

Impact on Participation and Autonomy Questionnaire: Psychometric Properties of the Thai Version

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Abstract. [Purpose] The present study aimed to cross-culturally translate and evaluate the reliability and validity of the Thai version of the Impact on Participation and Autonomy (IPA) in persons with spinal cord injury (SCI). [Subjects] One hundred and thirty-nine persons with SCI who lived in the community were recruited for this study. [Methods] The IPA was translated following the guideline for cross-cultural adaptation of self-report measures. The reliability and validity was examined in 139 persons with SCI. For the test-retest reliability, 30 participants completed the Thai version of the IPA twice with a 2-week interval. [Results] The translated questionnaire and its items had moderate to good reliability, with the ICC_(3,1) ranging from 0.76 to 0.93. The internal consistency for all domains was high, with Cronbach's alpha ranging from 0.86 to 0.90. The convergent validity, discriminant validity, and construct validity were supported. [Conclusion] The Thai version of the IPA is a reliable and valid instrument for assessing the level of community participation in Thai persons with spinal cord injury.

Key words: Assessment, Community participation, Spinal cord injury

(This article was submitted Jan. 11, 2013, and was accepted Mar. 1, 2013)

INTRODUCTION

One of the common outcomes measuring rehabilitation achievement in people with spinal cord injury is the level of community participation. Previous studies reported that participation directly reflected the potential to improve the quality of life (QOL) after SCI^{1, 2)}. This rather new concept has been used since the International Classification of Functioning, Disability and Health (ICF) replaced the former classification, the International Classification of Impairments, Disabilities, and Handicaps (ICIDH)^{3, 4)}. The concept of "participation" addressed in rehabilitation is defined in a positive way as the social involvement in a life situation with more autonomy and the individual's point of view, whereas the previous concept of "handicap" is restricted to the fulfillment of roles that were considered normal from a societal point of view³⁻⁶⁾.

In the handicap concept, the participation issue was observed quantitatively and objectively, such as the frequency with which an individual performed roles (e.g., hours of paid work). However, such measurement information does not capture the individual's perspective concerning the impact of the disease and the problems they experience in performing their life roles. Therefore, the more subjective measurements of participation, which assessed the perspective of the individual, were developed. Although the ICF model does not comprise a subjective dimension, replacement of the term handicap with participation and inclusion

of a broader range of life roles presents a scope compatible with capturing subjective information⁵⁾. Therefore, an outcome measure developed based on the ICF participation concept, which refers more to autonomy and the personal fulfillment of role would be an essential tool for personnel working in the rehabilitation field to evaluate and promote community participation after SCI.

Recently, three reviews focusing on the participation instruments were published⁷⁻⁹⁾. Among eight instruments particularly based on the ICF model, the Impact of Participation and Autonomy (IPA) is the one that is being increasingly used as a participation outcome instrument in clinical practice and rehabilitation research^{7, 10-14)}. This instrument was first developed in the Netherlands by Cardol et al. in 1999¹⁵⁾ and then translated into English by Sibley et al¹⁰⁾. This tool has good conceptual strength⁷⁾. It captures degree of perceived participation in two aspects: including perceived participation in various life situations and the experience of problems for participation. Good reliability and validity of the IPA were demonstrated in people with chronic disability, including people with SCI^{6, 10, 15, 16)}. Additionally, its responsiveness properties have also been proven^{13, 14)}.

In Thailand, assessing community participation in people with SCI after hospital discharge is still overlooked in the rehabilitation arena. A practical tool for this purpose was also warranted. Therefore, this study aimed to cross-culturally translate and then investigate the psychometric properties of the Thai version of the IPA as an instrument to be used to evaluate the level of community participation in the Thai SCI population.

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SUBJECTS AND METHODS

Initially, the participants were identified from the list of members of the Don't Drive Drunk Foundation, Thailand. (Many victims of traffic accidents caused by drunk driving have traumatic spinal cord injuries. This foundation aims to create awareness among drivers about dangers of alcohol-impaired driving.) Then, the snowball sampling technique was used to recruit the sample. The eligible participants were those aged from 18 to 55 years who sustained a traumatic SCI at least 1 year previously, had scores less than or equal to 11 on the Thai version of the Hospital Anxiety and Depression Scale, lived in the community, and used a wheelchair as their primary mobility tool. The procedure of the study was approved by the Ethics Committee, Mahidol University Institutional Review Board.

