The Validity and Reliability of the WHO Schedules for Clinical Assessment in Neuropsychiatry (SCAN Thai Version): Anxiety Disorders Section

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Background: *Anxiety disorders are some of the most prevalent psychiatric disorders, have early onset, are chronic and can cause functional impairment. It is, therefore, crucial to establish an accurate diagnosis for treatment and research purposes.*
Objective: *To test the validity and reliability of the W.H.O. Schedules for Clinical Assessment in Neuropsychiatry (SCAN Thai Version): Anxiety Disorders Section.*
Material and Method: *The linguistic clarity of the psychiatric schedules for Thais was tested by psychiatrists from the country's four regions. The psychiatrists were competent in the use of the schedules and their underlying objectives. Then between October 2004 and August 2005, Reliability of SCAN: anxiety disorder section was tested among 30 participants, including patients with anxiety disorders and normal volunteers.*
Results: *Based on reactions from Thais and consultations from competent psychiatrists, content validity was established. The duration of interviews for anxiety disorders section averaged 45.1 min (SD = 13.5). The reliability determined by Cohen's kappa coefficient for the 83 items that related to anxiety disorders in the SCAN were in Section 3, 4, 5. This overall inter-rater reliability was 0.79 (SD = 0.22), which were in substantial level of agreement. The overall intra-rater reliability was rated by the same psychiatrist 2 weeks apart. The result was 0.84 (SD = 0.21), which was near perfect agreement. There were three items (3.6%) of fair agreement and five items (6%) of moderate agreement that were caused from discrepancy of item definitions and the subjectivity of raters.*
Conclusion: *The Anxiety Disorders Sections of the WHO Schedules for Clinical Assessment in Neuropsychiatry (SCAN Thai Version) were an effective tool for assessing symptoms of anxiety disorders among Thais.*

Keywords: *Semi-structured interview, Schedules for clinical assessment, Neuropsychiatry, Validity, Reliability, Anxiety disorders, Panic disorder, Phobic disorder, Obsessive-compulsive disorder, Generalized anxiety disorder*

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Anxiety disorder is a state of pathological anxiety that is characterized by autonomy (spontaneous occurred or triggered by stimuli, tension, and autonomic nervous system over-activity), intensity (in which the severity exceeds the individual's capacity to bear the level of intensity), duration (usually persistent or chronic), and behavior (coping ability is impaired, with disabling behavior). According to Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV), anxiety disorders are classified into many types, including panic disorder, specific phobia, social phobia, obsessive-compulsive disorder (OCD), post-traumatic stress disorder(PTSD), acute stress disorder, and generalized anxiety disorders[1].

Anxiety disorders are among the most prevalent psychiatric conditions in most population

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studies. Studies have persistently shown that they produce inordinate morbidity, utilization of health care services, and functional impairment[2,3]. Several studies also suggest that there is an association between anxiety disorders and allergies, high fever, immunological diseases, infections, epilepsy, connective tissues diseases, and risk factors for the development of some cardiovascular and neurological disease[4]. Two major studies in the United States have estimated the prevalence rates for a variety of anxiety disorders (the Epidemiological Catchment Area (ECA) study and the National Comorbidity Survey (NCS)) study. The estimated lifetime prevalence rates for individual anxiety disorders are panic disorder (2.3-2.7%), generalized anxiety disorder (4.1-6.6%), OCD (2.3-2.6%), PTSD (1-9.3%), and social phobia (2.6-13.3%)[5-7]. The prevalence of specific anxiety disorders appears to vary between countries, cultures, assessment methods, measurement tools used, etc. The lifetime prevalence rates for panic disorder ranged from 1.4 per 100 in Edmonton, Alberta, to 2.9 per 100 in Florence, Italy, with the exception of Taiwan which is 0.4 per 100[8].

