Original Article

Validity and Reliability of Thai Psychiatric Aggression Scale

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Objective: To develop a tool for assessment of aggression in Thai psychiatric patients as well as validation of this scale.

Materials and Methods: This research is an analytical study. The authors generated the scale items by reviewing the actual aggressive behaviors of psychiatric patients from nurse records and reviewed literature regarding aggression scales and measurement. Subsequently, the assessments were constructed and piloted with 10 evaluators on 10 examples of aggressive incidents.

Results: Thai psychiatric aggression scale is composed of verbal aggression, physical aggression, emotional aggression, and self-harm with total of 18 items. The content validity index was 0.94, and internal consistency, Cronbach's alpha, was 0.86. When considered against inter-rater reliability, intraclass correlation revealed a score of 0.97. The test-retest reliability using Spearman-Brown coefficient was 0.85.

Conclusion: The result of the study demonstrated that the scale is statistically valid and reliable for future clinical assessments and researches.

Keywords: Psychiatric, Aggression, Validity, Reliability

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Aggression is defined as a behavior that intended to harm another who does not wish to be harmed. Aggressive behaviors, included physical, verbal, and emotional aggression, are commonly found among psychiatric patients worldwide and considered as one of the major reasons for hospital admission. Data from acute psychiatric ward in Netherland revealed 133 aggressive incidents per 100 admissions in two years[1]. In addition, Mauri et al[2] reported that aggressive incidents occurred approximately in 11 to 15 percent of in-patient psychiatric patients. In the psychiatric in-patient unit at Siriraj Hospital, during the 2003 to 2010 period, the data reported nearly 200 incidents of aggressive behaviors per year. These occurrences compromised the security of the patients themselves, their caretakers, and the hospital staff. The occurrences influenced some of the hospital staff to feel discouraged in continuing their work as aggressive behaviors persisted[3,4].

Treatment setting, safety of the environment, and trained medical staff are crucial components that influenced the effectiveness in management of aggression[5]. Moreover, the evaluation and screening of aggression is the key to success[6]. Accurate and pragmatic assessments are required for appropriateness of treatment and prevention of potential harms for both the patients and hospital staffs on duty[3,7]. Although, the standard evaluation is based on clinical judgement, thus it contained some limitations especially in regard to validity and reliability[8]. The researchers aimed to develop an observational aggression scale to be the first Thai aggression scale suited to Thai culture while upholding international standards.

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Materials and Methods

Ten participants from various positions, including two psychiatrists, four psychiatric residents, and four psychiatric nurses, referred to here as medical team members who assessed aggressive behaviors in 'psychiatric patients' by watching 'recorded simulated incidents'.

First step: preparation and development of aggression scale

The collection of aggressive incidents recorded by psychiatric nurses in psychiatric patients in psychiatric ward was compiled with literature reviews of aggressive behaviors in psychiatric patients[9]. The data assisted in establishing the scope of aggressive behaviors found in Thai patients. The researchers identified 18 items and separated them into four components as followed: four items regarding verbal aggression, five items for physical aggression, six items for self-harm, and four items for emotional aggression. The items are rated in according to the likert scale:

0 indicated no aggressive behaviors
1 indicated mild aggressive behaviors
2 indicated moderate aggressive behaviors
3 indicated severe aggressive behaviors

Second step: recording of simulated aggressive incidents[10]

Ten simulated incidents varied according to level of aggressiveness after consultation with psychiatric experts. Subsequently, the researchers invited volunteers, comprised of second and third year psychiatric residents, to role play as the aggressive psychiatric patients in addition to directing, rehearsing, and producing the video. The completed video was revised by psychiatric experts until they approved the experiment.

Third step: conducting the research[11-14]

The researchers distributed the assessment scale derived in the first step to the participants, and the participants then watched ten simulated incidents and rated them accordingly. Total scores range from 0 to 54. After a period of four weeks, the participants re-watched the videos and conducted the assessment once more.