English version of the IPA¹⁶⁾ was translated into Thai with permission from the authors of the original Dutch version and the translated English version of the IPA. The translation process was performed following the guideline for cross-cultural adaptation of self-report measures, which include forward translation, synthesis of translation, back translation, cross-cultural adaptation and pretesting¹⁷⁾. Two forward translations were independently produced by native speakers of Thai, a physical therapist and a language expert who had no medical background. The two draft translations of the questionnaire were discussed and integrated into one common translation. This was translated back into English by two native speakers of English who were blinded to the original version. In the stage of cultural adaptation, all translations were reviewed and approved to produce the final version by expert committees including two physical therapists, one statistician, and one language professional. None of the items in the Thai version of the IPA were adapted. The final Thai version of the IPA was then evaluated for the reliability and validity.

This study was part of a study of the influential factors in community participation among persons with SCI¹⁸⁾. A total of 139 persons with SCI were recruited to determine the validity of the IPA. The WHOQOL-BREF-Thai version was selected as a validated questionnaire in this study because the WHOQOL-BREF domains contain similar traits as the IPA and the contents of items are applicable for individuals with SCI. Moreover, none of the validated community participation instrument (Thai version) was used in Thailand. To assess the reliability, the first 30 participants were asked to complete the IPA twice with a 2-week interval. Completion of the questionnaire took place in the participant's home or a convenient place. The completed questionnaires were checked to ensure that there was no missing data. After that, the data were statistically analyzed.

The IPA measures the degree of perceived participation in two aspects including the perceived participation in various life situations and the experience of problems. The IPA comprised 32 items in five domains (autonomy indoors, family role, autonomy outdoors, social life and relationships, and work and education) and 8 items of the experience of problems (mobility, self-care, family role, financial situation, leisure, social relation, work, and education). For

the former aspect, the participants responded to each item by grading his/her perceived participation and autonomy on a 5-point rating scale (range: very good, 0; very poor, 4). The latter aspect focused on the perceived problems in participation restriction measured on a 3-point rating scale: no problem, minor problem, and severe problem. Scoring was obtained by summing all item scores in each aspect. The participation score ranges from 0–128, and experience of problems scores ranged from 0–16, with higher scores reflecting more restrictions in participation (less community participation) and/or more experience of problems.

The WHOQOL-BREF, an abbreviated version of the WHOQOL, assesses health-related quality of life. The WHOQOL-BREF was translated into Thai and tested for its psychometric properties¹⁹⁾. The WHOQOL-BREF consists of 26 items, of which 24 items were grouped into four domains (physical health, psychological health, social relationship, and environment). The other two items are for overall quality of life and general health, respectively. Each item is graded on a 5-point rating scale. All the domain scores were computed by summing all items in each domain.

The statistical analysis of the data was performed using SPSS version 18.0. The intraclass correlation coefficient (ICC3,1) was used to examine the test-retest reliability for the subscale scores and total scores of the Thai version of the IPA. The internal consistency was analyzed by Cronbach's alpha. ICC values greater than 0.75 are considered good reliability, and those less than 0.75 indicate poor to moderate reliability²⁰⁾.

Spearman rank correlation coefficient was obtained to assess the convergent and discriminant validity for the Thai version of the IPA by correlation with the WHOQOL-BREF-Thai version. Correlations ranging from 0 to 0.25 suggest little or no relationship; values from 0.25 to 0.50 indicate a fair relationship; values from 0.50 to 0.75 indicate a moderate to good relationship; and values exceeding 0.75 indicate a good to excellent relationship²⁰⁾.

Factor analysis was also used to confirm the construct validity of the Thai version of the IPA.

