

# Symptoms of Persistent pain

- Suffering
- Fatigue
- Insomnia
- Depression
- Physical disability
- Physical de-conditioning
- Increased medical support
- Increased medications
- Increased side-effects
- Reduced quality of life
- Patient dissatisfaction

# Some Measurement scales for pain

- **Single dimensional scales**
- Numerical Rating Scale (NRS)
- Visual Analogue Scale (VAS)
- Verbal Rating Scale (VRS) or
  
- **Multi dimensional scales**
- Wisconsin Brief Pain Inventory (**BPI**)
- McGill Pain questionnaire etc are used for measurement of pain
- Depression, Anxiety, Stress Scale (**DASS**)
- Pain Disability Index (**PDI**)
- DASS and PDI may be used to measure different components of the pain complex, like **psychological** and **physical** factors respectively

## Other scales

- Initiative on **M**ethods, **M**easurement, and **P**ain **A**ssessment in **C**linical **T**rials (**IMMPACT**) .
- The Norwegian Pain Society has also recommended a four page, 31 item screening questionnaire for treatment outcomes (6).
- Useful for measurement of clinical trial outcomes for medicines used for chronic pain (5).
- **Disadvantages** of above scales - quite comprehensive and lengthy.
- Unwieldy and time consuming for bedside follow-up and monitor progress.
- Good for trials of new medications, not practical for bed-side use.

# Desired Qualities of the tool

- Concise
- Clinically relevant
- Time efficient
- Simple to use for patients
- Simple to use for doctors
- Useful for all health professionals
- Able to evaluate treatment outcomes
- Monitor progress of treatment
- Be able to be delivered by phone or in person
- Easy to calculate

# SPAASMS:

Based on important symptoms of persistent pain:

- **S**- Score of pain intensity
- **P**- Physical Activity Levels
- **A**- Additional Pain Medication
- **A**- Additional Doctor Visits
- **S**- Sleep
- **M**- Mood
- **S**- Side Effects of medications

Scores should indicate clinical improvement of the seven components of persistent pain.

## Score of Pain Intensity

Turk and Melzack have stressed on intensity as the most salient feature of pain (8).

Intensity of pain is a very subjective experience therefore patient's self report used for monitoring intensity.

Numerical Rating Scale(NRS) was chosen as it could be delivered telephonically

## Physical Activity Levels

Linton, De Gagne and Holroyd have studied physical activity and pain, found it closely related another study found that more than two-thirds (68%) of the persistent pain patients considered improvement in daily activities as necessary for a successful outcome (14).

## Additional Pain Medication

Finnish study showed increased frequency of analgesic medication use, related to daily or continuous pain of high intensity (33).

One of the objectives aimed at achieving successful pain management was decreased frequency of medication use (34).

### Additional GP/ED Visits

An Australian study has found that patients with back pain visit GP 2.4 times more than patients without it (35).

A study in UK concluded that medically unexplained symptoms accounted for a significant proportion of consultations in secondary health care facility and common unexplained symptoms were abdominal pain, chest pain, headache, and back pain (36).

Researchers have also reported that depressive symptoms were the major predictor for frequent GP visit (37) chronic pain frequently co-exists with depressive illness (15).

## Sleep

Studies have demonstrated the reciprocal relationship between sleep quality and pain (20, 21). disorders should be treated in the same way as pain (25).

Insomnia increases severity of pain (22). For improvement to occur, whether as a cause or consequence of the pain condition.

## Mood

Mood is a state of mind or emotion. World Health Organization (WHO) study showed that 22% of primary care patients are suffering from constant debilitating pain and are four folds more likely to have depression or anxiety disorder than the patients without chronic pain (15).

Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) 2008 recommended emotional functioning as one of six outcome domains to be considered in assessing chronic pain patients (5).


Gambassi showed that pain and depression share genetic factors, biological pathways and neuro-transmitters .(19).

## Side-effects

Opioids have a range of adverse, unpleasant side effects of which nausea, constipation, vomiting, drowsiness and cognitive impairment of varying degrees have been reported by patients (30). Local irritation, rashes and skin eruptions (31,32) occur with TD medications.

Adverse reactions may compromise drug compliance. Severity of reaction to the medication and patients' acceptance to it is an important factor.

Side effects are self-rated as nil, transient, acceptable or severe.



## *Frequency of pain medication use*

Decreased frequency of medication, especially short acting opioids, would follow decreased pain intensity and frequency of pain flares, as a result of better pain management.

