals for a rheumatic problem – i.e., three teaching hospitals, Mahosot, Mittaphab and Setthathirat, from March to July 2009 – were approached. The study's goal was explained to potential participants by one of the researchers and only two patients refused to participate. Participants were then asked to answer the Short-Form McGill Pain Questionnaire (SF-MPQ) translated and validated in Lao (Wangkou *et al*, submitted) and the BDI-II Lao version. The BDI-II questionnaire was also administered to the first 40 patients twice, by two different researchers at half-day intervals.

Table 1 Characteristics of the sample (n=210)

	***N* (%)**	**Mean**	**Median**	**Range**	**Std Dev**
Gender					
Male	100 (47.62)				
Education					
Illiterate	50 (23.81)				
Elementary	51 (24.29)				
Secondary I	40 (19.05)				
Secondary II	29 (13.81)				
College-university	40 (19.05)				
Profession					
Public servant	31 (14.76)				
Employed	3 (1.43)				
Shopkeeper	17 (8.10)				
Worker	20 (9.52)				
Farmer	29 (13.81)				
Housewife	39 (18.57)				
Other	71 (33.81)				
Age		50.05	50	18-78	14.04
Income (kip*)		608K	325K	0-900K	1119K
Diagnosis					
Gout	54 (25.71)				
Rhumatoid arthritis	39 (18.57)				
Back pain	21 (10.00)				
Lumbar arthritis	17 (8.10)				
Polyarthritis	9 (4.29)				
Other	70 (33.3)				
Hospitalization	59 (28.09)				

* 100 000 kip = US $12 (July 2009)

The population under study (n=210) covered a wide range of socioeconomic conditions and rheumatic problems. A quarter of the participants were hospitalized (**Table 1**). In addition, 34 patients had a thoroughly psychiatric examination by one of the 2 physicians who have had a formal abroad-acquired training in psychiatry, for the presence or absence of depression. The psychiatrist was blinded to the results of DBI-II. These patients did not differ from another group of 34 patients randomly drawn among those without a diagnosis, on two variables tested: age (t test, p = 0.21) and gender (χ-square, p = 0.33).

Validation and analysis

Descriptive analyses (frequencies, extended, means and standard deviations) were conducted and the *construct validity* was assessed using exploratory factor analysis (principal component analysis with varimax rotation). Before conducting factor analyses, items for which more than 85% of respondents had given a similar response (e.g., a score of 0) were removed, as were items with a loading below .40 or a double saturation on several factors. Item # 9 (suicide), which was expected to show little variation, however, was retained. Various indices were produced: scree plot (and particularly presence of break(s)), eigenvalues, percentage of total variance and loading of items on each emerging dimension. The internal consistency of each dimension found in the factor analysis was finally assessed by Cronbach's α. To assess the *criterion validity* of the questionnaire produced by this procedure, we used a *t*-test to analyze the association with the diagnosis of depression. To assess the *convergent validity* we used a Pearson correlation test to analyze the correlation with pain scores measured by the Lao version of the McGill Pain Questionnaire. We used inter-judge analysis to assess reliability and applied a Pearson correlation test to the scores produced by the two administrations of the questionnaire (first 40 patients).

RESULTS For *construct validity*, items 3, 5, 6, 9 and 14 were removed before conducting exploratory factor analysis because more than 85% of the sample gave an answer of 0. After excluding other items with loadings below .40 or a double saturation on several factors, the factor solution was composed of 12 items spread out on three dimensions (**Table 2**). A break after 3 factors was apparent on the scree plot. Furthermore, this factor solution satisfactorily explained the variance (55% of total variance) at an empirical level and also supported a conceptual level with 3 dimensions, i.e., cognitive (4 items), affective (4 items) and somatic (4 items). Moreover, the dimensions demonstrated good internal consistencies from .65 to .69, considering the number of items included in each dimension (**Tables 2 and 3**). **Table 4** shows pain as assessed with the 12-item BDI in the sample population. For its *convergent validity*, the 12-item BDI-II showed a positive correlation with pain measurement assessed by the Lao validated McGill Pain Questionnaire (r=0.43, $p < 0.01$) and for its *criterion validity*, a statistically significant association with the diagnosis of depression, globally (p>0.0001) and with all three dimensions (somatic: $p < 0.001$; affective: $p < 0.05$; cognitive: $p < 0.0001$) (**Table 5**). The 12-item BDI had an excellent fidelity score (r=0.99) for inter-rater reliability.

