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# A COMPARATIVE STUDY OF THREE DIFFERENT PAIN SCALES FOR THE ASSESSMENT OF PAIN IN PATIENTS WITH CANCER

Oncology

**Abhishek Krishna** PG Resident, Department Of Radiation Oncology, Father Muller Medical College, Mangalore.

**Hasib A G*** Professor, Department Of Radiation Oncology, Father Muller Medical College, Mangalore. * Corresponding Author

## ABSTRACT

Majority of the patients with cancer suffer from pain. Various pain measurement scales have been developed to assess pain but none has been fully qualified for all patients. The objective of this study was to assess patient pain scale preference and compare different pain scales namely Numerical Pain Rating scale (NRS), Paisa Scale (PS) and Faces Pain Rating Scale (FRS). We also sought to evaluate there was a relation between education status and the preferred pain scale.Severity of patient's pain was assessed using NRS, PS and FPS. The pain scale preferred by the patient was also noted. The exercise was repeated twice, after 24 hours and after the consumption of analgesics. A total of 160 patients were included in the study. The mean pain scores measured was 3.70 with NRS, 38.40 with PS and with 3.85 with FRS. We found a good positive correlation between all the 3 scales. The inter class coefficient used to check the validity of the scale in terms of test retest showed a correlation of 0.97 for NRS, 0.95 for PS and 0.94 for FRS. 48.2 % preferred NRS, 31.8% preferred PS and 20 % preferred FPS ($p<0.005$).Out of the 50 patients who were either illiterate or had only education of primary level, 66% (33 patients) preferred paisa scale and showed a statistical significance ($p<0.0001$)Numerical and Paisa Scale can be used interchangeably for assessment of pain. Paisa Scale especially can be considered in patients with lower educational status

## KEYWORDS

## INTRODUCTION

According to the American Pain Society, pain has been defined as "an unpleasant sensory and emotional experience with actual or potential tissue damage or described in terms of such damage".[1]

Majority of the patients with cancer suffer from pain. Pain management is one of the most important aspect of oncology. One of the major problems in assessment of pain is that it is subjective.[2,3] Experience of pain is variable from person to person.[4]

Various pain measurement scales have been developed but none has been fully qualified for all patients.[5] On the other hand, using these tools interchangeably is still not justified.[6]

Daily clinical practice implies the fact that there is a need for at least two equally reliable methods to be used interchangeably, because some patients seem to have difficulties in interpreting pain scales and some lack the ability of abstract thinking required for most pain assessment instruments.[7,8]

Because some patients often have language interpretation difficulties or limited cognition, it is desirable to find a pain assessment instrument with high validity and reliability that is also simple to use.[9]

Numerical Pain Rating scale (NRS) is a popular pain scale used by many across the globe. It is simple and easy to interpret.[10]

Brunelli et al in a study of 240 advanced cancer patients with pain measured using both a Visual Analog Scale (VAS) and a 0-10 NRS concluded that NRS had higher discriminatory capability than VAS in distinguishing between background and peak pain intensity with a lower proportion of patients giving inconsistent evaluations (14% vs. 25%).[11]

Even though guidelines for assessment of pain exist, there is still limited data, on the use of pain scales in a population where illiteracy is prevalent. The majority of uneducated patients describe their pain on the amount of 100 paisa as it is easier for them to do so. Hence few of the clinicians use the Paisa scale (PS) to record the pain.[4]

Algadhir et in a study concluded that the reproducibility of Hundred Paisa Scale was good to excellent with the intraclass correlation coefficient (ICC) value of 0.85.[9]

Studies have also established the validity and reliability of the Faces Pain Rating Scale (FRS) in adult and older populations.[12-14]

The objective of this study was to assess patient pain scale preference and to compare different pain scales namely Numerical Pain Rating scale (NRS), Paisa Scale (PS) and Faces Pain Rating Scale (FRS) in cancer patients with complaints of pain and to determine the pain scale preferred by patients. We also sought to evaluate there was a relation between education status and the preferred pain scale

## MATERIALS AND METHODS

### SOURCE OF DATA

The study was conducted at Oncology department of Father Muller Medical College Hospital, Mangalore from July 2019 to September 2019 after obtaining approval from the institution ethics committee.

### PATIENT SELECTION

Patients who were diagnosed with cancer and had complaints of pain on presentation with age more than 18 years and patients in normal sensorium were included in the study. Patients with compromised hemodynamics, altered sensorium and those who refused to be a part of the study were excluded.

After taking written and informed consent, age, sex, diagnosis and educational qualification of the patient were noted. Severity of patient's pain were assessed using three pain scales: NRS, PS and FRS.The severity of the pain in all patients were assessed with all 3 pain scales. A detailed instruction about the procedure and all the scales were given to the participants.

For NRS patient were asked to rate the severity of pain in terms of a number ranging from 0 (No pain) to 10 (worst pain).For Paisa scale the patient were asked to rate the severity of pain ranging from 0 paisa (No pain) to 100 paisa (worst pain).For FRS, the patient were asked to mark the severity of the pain based on the facial expression as in the printed FRS that contain facial expression ranging from 0 (no hurt) to 10 (hurts worst)that was given to the patient. If the patient was unable to rate the pain in any of the above three scales the answer was left blank. At the completion of data collection, participants were also asked to identify the scale they preferred to use as a pain intensity measure.

The same exercise was repeated after 24 hours to determine the reproducibility of the scales. The same exercise was repeated after 48 hours of starting analgesics to compare the pain before and after analgesics.