## Trial

- 46 adult patients [mean age]47 years being treated for long term pain [mean duration of pain 13 years ( $\pm$ 12.87)] recruited at a tertiary Hospital Pain Management Clinic
- 24 patients female and 22 male
- Their progress on treatment was studied using the SPAASMS scale
- History taking, clinical examination and appropriate investigations done
- Treatment was initiated with transdermal patches
- Patients were titrated to optimal doses of medications
- Pts. asked to keep a record of any additional medicines or doctor visits that they made for break through pain

# Patient demographics

Bupren. Group	Age	Sex	Dx	Duration of pain(Yr)	Follow up (mo)	Remark
1	43	M	Back pain	3	12	Study completed
2	64	M	Back pain	17	4	SE - Breathlessness
3	56	F	Back pain	20	12	Study completed
4	80	M	Back pain	3	6	SE – Local Skin Reaction
5	65	F	Back pain	6	12	Study completed
6	59	F	Back pain	15	11	SE - Severe itch
7	67	F	Back pain	6	12	Study completed
8	43	M	Back pain	25	12	Study completed
9	72	F	Back pain	50	12	Study completed
10	39	M	Others	1	12	Study completed
11	32	F	Back pain	1	12	Study completed
12	38	F	Others	4	12	Study completed
13	62	M	Back pain	41	10	Declined further participation
14	69	M	Others	-	1	SE - Dizziness
15	46	M	Others	10	1	SE – Local Skin Reaction
16	59	M	Back pain	39	5	SE – Local Skin Reaction
17	49	M	Back pain	1.5	8	Treatment continuing
18	45	F	Others	0.5	7	SE – Local Skin Reaction
19	68	M	Back pain	20	2	Injections
20	40	M	Back pain	12	2	SE – Local Skin Reaction
21	52	M	Others	1	0	SE - Drowsiness
22	57	M	Back pain	19	0	SE - Lethargy & headache

*Table 1A*  
**Patient Demographic (Buprenorphine Group)**  
 SE: Side Effect

# Patient demographics

Fentan. Group	Age	Sex	Dx	Duration of pain (Yr)	Follow up (mo)	Remark
1	45	F	Others	3	12	Study completed
2	58	F	Back pain	20	12	Study completed
3	54	F	Others	6	1	Refused to increase dose
4	46	F	Others	3	12	Study completed
5	59	F	Back pain	12	12	Study completed
6	34	M	Back pain	12	12	Study completed
7	41	F	Back pain	5	12	Study completed
8	50	F	Back pain	7	5	Interstate relocation
9	24	F	Others	1	12	Study completed
10	49	F	Back pain	20	12	Study completed
11	22	F	Back pain	5	8	Effective relief
12	53	M	Others	34	3	SE- Hallucination
13	39	F	Others	9	12	Study completed
14	33	M	Back pain	12	6	SE – Local Skin Reaction
15	61	M	Back pain	28	0	SE - Drowsiness
16	55	M	Others	10	0	Study completed
17	47	F	Others	7	0	SE - Nightmare
18	43	M	Back pain	4	0	SE - Nausea & Headache
19	42	F	Back pain	-	0	SE - Sleeplessness
20	42	F	Others	2	10	SE - Headache
21	31	M	Others	0.5	1	Surgical intervention
22	39	M	Back pain	18	1	SE - Nausea
23	40	F	Others	2	0	SE - Extreme depression
24	51	F	Others	3	0	Refused to increase dose

*Table 1B*

**Patient Demographic (Fentanyl Group)**

SE: Side Effect

# SPAASMS SCORE CARD

Date

Name of patient

Diagnosis:

Pain on Numerical Rating Scale	1	2	3	4	5	6	7	8	9	10
	No pain									Most pain
	0		1		2		3			
Activity and mobility	Very good		Good		Fair		Nil			
Additional pain medication	Nil		Occasionally		2-3 times/wk		Daily			
Additional GP/ED visits	Nil		Occasionally		Once a week		> 5/month			
Sleep Quality	Very good		Good		Fair		Poor			
Side Effects	Nil		Transient		Acceptable		Severe			
Mood	Very Good		Good		Fair		Low			

Total Score = 25 (Initial)

Total Score = 28 (Monthly)

## Trial (Contd.)

- Pts. monitored monthly by a trained interviewer telephonically, on SPAASMS scoring for 9 months.
- Clinician evaluated the patients' progress independently at three monthly intervals.
- Patients completed DASS21 and PDI questionnaires every three months.
- DASS21 and PDI taken to compare validity of SPAASMS.
- The final scores of SPAASMS were recorded and results collated
- 20 patients were assessed with SPAASMS within 2 to 4 days to gain test-retest reliability.