Table 2 : Factor structure of BDI-II (n = 210)

Dimensions and items from the BDI-II	**Factors**		
	1	**2**	**3**
Somatic dimension			
18. Changes in appetite (S).	0.77		
16. Changes in sleeping patterns (S).	0.71		
20. Tiredness or fatigue (S).	0.68		
21. Loss of interest in sex (S).	0.67		
Affective dimension			
19. Concentration difficulty (A).		0.83	
13. Indecisiveness (A).		0.69	
8. Self-criticalness (C).		0.66	
4. Loss of pleasure (A).		0.58	
Cognitive dimension			
9. Suicidal thoughts or wishes (C).			0.75
2. Pessimism (C).			0.68
7. Self-dislike (C).			0.63
1. Sadness (A or C).			0.59
Eigenvalues	3.8	1.6	1.2
Variance after rotation	19.3	18.1	17.3

Parentheses refer to the initial dimension i.e. S= Somatic, C=Cognitive and A=Affective

Table 3 Means, Alpha and correlations between sub-scales of the BDI-12 items (n = 210)

	Somatic	Affective	Cognitive
Somatic	*.69* (M=1.11; SD= .68)		
Affective	.35*	*.69* (M=0.26; SD= 0.37)	
Cognitive	.33*	.48*	*.65* (M=0.50; SD= 0.51)

* p.<.01. Numbers in italics on the diagonal are Alphas.

Table 4 : Measures of depression in the population under study

Measure	Mean	Median	Range	Std Dev
BDI-II score	7.47	7	0-27	4.81
Somatic score	4.43	4	0-11	2.71
Affective score	1.03	0	0-8	1.47
Cognitive Score	2	1.5	0-12	2.04

Table 5 : Association between depression and diagnosis

	Mean	Std Err	Std Dev	95% IC	*P* value
BDI-12					
depression (n=14)	10.57	0.98	2.45	8.43 - 12.70	0.000
no depression (n=20)	5.35	0.54	3.69	4.20 - 6.49	
Somatic dimension					
depression (n=14)	6.64	0.66	2.49	5.19 - 8.08	0.004
no depression (n=20)	4.20	0.46	2.09	3.22 - 5.17	
Affective dimension					
depression (n=14)	1.42	0.35	1.34	0.65 – 2.20	0.047
no depression (n=20)	0.40	0.13	0.59	0.12 – 0.67	
Cognitive dimension					
depression (n=14)	2.50	0.33	1.45	1.66 – 3.33	0.000
no depression (n=20)	0.75	0.16	0.71	0.41 – 1.08	

T-test

DISCUSSION This version of the BDI with 12 items in Lao language has proven its validity because it complies with the conceptual dimensions of the instrument with a satisfactory internal consistency for all three dimensions (i.e., cognitive, affective, and somatic). Although this version is shorter, it is almost identical to the Harris *et al* questionnaire (Harris & D'Eon, 2008), has criterion and convergent validities and presents a very good fidelity score.

Validating the BDI-II in Lao language led to a shorter version of the questionnaire. This raises some intriguing questions related to how depression is felt in an Oriental culture compared to Western ones. First, it appears that the three items of the questionnaire that reflect signs of depression perceptible by the environment (#10 crying; #11 agitation; #17 irritability) are absent. We can speculate about the reason of this absence but we can suppose that a fear of embarrassing people in the community who might not know how to react to someone's depression is of utmost importance for Lao people, even if severely depressed.

Another group of items not included in the Lao version is the three questions that can be referred to a sense of regret for a past action (#3 past failures; #5 guilty feelings; #6 punishment feelings). If this is due to a feeling that *karma* doesn't give space to regret, a fear of analyzing past actions or a feeling that these questions were too intimate or disturbing, cannot be ascertained with the data we had. This is definitively a topic for future anthropological research.

As for the other absent items, it appears that each of them is conceptually close to one item retained in the Lao version (#12 loss of interest → #4 loss of pleasure; #14 worthlessness →#8 self-criticalness; #15 loss of energy → #20 tiredness or fatigue). We must emphasize that translating an instrument in Lao is challenging because, generally, Lao requires several words to describe concepts that can be expressed by a single word in English or French. Indeed the BDI-II has an average of 3 words per question in the French version, 2.19 in English and 5.23 in Lao. As a result, some nuances brought to some items in the attempt to reflect the conceptual difference between two close items that is well understood by English and French speakers, might not have been understood by the study participants, leading to an absence of variance for one of them.

Results show also than one item (#8 self-criticalness) appeared in the Lao version associated with the affective dimension, while in the literature it is usually found associated with the cognitive dimension. We can speculate that the concept is understood differently in Lao than in English of French, with more consideration for the felt consequences of self-criticism.

Altogether, this study suggests that depression might be differently constructed or experienced by Lao people compared to Western populations. However, the results also suggest that despite these differences, depression for Lao people can be evaluated and that there is now a validated instrument available for it.

Finally, we observe that these results already suggest possible values for discriminating depressive from non-depressive patients. The average score for patients with chronic pain was 5-6, while it was 10-11 for those who had a diagnosis of depression. The instrument can, therefore, be used in clinics and in studies on depression in Lao PDR. This validated tool will help us to address the many remaining questions about depression in Lao PDR, especially its prevalence and determinants. We hope that, in the near future, depression will no longer be a neglected disease in this country.