RESULTS

One hundred and thirty-nine individuals with SCI were recruited in this study. The current age of the participants ranged from 18 to 55 years with an average age of 34.2 years (SD = 8.4). The duration after injury ranged between 1 and 38, with an average of 10.6 years (SD = 7.1). Seventy-nine percent of participants were men, and 64.7% had paraplegia. The characteristics of the participants are presented in Table 1.

The reliability test was done by using internal consistency and test-retest reliability. The internal consistency was high for the total IPA score (Cronbach's $\alpha = 0.95$) and all domains (Cronbach's $\alpha = 0.86$ – 0.90). The data showed a total IPA score ICC reliability of 0.93 and domain ICCs between 0.74 (social life and relationships) and 0.92 (autonomy indoors), indicating moderate to good reliability (Table 2).

Convergent validity of the IPA was supported by the

Table 1. Characteristics of the participants

	Number	Percent
Chronologic age (years)		
Mean (SD)	34.2 (8.4)	
Range	18–55	
Age at injury (years)		
Mean (SD)	23.5 (6.9)	
Range	3–46	
Duration after injury (years)		
Mean (SD)	10.6 (7.1)	
Range	1–38	
Gender		
Male	110	79.1
Female	29	20.9
Marital status		
Married	34	24.5
Single/divorced/widowed	105	75.5
Education level		
Primary school or below	16	11.5
Secondary school	74	53.2
College or above	49	35.3
Employment		
Working (full-time/part-time/student/volunteer)	113	81.3
Not working (unemployed)	26	18.7
Level of injury		
Quadriplegia	49	35.3
Paraplegia	90	64.7
Cause of injury		
Traffic accidents	101	72.7
Work accidents	10	7.2
Fall	13	9.4
Gunshot wound	12	8.6
Sport accidents	1	1.4
Etc.	2	0.7

Table 2. Reliability of the Thai version of the IPA

IPA	Cronbach's Alpha (N=139)	ICC(3,1) (N=30)
Total score	0.95	0.93
Autonomy indoors domain	0.90	0.92
Family role domain	0.89	0.90
Autonomy outdoors domain	0.86	0.88
Social life and relationships domain	0.88	0.74
Work and education domain	0.88	0.76

correlations between the IPA and four domains of the WHOQOL-BREF, the physical, psychosocial, social, and environmental domains. The correlations between the “autonomy indoors,” “family role,” and “autonomy outdoors” domains of the IPA and the “physical” domain of the WHOQOL-BREF were substantial ($r = -0.49$ to -0.56). Moreover, the correlation between “autonomy outdoors” of the

IPA and “social relation” of the WHOQOL-BREF showed higher correlation than expected ($r = -0.65$). The “social life and relationships” domain of the IPA was correlated with “social relation” of the WHOQOL-BREF ($r = -0.40$). The “work and education” domain of the IPA was correlated with the “psychosocial” domain of the WHOQOL-BREF ($r = -0.37$), also representing convergent validity.

Discriminant validity was supported by no correlation between the “autonomy indoors,” “social and relationships,” and “work and education” domains of the IPA and “environment” domain of the WHOQOL-BREF. The correlation between the “family role” domain of the IPA and “environmental” domain of the WHOQOL-BREF” was fair ($r=0.36$). However, the “autonomy outdoors” domain of the IPA could not be clearly demonstrated to have discriminant validity in this study (Table 3).

Construct validity was proved by factor loadings with 5 components, which showed that 68% of the total variance could be explained. Most variance was explained by the factor autonomy indoors (41%), followed by work and education (11%) (Table 4).

DISCUSSION

Community participation outcome is an important variable for evaluating the rehabilitation achievement in people with spinal cord injury. This study conducted cross-cultural translation and then investigated the psychometric properties of the Thai version of the IPA. In the process of cross-cultural adaptation, the authors considered that the item of “intimate relationship” was a quite sensitive question in traditional Thai culture. Specifically, Thai women should not have intimate relationships before marriage. This topic is concealed, and people usually avoided discussing it openly. However, in present Thai society, people have become rather expressive about their sexual behavior and open minded about couples cohabitating before marriage compared with in the past. Therefore, this item was considered to be still included in the Thai version of the IPA with the understanding that there may be missing data. The IPA was used to assess the activities involved in life situation and social roles in everyday life (such as fulfilling role at home, helping and supporting others, and spending leisure time). From the experts’ opinions, these aspects of functioning were also experienced in the lifestyles of Thai people. Thus, none of the items in the Thai version of the IPA were adapted.