# Initial SPAASMS score

Name: Robert

Failed Back syndrome

Date –Oct.

Pain on		1	2	3	4	5	6	✓7	8	9	10
Numerical Rating Scale	No pain										Most pain
	0	1	2	3							
Activity and mobility	Very good	Good	Fair	✓Nil							
Additional pain medication	Nil	Occasionally	2-3 times/wk	✓Daily							
Additional GP/ED visits	Nil	Occasionally	✓Once a week	> 5/month							
Sleep Quality	Very good	Good	Fair	✓Poor							
Side Effects	Nil	Transient	Acceptable	Severe							
Mood	Very Good	Good	Fair	✓Low							

← Not applicable

Total score = 21/25

# 4<sup>th</sup> month SPAASMS score

Name: Robert

Failed Back syndrome

Date –January

Pain on		1	2	3	4	5	6	7	8	9	10
Numerical Rating Scale	No pain										Most pain
	0	1	2	3							
Activity and mobility	Very good	Good	Fair	Nil							
Additional pain medication	Nil	Occasionally	2-3 times/wk	Daily							
Additional GP/ED visits	Nil	Occasionally	Once a week	> 5/month							
Sleep Quality	Very good	Good	Fair	Poor							
Side Effects	Nil	Transient	Acceptable	Severe							
Mood	Very Good	Good	Fair	Low							

Total score = 9/28

# SPAASMS SCORE CARD

Name : Robert

Had a fall 2 weeks back

Pain on Numerical Rating Scale	1	2	3	4	5	6	7	8	9	10
	No pain									Most pain
	0		1		2		3			
Activity and mobility	Very good		Good		Fair		Nil			
Additional pain medication	Nil		Occasionally		2-3 times/wk		Daily			
Additional GP/ED visits	Nil		Occasionally		Once a week		> 5/month			
Sleep Quality	Very good		Good		Fair		Poor			
Side Effects	Nil		Transient		Acceptable		Severe			
Mood	Very Good		Good		Fair		Low			

Total Score = 21 / 25  
**(Initial)**

Total Score = 15/28 **(Monthly)**

# Statistical Analysis

- Statistical analyses were performed using Graphpad software (Version 5, GraphPad Software, Inc., La Jolla, CA, USA).
- Clinical measures concerning pain intensity VAS, DASS21, PDI etc. were based on mean, SE and range.
- Two-way repeated measurement ANOVA was used for comparison between SPAASMS and VAS, DASS21, PDI or VPD, followed by Bonferroni post-tests. Pearson's correlation coefficient ( $r^2$ ) was computed to examine the correlation between SPAASMS and PDI or DASS21 scores.
- The relationship between SPAASMS and NRS or NPD was not checked as NRS was one component of the SPAASMS score card.
- $P$  values of less than 0.05 were considered as statistically significant.