Despite the widespread use of psychiatric diagnostic interviews i.e. The Structure Clinical Interview for DSM-III-R(SCID)[9], Diagnostic Interview Schedules(DIS)[10], which is based on Diagnostic and Statistical Manual of Mental disorders of the American Psychiatric Association, have the inevitable limitations from internationally use. The WHO-Composite International Diagnostic Interview (CIDI), which is highly structured interview schedules, yielded less flexibility for clinical judgment[11]. There are also the use of psychiatric rating scales to assess the severity of anxiety disorders (*i.e.* Hamilton Rating Scale for Anxiety[12], Panic Disorder Severity Scale[13], and The Yale-Brown Obsessive Compulsive Scale[14]. However, psychiatrists need a comprehensive schedule covering all the psychopathological phenomena presenting in anxiety disorders. To ensure the accuracy of diagnosis, the interpretation of symptoms must be conformed and matched to the patient's subjective experience. Moreover, no true gold standard exists against which to test the validity of any new psychiatric diagnostic technique(s). Furthermore, the traditional use of the clinical based interview can produce variable diagnostic conclusions depending on the interviewer, the interviewee, and the interaction between them.

The Schedules for Clinical Assessment in Neuropsychiatry (SCAN) constitute a semi-structured clinical interview for use by trained clinicians to assess and diagnose psychiatric disorders among adults[15].

SCAN's core is a Present State Examination (PSE) that has been tested globally for its validity and reliability. SCAN was developed within the framework of the WHO and the National Institute of Mental Health (NIMH) Joint Project on Diagnosis and Classification of Mental Disorders, Alcohol and Related Problems. The use of SCAN gives flexibility in the diagnosis of mental disorders based on the current International Classification of Disease (ICD), Diagnostic and Statistical Manual (DSM) systems, and diagnostic systems that may be developed in the future. A major purpose of SCAN is to allow worldwide comparisons of psychiatric diagnoses[16,17]. The uses of SCAN 's semi-structured interview for epidemiological research of anxiety disorders will therefore increase[18].

The present study aimed to test the validity and reliability of the Anxiety Disorders Section of SCAN's Thai version.

Material and Method

After translating the original English version of SCAN to Thai and back-translating to establish its validity, the following SCAN anxiety disorders sections were extracted, section 3 (worrying, tension, etc.), section 4 (panic, anxiety, and phobias), and section 5 (obsessional symptoms). Symptoms of post-traumatic stress disorder were not included in the present study because section 13 of SCAN (stress related disorders) will be tested for reliability in another study. The section 3, 4, and 5 would be used to conduct interviews and testing for validity and reliability.

The Ethics Committee for Khon Kaen University reviewed and approved the study protocol and informed consent was then obtained from patients and normal subjects before conducting the interviews. Between October 2004 and August 2005, the authors conducted semi-structured interviews using the Anxiety Disorders Section of the Thai version of SCAN, both on anxiety disordered patients and normal volunteers, at Srinagarind Hospital, Khon Kaen University, Khon Kaen, Thailand.

The process of validity and reliability testing were accomplished as follows:

1. Content validity: Two psychiatrists well-versed in SCAN arrived at a consensus on the original meaning of each items and whether the Thai version conserved this. The comprehensibility of language was then tested among Thais from all four regions of the country. Reflections, comments, and suggestions from the Thais' interviewed were assessed then summarized

