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Reliability and Feasibility of Arabic Version of Patient and Observer Scar Assessment Scale

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Abstract: Post Burn Scar are probably the scars with the highest impact on the quality of life both physical and psychological effects related to excessive scarring may hamper the quality of life. Therefore, there is a need for a simple, reliable and a feasible assessment scale to use. This study was conducted to evaluate the reliability and feasibility of an Arabic version of Patient and Observer Scar Assessment Scale (POSAS). This study was conducted in three steps, as follows: Step 1: POSAS was translated from English to Arabic (examining both forward and backward translations); Step 2: the test-retest reliability of the scale was investigated; and Step 3: time factor was investigated to assess the feasibility of scale, the scale was reliable and feasible on 30 patients who attending outpatient clinic and had their scar assessment by Arabic version of POSAS. The Arabic version of (POSAS) demonstrated a high degree of internal consistency and stability over time, the cronbach?s alpha for observer scale of (POSAS) = 0.872. and for patient scale of (POSAS) = 0.901, percentage of missed data 0.00% and The scale needed in average about 2.53± 1.38 minutes to be answered. The Arabic version of the (POSAS) is an easy-to-administer, simple and reliable tool for assessment of burn scar and for use on Egyptian population. It is advised to be used in clinical practice as well as scientific researches.

Key words: Burn · Scar · Patient and Observer Scare Assessments Scale · Reliability · Feasibility

INTRODUCTION

Attempts have been made by many to create an ideal method for subjective scar rating. This approach is, in many ways, problematic and demands several simplifications. There are different types of skin scars and it would be unrealistic to assume that completely different scar types could be measured with a single scale. On the other hand, the clinical importance of a scar often depends more on the location than the type or size of the scar. Scars that are easily hidden are less disadvantageous than ones that are difficult to cover [1]. The Patient and Observer Scar Assessment Scale (POSAS) is a scar rating scale. It consists of two separate scales for the observer and the patient. The parameters have a scale of 0-10 and the total score ranges from 0 to 90 points. It achieved a slightly better reliability than the VSS, although neither of the two scales could be considered reliable if used in a clinical setting by one observer. When used in a clinical study with a group of scars by a group of four observers, the reliability could be considered acceptable [2].

The POSAS is an important improvement on previous subjective scar assessment methods because it also records the patient's opinion and scar symptoms. In fact, the scale places more weight on the patient component than on the observer component. The information acquired from the patient component of the scale can be used to test the validity of other scar assessment methods [3]. Most of the questionnaires were written by the English language, which cannot be used by others who have mother tongues other than English, so it becomes a necessity to translate these questionnaires to other languages, which can be used by other [4]. From the advantages of cross-cultural adaptation, procedures are strengthening the reliability of

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instruments, comparison of the results of the same study between different countries with different languages [5] As psychometric properties of an instrument may be variable from time to time, from culture to another and from context to another [6]. In contrast to that, Arabic language is the mother tongue in Egypt and several Egyptians have limited English language proficiency so this study provided translation of the patient and observer scar assessment scale from English to Arabic and it provided its feasibility and reliability to evaluate the burn scars.

MATERIALS AND METHODS

Design of the Study: This study is a prospective observational study; it followed the recommendations of Borsa *et al*. [7] and Sousa and Rojjanasrirat [8] for testing of feasibility and internal consistency and test retest reliability of a translated instrument.

Participants: The study sample consisted of 30 patients with burn scars from physical therapy department in Helwan sulfuric Hospital and 10 experts in the medical field, from physicians and physical therapists. Each participant signed the consent form.

Methods: The POSAS was translated and adapted into Arabic language following the process postulated by Sousa and Rojjanasrirat [8]. The following steps were followed:

- Forward translation Scale in English was translated to Arabic to produce two forward translated versions of the scale (A1 and A2).
- Development of the preliminary initial translated Arabic version. Both versions (A1 and A2) were compared and merged.
- Blind back-translation: The preliminary initial translated version of the scale was translated to English to produce two back-translated versions (B1 and B2).
- The researchers compared back-translation of the scale B1 with B2 and also compared both B1 and B2 with the original English scale regarding instructions, items, response format, wording, sentence structure, meaning and relevance and they found that there were no significant differences between them, so the preliminary initial translated Arabic version was considered to be the final Arabic version of the scale (Appendix 1 and 2).