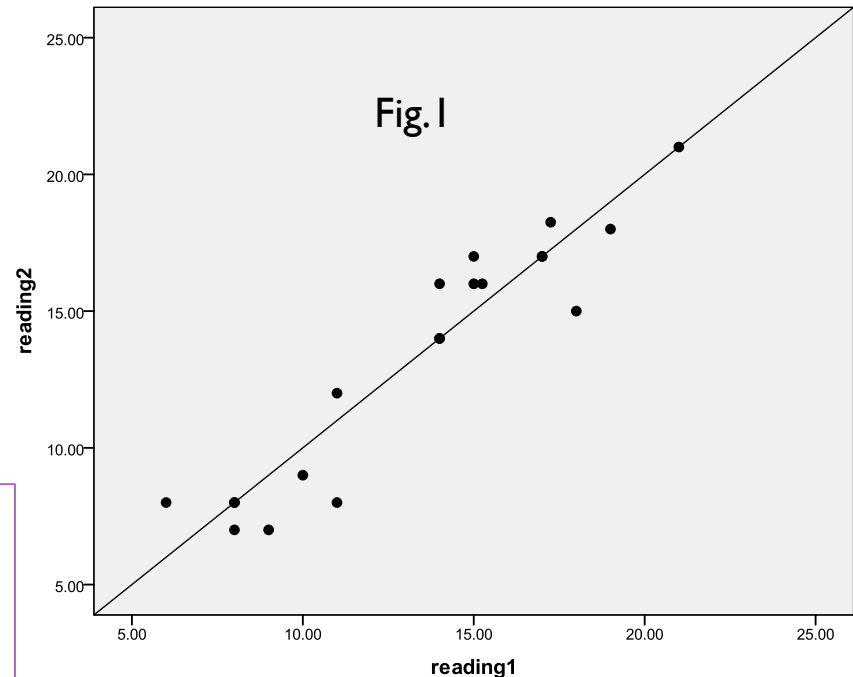
## CRONBACH's Test Retest Validity

Overall assessment of reliability was conducted using the test-retest data. A scatter plot was used for graphical assessment of reliability. A concordance correlation coefficient (CCC) was calculated (38). Cronbach's alpha was calculated to assess internal consistency of SPAASMS using SPSS (SPSS Inc, PASW version 18, Chicago,

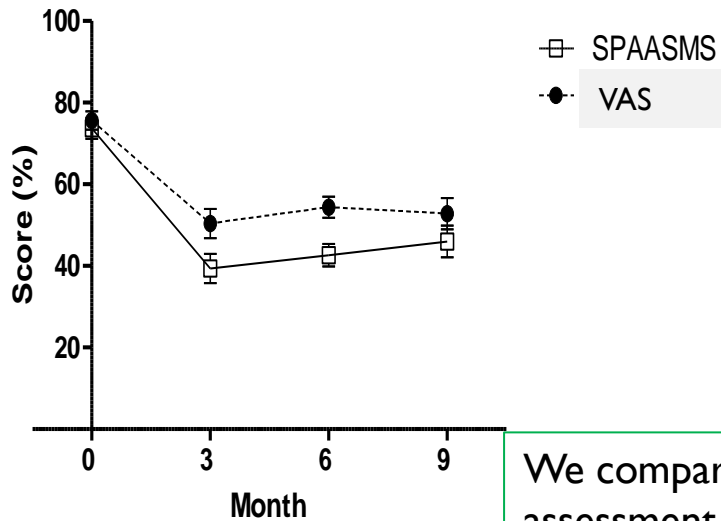
CCC was 0.94 with 95%-confidence interval = 0.86, 0.97 (Fig. 1)

Significance - high reliability of SPAASMS scoring.

Cronbach's alpha for readings 1 and 2 were 0.66 ( $P = 0.001$ ) and 0.67 ( $P < 0.001$ ), respectively.



## RESULTS



**Figure 2A**

## INTENSITY OF PAIN

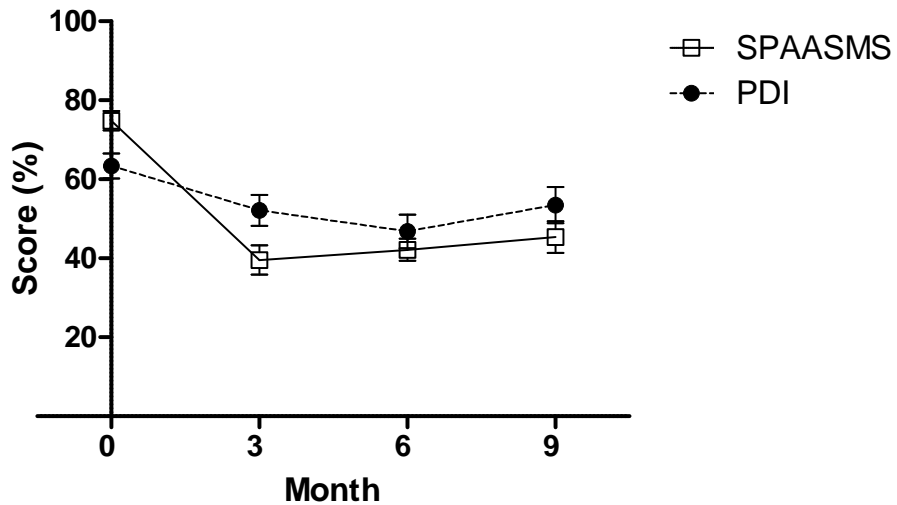
We compared SPAASMS with the most vital factor in pain assessment, pain intensity, VAS (Fig.2A). SPAASMS scores showed a similar trend to VAS.

Initial scores for SPAASMS and VAS were almost identical. With initiation of treatment, SPAASMS scores were persistently lower. At 6 months being lower & statistically significant from VAS ( $P < 0.05$ ).