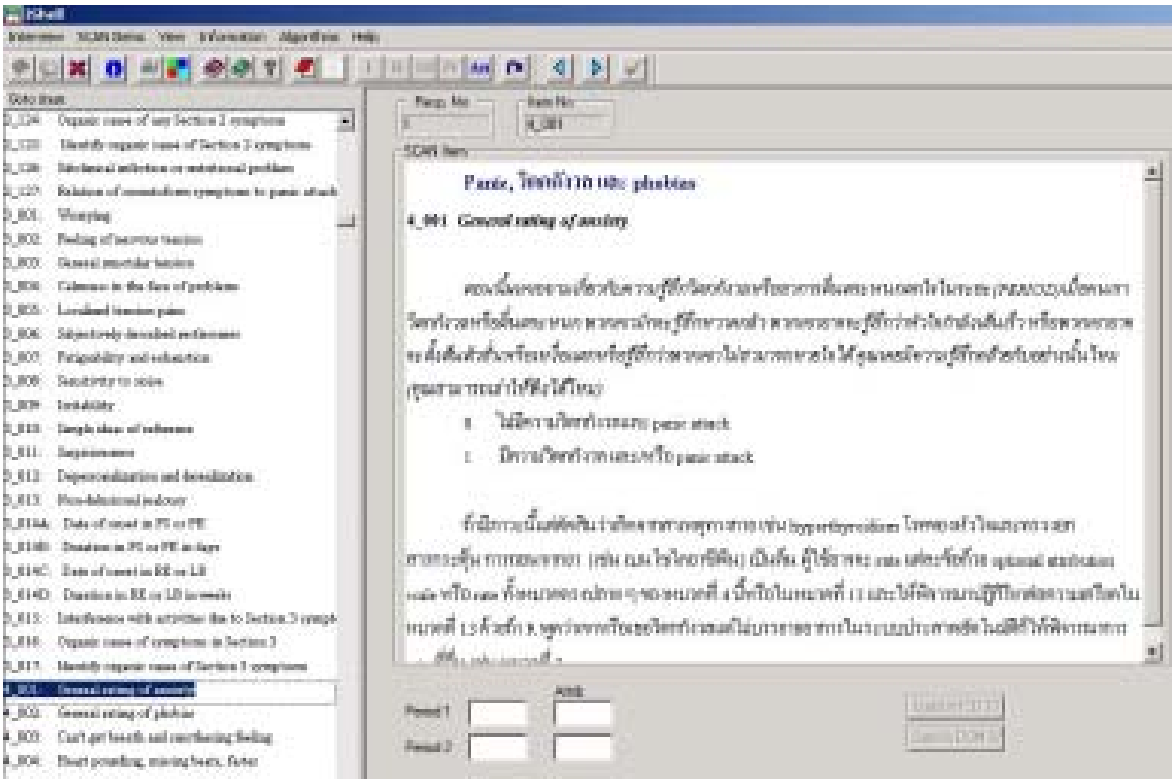

Fig. 1 WHO I-Shell program SCAN 2.1: Anxiety Disorders Section 4 (Thai version)

during a consensus meeting of the two psychiatrists (PS and KT). With permission from WHO, the final Thai version was incorporated into the SCAN I-Shell program running on Microsoft Windows (Fig. 1).

2. Reliability study: The present sample size comprised 30 subjects (15 anxiety disordered patients and 15 normal volunteers). Anxiety disorders were not uncommon to be found among normal volunteers. The patients (from either in- or out-patient departments) were identified using either the ICD-10 or the DSM-IV criteria. All subjects had to be over 14 years of age, ethnic Thais (*i.e.* fluent in, and able to understand, spoken Thai). All subjects were interviewed by a psychiatrist familiar with SCAN: Anxiety Disorders Section. With permission from each subject, the interviews were recorded on digital video.

2.1 Inter-rater reliability: Two psychiatrists (KT and RP) who were trained in the use of SCAN) independently rated the interviews; either live or on video; and,

2.2 Intra-rater reliability: One of the psychiatrists (KT) re-rated the video 2 weeks later.

Statistical analysis

Inter- and intra-rater reliability was determined from the agreement between raters; calculated using the kappa statistic (κ) for categorical data or the Intra-class Correlation for continuous data[19,20]. The simple percentage of agreement was used whenever the κ statistic could not be calculated. All statistics were done using STATA 7.0.

The predefined level for the degree of agreement was: 1 = poor agreement (κ < 0.00); 2 = slight (κ: 0.00-0.20); 3 = fair (κ: 0.21-0.40); 4 = moderate (κ: 0.41-0.60); 5 = substantial (κ: 0.61-0.80); and, 6 = near perfect (κ: 0.81-1.00)[21].