The researchers then consulted another five experts in the field of psychiatry to verify the validity of the content after calculating the Item Content Validity Index [I-CVI]. The researchers accepted the items that I-CVI was 0.8 or more; if I-CVI score was less than 0.8, the items would be removed from Thai psychiatric aggression scale. The researcher analyzed internal consistency using Cronbach's alpha, inter-rater reliability using Intra-class Correlation Coefficient [ICC], and test-retest reliability using Spearman-Brown coefficient. Statistical analysis was performed by using SPSS version 18.

Results

The content validity of Thai psychiatric aggression scale is 0.94, considered high in accuracy. The evaluation reported accuracy of the content between 0.8 to 1.0 except for item 18, lack of emotional control that scored 0.6. This may be due to the ambiguity of the description itself, or that it was too broad, making it difficult for accurate assessment.

Table 1 demonstrated internal consistency using Cronbach's alpha revealed 0.86 which is considered highly accurate. When accounting for the components, the value of item total correlation is higher than 0.3. The Cronbach's alpha if an item is deleted, excluding item 9 (holding an object that considered a weapon), item 10 (inflict physical injuries on others), and item 12 (self-harm that does not inflict physical injuries such as hair pulling), has the value of item total correlation of 0.3 and Cronbach's alpha if an item is deleted higher than 0.862. Therefore, it can be determined that when excluded the items out of the aggression scale contributed to higher internal consistency.

Inter-rater reliability was 0.97 which is considered reliable. When take into account, the items and the components the ICC is higher than 0.8 except for item 3, sarcasm (ICC = 0.75), and item 12, self-harm that does not inflict a physical wound such as hair pulling (ICC = 0.76), which is still considered reliable.

Test-retest reliability using Spearman-Brown coefficient scored 0.85 when considered the 4 components and 18 items, considered reliable if the score is higher than 0.6. There were 4 items that scored high reliability, which are item 2 (Rowdy behaviors), item 10 (inflict physical wound on others), item 11 (avoidance behaviors), and item 14 (self-harm that inflicts severe injuries that may be life-threatening). The only exception was item 13, self-harm that inflicts minor injuries that scored only 0.35 which is considered unreliable.

In summary, the overall assessment of Thai psychiatric aggression scale comprised of both validity and reliability in an acceptable level proving to be

Table 1. Internal consistency of each item of Thai psychiatric aggression scale

Type of displayed aggression	Item total correlation (r)	Cronbach's alpha (α) if item is deleted
Verbal aggression	5 items α = 0.855	
1) Speak with harsh, abrupt tones	0.774	0.839
2) Speak in loud tones	0.765	0.839
3) Use of sarcasm	0.336	0.860
4) Belittle or threaten others	0.511	0.854
5) Use of profanity	0.637	0.847
Physical aggression	6 items α = 0.647	
6) Physically shaken with anger	0.800	0.837
7) Agitation, unable to sit still	0.794	0.839
8) Physically damage various objects	0.509	0.853
9) Seek out possible weapon	0.034	0.869
10) Physically harm others	0.068	0.865
11) Avoidance behaviors	0.315	0.862
Self-harm	3 items α = 0.476	
12) Self-harm that does not inflict wounds such as hair pulling	0.135	0.866
13) Self-harm that inflicts minor injuries	0.289	0.861
14) Self-harm that inflicts major injuries that maybe life threatening	0.350	0.890
Emotional aggression	4 items α = 0.817	
15) Frowning face	0.531	0.852
16) Crossed eyes	0.512	0.853
17) Irritability	0.800	0.840
18) Lack of emotional control	0.748	0.843

beneficial in terms of a clinical tool for assessments, follow-ups, and clinical research. Only some items scored lower than the standard value which were item 18 (lack of emotional control) with CVI less than 0.8 due to ambiguity in definition; item 9 (holding an object that considered a weapon), and item 10 (inflict physical injuries on others) having the value of Cronbach's alpha lower than 0.8; item 12 (self-harm that does not inflict physical injuries such as hair pulling) having the value of Cronbach's alpha and inter-rater reliability lower than 0.8, among others, were subsequently removed from the scale for a more reliable and valid standard. However, item 10 (inflict physical juries on others), demonstrated clear physical aggression and is accountable for injuries of hospital staff and others, and was considered to be the primary cause for hospital admission for many psychiatric patients. Therefore, the research team used their clinical judgement to retain this item for further study.