SIGNIFICANCE-

SPAASMS more sensitive than VAS

## PHYSICAL ACTIVITY

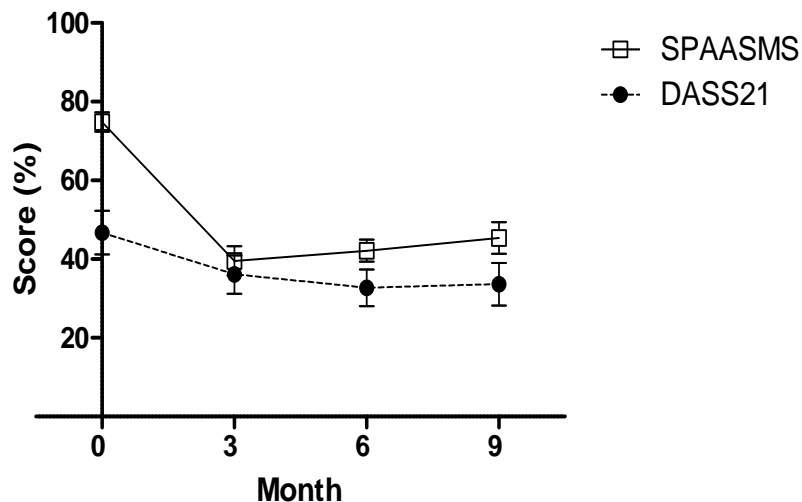


**Figure 2B**

No significant differences between SPAASMS and PDI scores were detected throughout the study (Fig.2B). R square for the correlation between SPAASMS and PDI was 0.84 ( $P = 0.085$ ).

SIGNIFICANCE - SPAASMS is comparable to PDI

## COMPARISON OF SPAASMS TO DASS21

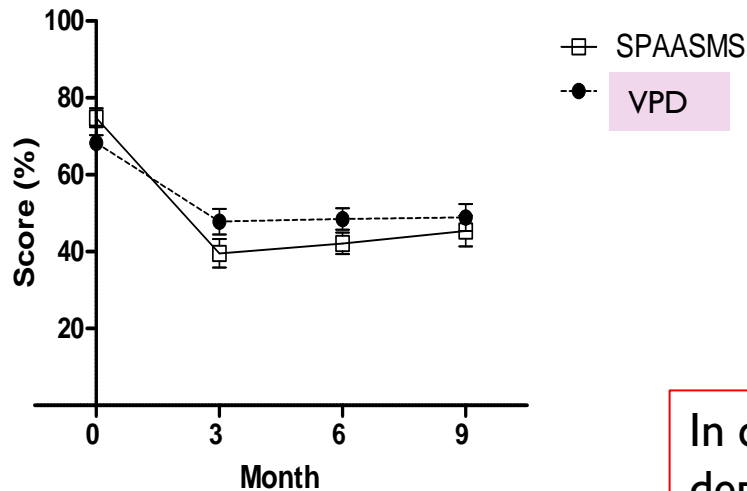


**Figure 2C**

DASS21 scores were lower in comparison to SPAASMS scores (Fig.2C). The difference between the two scales was significant only at 0 month ( $P = 0.001$ ).

SIGNIFICANCE – DASS21 more sensitive than SPAASMS for indicating depression, however same trend as DASS

## COMPARISON OF MEAN SCORE OF SPAASMS TO MEAN TOTAL OF VAS+PDI+DASS21



**Figure 3**

In clinical practice, we consider pain intensity, depression and physical ability as the most important factors to assess chronic pain. Therefore, we compared SPAASMS with a scale which combined NRS, PDI and DASS21 scores (NPD)

No significant difference between the 2 Mean scores

SIGNIFICANCE-

SPAASMS slightly more sensitive than VPD

## CONCLUSION

- Reliable
- SPAASMS score card was simple to understand
- Time efficient bed-side clinical assessment tool
- Not lengthy or tedious for the patient
- It indicated specific symptoms of persistent pain, to which the patient had not responded.
- Further assistance could be provided, addressing the articular need according to sub-scale score indications.
- The scale could be delivered by phone or by consultation.
- The patient could be shown objective progress regarding their treatment.

## Further Studies

Patients' satisfaction or rating of improvement/worsening of the pain condition was not accounted

Dispositions data were not included (42).

This study did not have a control group and the number of patients was comparatively small.

? influence these would have on the total scores and rating;

Future research could be directed to address this variation.