Data Collection and Statistical Analysis: This part of the study is intended to present the collected data through measuring the reliability and feasibility of an Arabic version of Patient and Observer Scar Assessment Scale (POSAS) by statistical analysis of the face validity using Clarity index. Reliability of the reliability and feasibility of an Arabic version of Patient and Observer Scar Assessment Scale (POSAS) statistically measured by assessment of the Internal consistency by Cronbach's alpha. For observer part of the scale, Intra rater reliability by Intra-class Correlation Coefficient (ICC). The Intra-class Correlation Coefficients (ICC) together with their 95% confidence intervals were used to evaluate the agreement between the test and the retest total scores (Arabic version of Patient and Observer Scar Assessment Scale (POSAS)). The same criteria were used to assess the item-by item agreement. Values of ICC less than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability and values greater than 0.90 indicate excellent reliability. Statistical analysis was conducted using SPSS for Windows, version 23 (SPSS, Inc., Chicago, IL). Alpha level set at 0.05.

RESULTS

As shown in Table (1) the internal consistency was measured by Cronbach's alpha. Results revealed that the internal consistency of observer scale of the Arabic version of Patient and Observer Scar Assessment was good with Cronbach's alpha = 0.872. Also, results revealed that the internal consistency of patients scale of the Arabic version of Patient and Observer Scar Assessment was good with Cronbach's alpha = 0.901.

Face validity was measured by index of clarity for the Arabic version of Patient and Observer Scar Assessment Scale. As shown in Table 2, according to the experts' opinions the mean index of clarity of all 26 items was 99.26%. Twenty-four item were clear, with index of clarity = 100%. Items number 11 and 12 had index of clarity = 90%, experts' suggested modification to the translation of items with index of clarity <100% had been done.

Inter Rater Reliability of Observer Part of Arabic Version of Patient and Observer Scar Assessment Scale: The inter-rater reliability of the Arabic version of Patient and Observer Scar Assessment Scale was established by testing 60 subjects by two testers. As shown in Table (3) the total value of observer scale mean ±SD for the first tester and for the second tester. The inter-rater reliability

Table 1: Internal consistency of the Arabic version of Patient and Observer Scar Assessment by Cronbach's Alpha:

		Cronbach's Alpha if Item Deleted	Cronbach's Alpha of scale as total
Observer scale	Vascularity	0.825	0.872
	Pigmentation	0.857	
	Pliability	0.882	
	Thickness	0.864	
	Relief	0.856	
	Surface area	0.845	
	Overall Opinion of the Observers	0.841	
Patients scale	Question 1	0.929	0.901
	Question 2	0.904	
	Question 3	0.865	
	Question 4	0.890	
	Question 5	0.872	
	Question 6	0.867	
	Overall Opinion of the Patient	0.858	

Table 2: Experts' opinions according to ICV of the Arabic version of Patient and Observer Scar Assessment

No	Item	N. of expert agree	N. of expert not agree	Item index of clarity
	Vascularity			
1.	Pale	10	0	100%
2.	Pink	10	0	100%
3.	Red	10	0	100%
4.	Purple	10	0	100%
5.	Mix	10	0	100%
	Pigmentation			
6.	Hypo	10	0	100%
7.	Hyper	10	0	100%
8.	Mix	10	0	100%
	Thickness			
9.	Thicker	10	0	100%
10.	Thinner	10	0	100%
	Relief			
11.	More	9	1	90%
12.	Less	9	1	90%
13.	Mix	10	0	100%
	Pliability			
14.	Supple	10	0	100%
15.	Stiff	10	0	100%
16.	Mix	10	0	100%
	Surface area			
17.	Expansion	10	0	100%
18.	Contraction	10	0	100%
19.	Mix	10	0	100%
	Patient Scale			
20.	Question 1	10	0	100%
21.	Question 2	10	0	100%
22.	Question 3	10	0	100%
23.	Question 4	10	0	100%
24.	Question 5	10	0	100%
25.	Question 6	10	0	100%
26.	Question 7	10	0	100%
Mean index of clarity for all items		99.26%		

Table 3: Intra-class Correlation Coefficient (ICC) for Test re-test Inter rater reliability of Arabic version of Observer Scale for Scar Assessment

	Observer scale	
Observar	Observar (1)	Observar (2)
Mean	37.47	35.23
±SD	11.887	13.221
ICC	0.950	
P-value	0.0001	
Significance level	Significant	

Table 4: Descriptive statistics of time of 60 sheets

Study group (n=30)	Time in Minutes
Mean	2.53
Median	2
±S. D.	1.38
Minimum	1
Maximum	7

(between two testers) using the Intra-class Correlation Coefficient (ICC) showed that there was a high reliability of Arabic version Observer Scale (with ICC = 0.95 and P-value < 0.05).