Discussion

In the development process of Thai psychiatric aggression scale, the authors had categorized and compiled each item from various sources such as literature review and records of actual incidents[3]. Each item has a clear and precise component as well as statistical reliability and validity in comparison to scales developed in other countries such as Overt Aggression Scale Yudofsky (Inter-rater reliability >0.75)[15] and Modified overt aggression scale (Interrater: = 0.85 to 0.94, Test-retest reliability = 0.72)[16]. Furthermore, this is the first Thai aggression scale that has not been translated from other country's measurement scale.

The present research was conducted based on simulated incidents as representation of validity and accuracy of the aggression scale. This method is beneficial because aggressive behaviors tend to be spontaneous and unpredictable which made it difficult to assess by different medical team members at the same time. Simulated record incidents were significant as the medical residents who performed had direct experiences with aggressive psychiatric patients. Similarly, Huang et al[17] had used this method, performed by trained volunteers making it simpler for assessments by multiple assessors. Furthermore, it can

Table 2. Inter-rater reliability and test-retest reliability of each item of Thai psychiatric aggression scale

Type of displayed aggression	Inter-rater reliability	Test-retest reliability
Verbal aggression	0.963	0.847
1) Speak with harsh, abrupt tones	0.981	0.827
2) Speak in loud tones	0.996	0.961
3) Use of sarcasm	0.751	0.822
4) Belittle or threaten others	0.910	0.653
5) Use of profanity	0.956	0.788
Physical aggression	0.977	0.829
6) Physically shaken with anger	0.951	0.769
7) Agitation, unable to sit still	0.972	0.796
8) Physically damage various objects	0.944	0.789
9) Seek out possible weapon	0.863	0.701
10) Physically harm others	0.947	0.909
11) Avoidance behaviors	0.972	0.911
Self-harm	0.970	0.701
12) Self-harm that does not inflict wounds such as hair pulling	0.757	0.793
13) Self-harm that inflicts minor injuries	0.687	0.350
14) Self-harm that inflicts major injuries that maybe life threatening	0.998	0.960
Emotional aggression	0.955	0.733
15) Frowning face	0.803	0.722
16) Crossed eyes	0.924	0.703
17) Irritability	0.973	0.856
18) Lack of emotional control	0.897	0.795
Total	0.971	0.852

be re-evaluated for reliability and validity which could not be done in actual incidents.

Another advantage of the present study is the diversity of the assessors which comprised of psychiatrists, psychiatric residents, and psychiatric nurses in comparison to previous studies[15] which was assessed only by psychiatrists, and 'Violence scale' by psychiatric nurses. Inter-rater reliability and test-retest reliability was highly reliable and therefore it could be used by psychiatric residents and psychiatric nurses to yield similar results. For further study, the assessment could be conduct by emergency room nurses, or physicians of other specialty.

Although this research was done with simulation incidents conducted by psychiatric residents, actual incidents do contain details that may differ and unable to be replicated. Before this scale is use in public, it should be conduct in psychiatric patients to find an appropriate cut-off point for standardization and assessment.

Furthermore, the likert scale presented some limitations in the aspect of computing total scores as it could not distinguish the severity of aggressive behaviors which may need to be modified before use in clinical setting.

What is already known on this topic?

Aggressive behaviors have a variety of measurements which depend on assessors and methods of assessment. The well-known aggression scales were developed mainly for standardization of management. Still, there is no standard aggression scale that suitable for Thai culture.

What this study adds?