REFERENCES

American Psychiatric Association. *Diagnostic and statistical manual of mental disorders, 4th Edition*. Washington (DC), American Psychiatric Press, 1994

Beck AT, Steer RA, Garbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8: 77-100, 1988

Beck A, Steer RA, Brown GK. *Beck Depression Inventory-2nd Edition manual*. San Antonio (TX), The Psychological Corporation, 1996a

Beck AT, Steer RA, Brown GK. *Manuel de l'Inventaire de dépression de Beck (2e éd.)*. Toronto (Canada), Harcourt Brace and Company, 1996b

Bonneville-Roussy A, Corbière M, et al. Patterns of depressive symptoms among women experiencing acute/subacute and chronic pain. (*in press*).

Calabrese JR, Hirschfeld RM, Reed M, Davies MA, Frye MA, Keck PE, Lewis L, McElroy SL, McNulty JP, Wagner KD. Impact of bipolar disorder on a U.S. community sample. *Journal of Clinical Psychiatry*, 64: 425-432, 2003

Calabrese JR, Hirschfeld RM, Frye MA, Reed ML. Impact of depressive symptoms compared with manic symptoms in bipolar disorder: results of a U.S. community-based sample. *Journal of Clinical Psychiatry*, 65: 1499-1504, 2004

Casey P, Birbeck G, McDonagh C, Horgan A, Dowrick C, Dalgard O, Lethinen V, Ayuso-Mateos JL, Dunn G, Page H, Wilkinson C, Wilkinson G, Vazquez-Barquero JL; ODIN Group. Personality disorder, depression and functioning: results from the ODIN study. *Journal of Affective Disorders*, 82: 277-283, 2004

Corbière M, Bonneville-Roussy A, et al. Further validation of the BDI-II among people having chronic pain originating from musculoskeletal disorders. *Clinical Journal of Pain* (in press).

Dore G, Romans SE. Impact of bipolar affective disorder on family and partners. *Journal of Affective Disorders*, 67: 147-158, 2001

Enfield NJ. *Lao as a national language.* In: Evans G (Ed). *Laos, culture and society.* Chiang May, Silkworm Books, 1999

Evans G. *Introduction: what is Lao culture and society?* In: Evans G (Ed). *Laos, culture and society.* Chiang May, Silkworm Books, 1999

Harris CA, D'Eon JL. Psychometric properties of the Beck Depression Inventory - second edition (BDI-II) in individuals with chronic pain. *Pain*, 137: 609-622, 2008

Ivarsson S. *Towards a new Laos. Lao Nhay and the campaign or a national "reawakening" in Laos 1941-1945.* In: Evans G (Ed). *Laos, culture and society.* Chiang May, Silkworm Books, 1999

Kolotkin RL, Crosby RD, Corey-Lisle PK, Li H, Swanson JM. Performance of a weight-related measure of Quality of Life in a psychiatric sample. *Quality of Life Research*, 15: 587-596, 2006

Lopez AD, Mathers CD. Measuring the global burden of disease and epidemiological transitions: 2002-2030. *Annals of Tropical Medicine and Parasitology*, 100: 481-499, 2006

Meyer C, Rumpf HJ, Hapke U, John U. Impact of psychiatric disorders in the general population: satisfaction with life and the influence of comorbidity and disorder duration. *Social Psychiatry and Psychiatric Epidemiology*, 39: 435-41, 2004

Mouvement lao pour les droits de l'homme. *Rapport MLDH 2002 sur la situation au Laos.* 2002 [Retrieved from http://servizi.radicalparty.org/documents/index.php?func=detail&par=279.]

Murray CJ, Lopez AD. Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. *Lancet*, 349: 1436-1442, 1997

Patel V. Mental health in low- and middle-income countries. *British Medical Bulletin*, 81-82: 81-96, 2007

Suppes T, Leverich GS, Keck PE, Nolen WA, Denicoff KD, Altshuler LL, McElroy SL, Rush AJ, Kupka R, Frye MA, Bickel M, Post RM. The Stanley Foundation Bipolar Treatment Outcome Network. II. Demographics and illness characteristics of the first 261 patients. *Journal of Affective Disorders*, 67: 45-59, 2001

Appendix: Lao version of Beck Depression Inventory-II

ຂໍ້	A	B	C	D
1. ຄວາມໂສກເສົ້າ				
2. ການເບິ່ງໂລກໃນແງ່ຮ້າຍ				
3. ເສຍຄວາມພໍໃຈ				
4. ຄວາມຮູ້ສຶກໃນດ້ານລົບກັບໂຕເອງ				
5. ການຕຳນິຕົນເອງ				
6. ຄິດ ຫຼື ຢາກຂ້າຕົນເອງ				
7. ການລັງເລໃຈ				
8. ອາການຢາກນອນປ່ຽນແປງ				
9. ການຢາກກິນເຂົ້າປ່ຽນແປງ				
10. ການຂາດສະມາທິ				
11. ອິດເມື່ອຍ				
12. ຂາດຄວາມຕ້ອງການທາງເພດ				