Time Needed to Answer the Questions: The scale needed in average about 2.53± 1.38 minutes to be answered as shown in Table (4) which is considered to be good results.

DISCUSSION

The original scale was translated forward into two Arabic versions then preliminary initial translated version was developed then it was backward translated into two English versions then pre-final version was developed then it was tested by the experts for face and content validity, then it was tested by the patients for feasibility, internal consistency, reliability and test retest reliability.

Validity of the Arabic version of POSAS revealed that the Arabic version of POSAS has excellent face validity as mean index of clarity equaled 99.26%, scale-level clarity index UA equaled 100% and the mean of proportion of clearance (clear responses) equaled 100%, also it has excellent content validity as S-CVI equaled 93.59%.

Feasibility of the Arabic version of Patient and Observer Scar Assessment Scale showed that the Patient and Observer Scar Assessment Scale has high feasibility because it needed three minutes or less to be answered in about 78% of all sheets, also it needed 5 minutes or less to be answered in about 98.3% of all sheets.

The results of the current study came in agreement with Van *et al*. [9] who stated that missing rate on the item level was considered acceptable if no single item had a missing rate exceeding 10% and completion time was considered acceptable if 95% of sheets were completed in less than 15 minutes.

Internal consistency and test retest reliability of the Arabic version of POSAS showed that the Arabic version of POSAS has good internal consistency and good test retest reliability as Cronbach's alpha equaled = 0.872. The process of reliability assessment of POSAS with test-retest reliability for inter-rater reliability (between two observers) using the Intra-class Correlation Coefficient (ICC) showed that there was a high reliability of Arabic version observer scale.

Also, the intra rater reliability for observer scale of two readings with a two weeks in-between showed that there was a high reliability of Arabic version observer scale.

Farther more, the intra rater reliability for patient scale between the first reading of the patient and the second reading after two weeks showed that there was a high reliability of Arabic version of Patient Scale for Scar Assessment with because Pearson Correlation Coefficient (r) showed that there was a high reliability of Arabic version of Patient Scale for Scar Assessment for the total score.

The results of the current study came in agreement with Fenton and Neil, [10] which approved that the correlation coefficient is a number between -1 and 1 that determines whether two paired sets of data (such as those for height and intelligence of a group of people) are related.

CONCLUSION

The Arabic version of the (POSAS) is an easy-to-administer, simple and reliable tool for assessment of burn scar and for use on Egyptian population. It is advised to be used in clinical practice as well as scientific researches.

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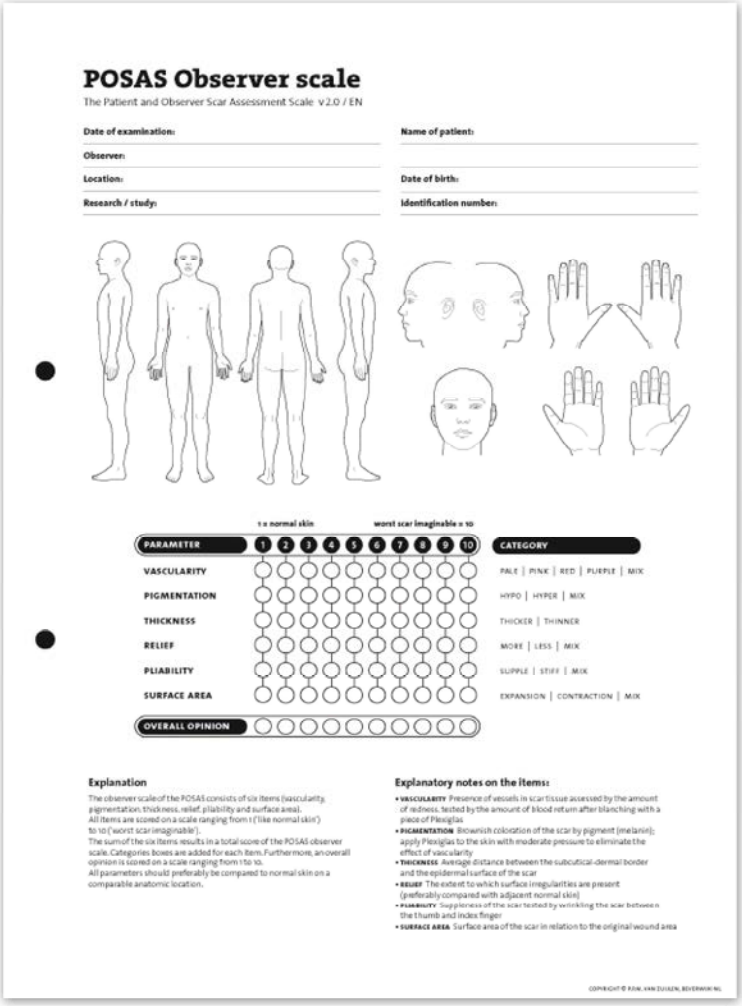
Appendix 1:
(Original English Scale POSAS Patient scale)