This study developed the first Thai aggression scale suited for Thai culture and was not translated from other country's scale. The researchers conducted the study comprehensively by simulated aggressive incident with multi-level of aggressiveness, and the diversity of the assessors. Besides, inter-rater reliability and test-retest reliability was high, so it could be used by psychiatrist and other psychiatric staffs.

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Potential conflicts of interest

None.

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Appendix 1. *แบบประเมินพฤติกรรมก้าวร้าวในผู้ป่วยจิตเวช (Thai psychiatric aggression scale)*

คำแนะนำ: ทำเครื่องหมายวงกลมรอบตัวเลข "ระดับคะแนน" ที่ท่านเลือกในแต่ละหัวข้อการประเมิน

Instruction: circle the relevant score in each category

หัวข้อการประเมิน Type of displayed aggression	*ระดับคะแนน Score*			
พฤติกรรมก้าวร้าวทางวาจา: Verbal aggression				
1) ใช้น้ำเสียงกระด้างห้วนหรือกระแทกกระทั้น Speak with harsh, abrupt tones	*0*	*1*	*2*	*3*
2) พูดเสียงดังขึ้นหรือเอะอะโวยวาย Speak in loud tones	*0*	*1*	*2*	*3*
3) ใช้คำพูดประชดประชัน Use of sarcasm	*0*	*1*	*2*	*3*
4) ใช้คำพูดต่อว่าหรือข่มขู่ Be little or threaten others	*0*	*1*	*2*	*3*
5) ใช้คำพูดหยาบคายหรือสบถ Use of profanity	*0*	*1*	*2*	*3*
พฤติกรรมก้าวร้าวทางกาย: Physical aggression				
6) มีท่าทีโกรธตัวและมือสั่นหรือกำหมัด Physically shaken with anger	*0*	*1*	*2*	*3*
7) มีอาการกระวนกระวายพลุ่งพล่านหรือนั่งไม่ติดที่ Agitation, unable to sit still	*0*	*1*	*2*	*3*
8) กระแทกหรือกระทำความรุนแรงกับสิ่งของ Physically damage various objects	*0*	*1*	*2*	*3*
9) ทำร้ายร่างกายให้ผู้อื่นบาดเจ็บ Physically harm others	*0*	*1*	*2*	*3*
10) มีพฤติกรรมหลบหนี Avoidance behaviors	*0*	*1*	*2*	*3*
พฤติกรรมรุนแรงต่อตนเอง: Self-harm				
11) ทำร้ายตนเองจนเป็นแผลฟกช้ำหรือถลอกเล็กน้อย Self-harm that inflicts minor injuries	*0*	*1*	*2*	*3*
12) การทำร้ายตนเองจนเกิดการบาดเจ็บรุนแรงหรืออาจทำให้เสียชีวิตได้ Self-harm that inflicts major injuries that may be life threatening	*0*	*1*	*2*	*3*
ความรุนแรงทางอารมณ์: Emotional aggression				
13) สีหน้าบึ้งตึง Frowning face	*0*	*1*	*2*	*3*
14) ตาขวางหรือแววตาไม่เป็นมิตร Crossed eyes	*0*	*1*	*2*	*3*
15) อารมณ์โกรธหรือหงุดหงิด Irritability	*0*	*1*	*2*	*3*

ระดับคะแนน

Scoring guide

0 หมายถึงไม่มีพฤติกรรมดังกล่าว infers 'No aggressive behaviors'

1 หมายถึงมีพฤติกรรมระดับเล็กน้อย คือ ปรากฏพฤติกรรมเพียงเล็กน้อย infers 'Mild aggressive behaviors'

2 หมายถึงมีพฤติกรรมระดับปานกลาง คือ ปรากฏพฤติกรรมเห็นได้ชัดเจนเป็นส่วนใหญ่ infers 'Moderate aggressive behaviors'

3 หมายถึงมีพฤติกรรมระดับรุนแรง คือ ปรากฏพฤติกรรมดังกล่าวชัดเจนและมีความรุนแรงมากตลอดการสังเกต infers 'Severe aggressive behaviors'