Results

Content validity was performed by two psychiatrists (PS and KT). Some adaptations were made to words or sequence of sentences describing symptoms to make them more understandable in the Thai cultural and linguistic context.

To verify the linguistic clarity, one of the researchers (KT) interviewed 80 volunteers, representing the four regions of Thailand (20 volunteers per

region), and tested their understanding of the terms used in the SCAN (Thai version). All of the comments and suggestions (*i.e.* for comparable meanings using local idioms) were gathered and the most suitable (*i.e.* understandable and conserving the original meaning) chosen.

The reliability study commenced with 30 subjects, nine males [30%] and 21 females [70%] aged between 22 and 74 years old, averaged 40.2 (10.4), including both anxiety disorders and normal volunteers to ensure a full range of scores and spectrum of symptoms. The participants had an education varied from primary school to master degree level which had an average of 9.6 (5.1) years in formal education. Every one understood Thai and were all Buddhists. The interviews took between 23.7 and 71.2 minutes, average 45.1 (13.5) minutes and none of the subjects dropped out during the interviews.

SCAN Section 3: Worrying, tension, etc.

The mean inter- and intra-rater reliability-κ SD for the 14 items in this section was 0.75 (0.17) and 0.92 (0.08), respectively. Almost all of the κ indicated substantial agreement to near perfect; except for the item 13: non-delusional jealousy – inter-rater reliability that had fair agreement κ = 0.29(0.13) (Table 1-3).

SCAN Section 4: Panic, anxiety, and phobias

The mean inter- and intra-rater reliability-κ SD for the 56 items in this section was: 0.80 (0.23) and 0.83 (0.23), respectively. Again, the majority of the κ indicated substantial agreement to near perfect except for items 24: Anxious foreboding with autonomic symptoms- inter-rater reliability that had fair agreement κ = 0.37(0.12). There were three items that had intra-rater reliability in moderate level; item 30; Traveling away from home, item32: Being alone, and item 41: Flying (Table 1-3).

SCAN Section 5: Obsessional symptoms

The mean inter- and intra-rater reliability-κ SD for the 13 items was 0.76 (.21) and 0.76 (0.15), respectively which showed overall substantial agreement for this section. The item 12 (Content of obsessional symptoms limited to another disorder) yielded fair agreement in inter-rater reliability κ = 0.23 (0.08). Item 8 (Relation of anxiety to obsessional symptoms), item 2 (Obsessional checking and repeating) had moderate agreement (Table 1-3).

The overall inter-rater reliability-κ for the 83 items in all sections was 0.79 (SD = 0.22); indicating substantial agreement. The overall intra-rater reliability-κ for the 83 items in all sections was 0.84 (SD = 0.21), indicating near perfect agreement.

Table 1. Agreement of each section determined by κ statistic

Section	No. of items	Inter-rater reliability κ (SD)	Intra-rater reliability κ (SD)
3	14	0.75 (0.17)	0.92 (0.08)
4	56	0.80 (0.23)	0.83 (0.23)
5	13	0.76 (0.21)	0.76 (0.15)
All sections	83	0.79 (0.22)	0.84 (0.21)

Table 2. Inter-rater reliability profile for each section

Section	Poor	Slight	Fair	Moderate	Substantial	Near perfect	Total
3	-	-	1	-	7	6	14
4	-	-	1	-	17	38	56
5	-	-	1	1	5	6	13
All sections	-	-	3	1	29	50	83

Table 3. Intra-rater reliability profile for each section

Section	Poor	Slight	Fair	Moderate	Substantial	Near perfect	Total
3	-	-	-	-	1	13	14
4	-	-	-	3	7	46	56
5	-	-	-	1	4	8	13
All sections	-	-	-	4	12	67	83