POSAS Observer scale

The Patient and Observer Scar Assessment Scale v2.0 / EN

Date of examination: | Name of patient:
Observer:
Location: | Date of birth:
Research / study: | Identification number:

1 = normal skin — worst scar imaginable = 10

PARAMETER	1	2	3	4	5	6	7	8	9	10	CATEGORY
VASCULARITY											PALE | PINK | RED | PURPLE | MIX
PIGMENTATION											HYPO | HYPER | MIX
THICKNESS											THICKER | THINNER
RELIEF											MORE | LESS | MIX
PLIABILITY											SUPPLE | STIFF | MIX
SURFACE AREA											EXPANSION | CONTRACTION | MIX
OVERALL OPINION											

Explanation

The observer scale of the POSAS consists of six items (vascularity, pigmentation, thickness, relief, pliability and surface area). All items are scored on a scale ranging from 1 ('like normal skin') to 10 ('worst scar imaginable'). The sum of the six items results in a total score of the POSAS observer scale. Categories boxes are added for each item. Furthermore, an overall opinion is scored on a scale ranging from 1 to 10. All parameters should preferably be compared to normal skin on a comparable anatomic location.

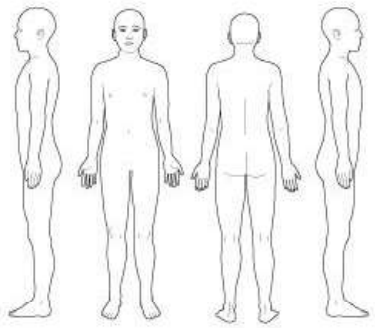
Explanatory notes on the items:

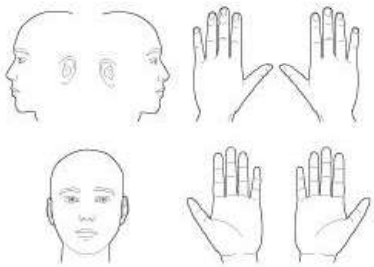
- **VASCULARITY** Presence of vessels in scar tissue assessed by the amount of redness, tested by the amount of blood return after blanching with a piece of Plexiglas
- **PIGMENTATION** Brownish coloration of the scar by pigment (melanin); apply Plexiglas to the skin with moderate pressure to eliminate the effect of vascularity
- **THICKNESS** Average distance between the subcutical-dermal border and the epidermal surface of the scar
- **RELIEF** The extent to which surface irregularities are present (preferably compared with adjacent normal skin)
- **PLIABILITY** Suppleness of the scar tested by wrinkling the scar between the thumb and index finger
- **SURFACE AREA** Surface area of the scar in relation to the original wound area

POSAS Patient scale

The Patient and Observer Scar Assessment Scale v 2.0 / EN

Date of examination:	**Name of patient:**
Observer:	
Location:	**Date of birth:**
Research / study:	**Identification number:**





	1 = no, not at all … yes, very much = 10
HAS THE SCAR BEEN PAINFUL THE PAST FEW WEEKS?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
HAS THE SCAR BEEN ITCHING THE PAST FEW WEEKS?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○