The findings of this study showed that the Thai version of the IPA was a reliable and valid measure of community participation in Thai people with spinal cord injury. The test-retest reliability with a 2-week interval was high (ICC values = 0.76–0.93) for total score and all five domains, indicating that the Thai version of the IPA was stable over time. The internal consistency of the overall scale was also good (Cronbach’s $\alpha = 0.95$), reflecting that all items measured the same underlying construct. The result of good reliability of the IPA scale corresponded with previous studies^{6, 10}. Cardol et al. reported that the Cronbach’s alpha coefficient in each domain of the Dutch version of the IPA ranged from 0.81–0.91 and that the test-retest reliability with ICC values ranged from 0.83 to 0.91⁶. Sibley et al. showed that the Cronbach’s alpha coefficient in each domain of the translated English version of the IPA ranged from 0.86 to 0.94 and that the test-retest reliability with ICC values was more than 0.90¹⁰. Therefore, the Thai version of the IPA could be considered a reliable measure of community participation outcome.

Regarding the convergent validity, the 3 domains of the Thai version of the IPA including autonomy indoors, family role, and autonomy outdoors were correlated with the physical domain of the WHOQOL-BREF, supporting the convergent validity. The autonomy outdoors and social life and relationships domain of the Thai version of the IPA were also confirmed to have convergent validity by the moderate to high correlations with the social relation domain of the WHOQOL-BREF. Unexpectedly, the work and education domain of the Thai version of the IPA was not found to be correlated with the social relation domain of the WHOQOL-BREF in the present study. However, the work and education domain of the Thai version of the IPA showed moderate correlation with psychological domain of the WHOQOL-BREF, which was similar to the results of a study by Sibley et al.¹⁰. They found moderate correlation between the work and education domains of the English version of the IPA and the Functional Limitation Profile (emotional subscale) and SF-36 mental health component. A possible reason for this was that the content of items in the work and education domain of the Thai version of the IPA (such as the chance to do or keep a job the way one wants) and items in the psychological domain of the WHOQOL-BREF (such as satisfied in one’s life or the extent to which one feels life to be meaningful) might represent related issues of life. Noticeably, the duration after injury was long in most of the participants in this study, so they might have adjusted to their disability. Additionally, many participants in this study were employed. Therefore, an individual who could get the job as they wish might have good psychological functions. However, further studies would be required to support the convergent validity in the work and educational domain of the Thai version of the IPA for persons with SCI in different stages of adaptation.

Discriminant validity was confirmed by no correlation between 3 domains of the Thai version of the IPA, autonomy indoors, social life and relationships, and work and education, and the environmental domain of the WHOQOL-BREF. However, two domains of the Thai version of the IPA, family role and autonomy outdoors, could not be clearly demonstrated to have discriminant validity in this study. This may be the results of autonomy outdoors and family role being nearly related with all domains of the WHOQOL-BREF. Hence, future research might be required to confirm discriminant validity of these two domains by using other tools with distinctly different measuring concepts.

Construct validity of the Thai version of the IPA was supported by factor loadings with 5 components. Most of the items were loaded according to their designated factors. However, there were six items that had a loading pattern deviation. The items of spending money, supporting people, and living the life as one wants were loaded on the work and education domain. This may imply that those items shared the consequences of employment, which allowed people could spend their own money and support others as they wanted. The education or training item was not loaded on the work and education domain, but it was loaded on the autonomy outdoors domain. The two items composing leisure time and intimate relationship were not strongly loaded on

Table 3. Convergent and discriminant validity of the Thai version of the IPA (N=30)

IPA domains	WHOQOL-BREF			
	Physical	Psychosocial	Social relation	Environmental
Autonomy indoors	-0.56	-0.46	-0.44	<i>-0.30</i>
Family role	-0.55	-0.55	-0.47	-0.36
Autonomy outdoors	-0.49	-0.59	-0.65	-0.59
Social life and relationships	-0.39	<i>-0.34</i>	-0.40	<i>-0.33</i>
Work and education	<i>-0.37</i>	-0.37	<i>-0.33</i>	<i>-0.35</i>

Significant correlations are presented in bold.