Discussion

The assessment of psychiatric symptoms is based on interviewing and relatively subjective, it has a tentative to vary among patients, interviewers, settings etc. The utmost advantage of SCAN is the use of a semi-structured interview that gives flexibility to the interviewers to further explore the contents of symptoms and bottom-up approach that group symptoms as much as possible before making a diagnosis. Another advantage is SCAN used cross-examination techniques, which provides well-defined symptoms criteria to help interviewers match their own clinically relevant symptom concepts with the symptoms experienced/expressed by the patients before being given the score. This is very crucial because anxiety, worrying, and tension are very common experiences amongst people, so it is prone to give a false positive rate among normal populations which will over-estimate the prevalence of anxiety disorders.

In the content validity process of SCAN (Thai version)-anxiety disorders sections, the authors had adapted some of the sentences, phrases, and words from the original SCAN (English version)[22] to make SCAN-Thai: anxiety disorders sections more understandable in the Thai linguistic and social context. These types of emendations are acceptable practice in translation science as long as the original meaning(s) is preserved. After testing SCAN in Taiwan, Cheng et al concluded that cross-cultural implementation of SCAN was practicable[23].

The reliability of SCAN (Thai version) Anxiety Disorder Sections (Sections 3, 4, and 5) were acceptable determined from the value of kappa, which shown substantial level of agreement between rater and near perfect agreement within the same rater. The good agreement might be due to the authors use of psychiatrists well-versed in SCAN to rate (and re-rate) the interviews along with the use of glossary of SCAN[24] that provided the definitions of each items.

The reliability results confirmed the international application of SCAN and were in concordance with a Spanish reliability study (of SCAN Spanish version), which also reported a high degree of reliability[25]. Even though SCAN should be used by experienced clinicians, Rijnders et al showed that less experienced (but well-trained) interviewers were able to reliably apply SCAN[26].

There was one item in each of Section 3, 4, 5 which had fair agreement (κ: 0.21-0.40) among inter-raters. They consist of item 3.013-Non-delusional jealousy, item 4.024-Anxiety foreboding with autonomic symptoms, and item 5.012-Content of obsessional symptoms limited to another disorder. When considered into details of these items, some consideration should be exercised before applying to Thais.

Item 3.013-Non-delusional jealousy from 30 participants: the agreement between rater was 86.67% but calculated kappa = 0.29 (SD = 0.13). From the statistical view, the discrepancy came from invariability of data. However, from methodological view, it might due to gender effect of raters that had different interpretation to jealous feelings. As mentioned in the glossary of SCAN that the importance placed on infidelity varies between cultures and between sexes, caution should be used when making a rating[24].

Item 4.024-Anxiety foreboding with autonomic symptoms, the agreement between rater was 60%, the calculated kappa = 0.31 (SD = 0.11). From the definition of SCAN, the subject fears that something dreadful is going to happen and the foreboding is accompanied by autonomic symptoms. However, from Okasha et al, 1994 patients with panic disorder showed less anxious foreboding than patients with generalized anxiety disorders[27]. This implied that anxious foreboding does not need to be accompanied by autonomic symptoms. The present study also supported from the finding that many participants had substantial intensity of anxious foreboding without autonomic symptoms. This may raise the issue of socio-cultural difference of symptom in this item.

Items 5.012- Content of obsessional symptoms limited to another disorder. The agreement between rater was 90% but the calculated kappa = 0.23 (SD = 0.07). Again, this was due to invariable data. Another explanation might be that this item relied on interviewer's judgment based on limited data. This weakness was also noted by Rijnders et al, so, at the risk of neglect, special attention should be paid to items that have no explicit interview questions[26].

Nevertheless, some cautions should be exercised when using the 5 of 83 (6%) items with moderate agreement (*i.e.* κ = 0.41-0.60). The main reasons are due to some lack of consensus between raters, minor inconsistency within rater, and items that do not have explicit interviewing questions where raters need to use their own judgment in rating. As reported by Andrews et al, whenever clinical judgment is involved in administering SCAN, agreement between the interviewer and observer is limited to moderate levels, which is less than that for CIDI-a highly structured interview[28]. The practical solution then is to re-check the scores and criteria used for rating (among raters) by

consulting the SCAN glossary when in doubt[24].