	1 = no, as normal skin … yes, very different = 10
IS THE SCAR COLOR DIFFERENT FROM THE COLOR OF YOUR NORMAL SKIN AT PRESENT?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
IS THE STIFFNESS OF THE SCAR DIFFERENT FROM YOUR NORMAL SKIN AT PRESENT?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
IS THE THICKNESS OF THE SCAR DIFFERENT FROM YOUR NORMAL SKIN AT PRESENT?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
IS THE SCAR MORE IRREGULAR THAN YOUR NORMAL SKIN AT PRESENT?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○

	1 = as normal skin … very different = 10
WHAT IS YOUR OVERALL OPINION OF THE SCAR COMPARED TO NORMAL SKIN?	○ ○ ○ ○ ○ ○ ○ ○ ○ ○

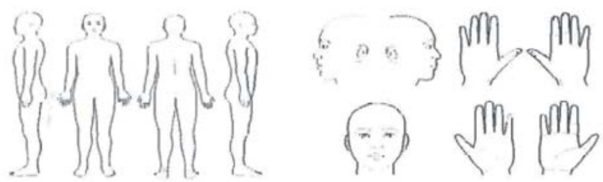
Appendix 2:
(Final Arabic Version)

ملحق

مؤشر تثييم ندبات المريض والمراقب مؤشر المريض

مؤشر تقييم ندبات المريض والمراقب الاصدار ٢,٠ / انجليزي

تاريخ الاختبار :	
المراقب :	اسم المريض :
المكان :	تاريخ الميلاد :
البحث / الدراسة :	رقم التعريف :



١ = لا يوجد على الاطلاق ١٠ = نعم ، مختلف جدا

	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠
هل كانت الندبة مؤلمة الاسابيع القليلة الماضية ؟	○	○	○	○	○	○	○	○	○	○
هل الندبة كان بها حكة الاسابيع القليلة الماضية ؟	○	○	○	○	○	○	○	○	○	○

١ = لا ، الندبة كالجلد الطبيعي ١٠ = مختلف جدا

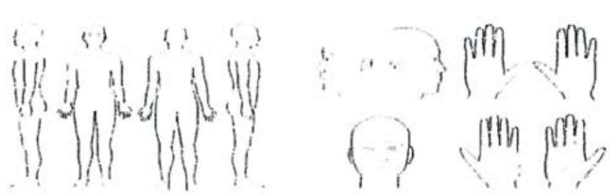
هل لون الندبة مختلف عن لون الجلد الطبيعي في الوقت الحالي ؟	○	○	○	○	○	○	○	○	○	○
هل صلابة الندبة تختلف عن صلابة الجلد الطبيعي في الوقت الحالي ؟	○	○	○	○	○	○	○	○	○	○
هل سماكة الندبة مختلفة عن سماكة الجلد الطبيعي في الوقت الحالي ؟	○	○	○	○	○	○	○	○	○	○
هل الندبة اكثر تعرجا من الجلد الطبيعي في الوقت الحالي ؟	○	○	○	○	○	○	○	○	○	○

	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠
ما هو رايك الاجمالي عن الندبة مقارنة بالجلد الطبيعي ؟	○	○	○	○	○	○	○	○	○	○

مؤشر تاتييم ندبات المريض والمراقب لتييم المراقب

مؤشر تقييم ندبات المريض والمراقب الاصدار ٢,٠ / انجليزي

تاريخ الاختبار :	
المراقب :	اسم المريض :
المكان :	تاريخ الميلاد :
البحث / الدراسة :	رقم التعريف :



١ = الجلد طبيعي ١٠ = اسوأ صورة للندبة

العامل	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠	
الاوعية الدموية	○	○	○	○	○	○	○	○	○	○	خليط | بنفسجي , وردية | باهته
التصبغ	○	○	○	○	○	○	○	○	○	○	خليط | مفرطة , قليلة
السماكة [illegible]	○	○	○	○	○	○	○	○	○	○	اقل سمكا | [illegible]
[illegible]	○	○	○	○	○	○	○	○	○	○	خليط | اقل | اكثر
الليونة	○	○	○	○	○	○	○	○	○	○	خليط | صلبة | مرنة
مساحة السطح	○	○	○	○	○	○	○	○	○	○	خليط | تقلصت | متمدد
الرأي الاجمالي	○	○	○	○	○	○	○	○	○	○	