Nonsignificant correlations are presented in italics.

Table 4. Factor loading of the five domains of the Thai version of the IPA

Factor	AI	WE	FR	SR	AO
Explained variance	41%	11%	7%	5%	4%
2a. My chances of getting washed and dressed the way I wish are	.832				
2b. My chances of getting washed and dressed when I want to are	.811				
2c. My chances of getting up and going to bed when I want to are	.725				
2d. My chances of going to the toilet when I wish and need to are	.708				
1a. My chances of getting around in my house where I want to are	.655				.434
1b. My chances of getting around in my house when I want to are	.605				.527
2e. My chances of eating and drinking when I want to are	.487	.343		.326	
8d. My chances of achieving or keeping the position that I want, in my paid or voluntary work are		.858			
8b. My chances of doing my paid or voluntary work the way I want to are		.855			
8a. My chances of getting or keeping a paid or voluntary job that I would like to do are		.812			
8c. My contacts with other people at my paid or voluntary work are		.800			
8e. My chances of getting different paid or voluntary work are		.659			
9a. My chances of getting the education or training I want are		.280			.599
3c. My chances of getting heavy tasks done around the house (e.g., cleaning), either by myself or by others, the way I want them done are			.841		
3e. My chances of getting minor repairs and maintenance work done in my house and garden, either by myself or by others, the way I want them done are			.833		
3d. My chances of getting housework done, either by myself or by others, when I want them done are	.356		.806		
3f. My chances of fulfilling my role at home as I would like are			.750		.319
3a. My chances of contributing to looking after my home the way I want to are	.334		.720		.326
3b. My chances of getting light tasks done around the house (e.g., making tea or coffee), either by myself or by others, the way I want them done are	.485		.518		
4a. My chances of choosing how I spend my own money are		.558	.180		
6c. The respect I receive from people who are close to me is				.853	
6e. The respect I receive from acquaintances				.827	
6d. My relationships with acquaintances are				.826	
6b. The quality of my relationships with people who are close to				.773	
6a. My chances of talking to people close to me on equal terms are	.337			.576	.466
6f. My chances of having an intimate relationship are		.325		.380	.403
7a. My chances of helping or supporting people in any way are		.378		.332	.372
1d. My chances of going on the sort of trips and holidays I want to are	.394				.643
6g. My chances of seeing people as often as I want are					.638
1c. My chances of visiting relatives and friends when I want to are	.444				.612
5a. My chances of using leisure time the way I want to are		.327	.308	.366	.107
10. How able am I to live my life how I want to		.518			.350

AI = autonomy indoors, WE = work and education, FR = family role, SR = social life and relationships, AO = autonomy outdoors

the same structure, which was similar to the results of Cardol's study⁶). Thus, these six items might need to be further confirmed to have construct validity. However, most of the items of the Thai version of the IPA were contained in the same domains as the English version of the IPA. Therefore, the Thai version of the IPA could be considered to have acceptable construct validity.

In conclusion, the present findings provide supportive evidence of appropriate psychometric properties of the Thai version of the IPA for measuring community participation in people with spinal cord injury. It is a reliable and valid instrument that can be used to evaluate the level of community participation. In addition, it might be used as a guideline for developing interventions to promote community participation for Thai persons with spinal cord injury.

The limitation of this study was that we used only one instrument (WHOQOL-BREF) to examine the validity of the Thai version of the IPA. This might limit the results for discriminant validity, especially in the autonomy outdoors and family role domains. Therefore, a future study may require distinctly different measurement concepts to confirm the discriminant validity of these two domains.

ACKNOWLEDGEMENTS

The authors wish to thank the participants who took part in the study and the Don't Drive Drunk Foundation in Thailand for their list of disabled members. The authors are grateful to Ms. Thida Suwansakornkul, Dr. Donald Persons, and Mr. Marc Steeb for their kind assistance with the forward-backward translation.

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