Limitations

1. A limitation to the present study was that during the reliability study, the authors recruited only participants from Srinagarind Hospital, Khon Kaen (Northeast Thailand).

2. The reliabilities were tested exclusively for anxiety disorder sections. In true clinical settings, it is not uncommon that other psychiatric conditions (such as depression) would be found as co-morbidities.

3. The authors did not evaluate SCAN *vs* clinical interviews to ensure concurrent validity. Such an analysis was beyond the objective of the present study. However, the authors believe further study of concurrent validity should be done.

Conclusion

The overall 'SCAN (Thai version): Anxiety Disorders Section' has good content validity and reliability. A few items need to be studied before rating due to discrepancy of item's definitions, gender, and socio-cultural differences. Training in the use of SCAN in Thailand should be set up to build familiarity with the terms and approaches. Research, based on SCAN as an instrument in Thailand, should prove fruitful.

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ความถูกต้องและความเชื่อถือได้ของ WHO schedules เพื่อ clinical assessment ใน neuropsychiatry ฉบับภาษาไทย หมวดโรควิตกกังวล

ธวัชชัย กฤษณะประกรกิจ, พูนศรี รังษีขจี, สุชาติ พหลภาคย์, จิราพร เขียวอยู่

วัตถุประสงค์*: เพื่อศึกษาความถูกต้องและความเชื่อถือได้ของ WHO schedules เพื่อ clinical assessment ใน neuropsychiatry ฉบับภาษาไทย หมวดโรควิตกกังวล*

วัสดุและวิธีการ*: ทำการทดสอบความถูกต้องเชิงภาษาในประชากรทั่วไปทั้ง 4 ภาคของประเทศไทย และความเห็นจากผู้เชี่ยวชาญ และทดสอบความเชื่อถือได้ใน กลุ่มตัวอย่างที่ประกอบด้วยผู้ป่วยความผิดปกติทางอารมณ์และอาสาสมัครปกติ จำนวน 30 ราย ระหว่างเดือน ตุลาคม พ.ศ. 2547 - กันยายน พ.ศ. 2548*

ผลการศึกษา*: ทำให้ได้แบบสัมภาษณ์กึ่งโครงสร้างที่มีความถูกต้องเชิงภาษา ผู้ถูกสัมภาษณ์สามารถเข้าใจความหมายของข้อคำถามและรักษาความหมายได้ตรงกับต้นฉบับภาษาอังกฤษ ใช้เวลาในการสัมภาษณ์เฉลี่ย 45.1 นาที (SD = 13.5) และมีค่าความเชื่อถือได้จากการวัดความสอดคล้องตรงกันจากข้อคำถาม 83 ข้อจากข้อคำถามบทที่ 3,4,5 ระหว่างผู้สัมภาษณ์ 2 คนเท่ากับ 0.79 (SD = 0.22) และความสอดคล้องตรงกันในผู้สัมภาษณ์คนเดียวกันที่ให้คะแนน 2 ครั้ง เท่ากับ 0.84 (SD = 0.21) ซึ่งเป็นระดับความสอดคล้องเกือบสมบูรณ์ อย่างไรก็ตามพบว่ามีข้อคำถามที่มีค่าความสอดคล้องในระดับพอใช้ 3 ข้อ (ร้อยละ 3.6) และระดับปานกลางอยู่ 5 ข้อ (ร้อยละ 6) ซึ่งควรจะมีการตรวจสอบความเข้าใจของผู้สัมภาษณ์ก่อนการให้คะแนน*

สรุป*: ได้แบบสัมภาษณ์กึ่งโครงสร้างมาใช้ในการประเมินอาการของโรควิตกกังวลในคนไทยได้อย่างมีประสิทธิภาพ*