### STATISTICAL ANALYSIS

Data was analysed for Frequency, Percentage, Mean and Standard Deviation.The test–retest reliability of an NRS, PS and FRS were assessed using intraclass correlation coefficients. Chi square test was

used to determine the statistical significance between the choice of pain scale and educational qualification. The level of significance for all tests was $p<0.05$. SPSS for Windows version 19 was used to analyze the data.

## RESULTS:

A total of 160 patients were included in the study.

The mean age was 56.08 years.58.1% were males and 41.9% females. 6.8% were illiterate, 24.4% had only primary education and 68.7% had an educational qualification of secondary education and above.

| Patient Characteristics | Value (n=160) |
|---|---|
| **Age (Mean)** | 56.08 Years |
| **Gender** | |
| Male | 93 (58.1%) |
| Female | 67 (41.9%) |
| **Educational Qualification** | |
| Illiterate | 11 (6.8%) |
| Primary Education (<5th Std) | 39 (24.4%) |
| Secondary Education and Above | 110 (68.7%) |
| **Diagnosis** | |
| Lung Cancer | 16 (10%) |
| Head and Neck Cancer | 30 (18.8%) |
| Gastrointestinal Cancer | 34 (21.2%) |
| Gynaecological Cancer | 37 (23.2%) |
| Breast Cancer | 20 (12.5%) |
| Haematological Cancer | 4 (2.5%) |
| Genitourinary Cancer | 7 (4.3%) |
| Others | 12 (7.5%) |

**Table 1: Patient Characteristics**

| MEAN PAIN SCORES | BEFORE ANALGESICS | | AFTER ANALGESICS | |
|---|---|---|---|---|
| | TEST | RETEST | TEST | RETEST |
| NRS | 3.70 | 3.60 | 2.12 | 2.10 |
| PS | 38.40 | 37.62 | 26.50 | 25.81 |
| FPS | 3.85 | 3.71 | 2.40 | 2.42 |

The mean pain scores measured with Numerical Pain Rating Scale was 3.70, Paisa Scale was 38.40 and with Faces Pain rating scale was 3.85. We found a good positive correlation between all the 3 scales. The inter class coefficient used to check the validity of the scale in terms of test retest showed a correlation of 0.97 for NRS, 0.95 for PS and 0.94 for FPS. The mean pain scores after analgesics were 2.12 with NRS, 26.50 with PS and 2.40 with FPS. inter class coefficient used to check the validity of the scale in terms of test retest showed a correlation of 0.96 for NRS, 0.95 for PS and 0.93 for FPS.

**Table 2 – Correlation of 3 pain scales**

| CORELATION | BEFORE ANALGESICS | | | AFTER ANALGESICS | | |
|---|---|---|---|---|---|---|
| PAIN SCALES | NRS | PS | FPS | NRS | PS | FPS |
| INTER CLASS COEFFICIENT BETWEEN REST - RETEST | 0.97 | 0.95 | 0.94 | 0.96 | 0.95 | 0.93 |

Out of the total patients, 48.2 % preferred the numerical pain rating scale, 31.8% preferred PS and 20 % preferred FPS ($p<0.005$).

We further did an analysis in term of relation between education status of the patient and the pain scale they preferred. Out of the 50 patients who were either illiterate or had only education up to primary level, 66% (33 patients) preferred paisa scale. In 110 patients who had secondary education or above only 16% (18 patients) preferred paisa scale. On Chi squared analysis, it showed a statistical significance ($p<0.0001$)

**Table 3: Chi square test for evaluation of preferred pain scale in patients who are illiterate or have only primary education**

| CHI SQUARE TEST | | | | |
|---|---|---|---|---|
| | PS SCALE PREFFERED | PS SCALE NOT PREFFERED | CHI SQUARE VALUE | P VALUE |
| ILLITERATE AND PRIMARY | 33 | 17 | 39.0019 | p<0.0001 |
| SECONDARY AND ABOVE | 18 | 92 | | |

## DISCUSSION:

Accurate assessment of pain is important in the treatment of pain in patients with cancer. As pain a subjective assessment the reporting of pain needs to be accurate as treatment depends on the intensity of pain. Various pain scales have been tested and tried for recording the intensity of pain.[15-18]

Hjermstad et al reported a higher compliance rates, better responsiveness and ease of use, and good applicability with Numerical Pain Rating Scale compared to other scales.[16]

Brunelli et al revealed higher discriminatory capability of Numerical Scale than VAS in distinguishing between background and peak pain intensity with a lower proportion of patients giving inconsistent evaluations.[11]

Lida et al concluded that Visual analogue scale and Faces Rating Scale are two pain assessment tools that can be used interchangeably for evaluation of acute postoperative pain.[6]

In our study majority of the patients preferred Numerical Pain rating Scale followed by Paisa scale followed by Faces Pain Rating scale and was statistically significant. The rest – retest validity was also excellent in Numerical Scale.

In a subset analysis of people who were illiterate or who had only primary level of education we observed a different trend. Such patients were more comfortable in using the paisa scale as they understood the Paisa scale better than the NRS or FRS.

Chakraborty et al in their study concluded that Paisa Scale due to its simplicity and acceptability, can be used successfully by the clinicians and surgeons both for acute and chronic pain conditions.[4] Algadhir et al showed good validity and reliability of Hundred paisa scale in their study.[9]

The expressibility of patients, thus was better with Paisa scale in these subsets of patients. Paisa scale also showed an excellent test – retest validity.

Faces Pain Rating scale was preferred only in 20% of the patients. Patients felt it was slightly difficult to interpret and express their pain in FRS.

Both NRS and Paisa Rating scale showed an excellent positive correlation. Thus, Numerical Pain Rating and Paisa Scale can be used in majority of the patients. The main advantage of paisa scale was seen in patients who had no education or only primary education.

## CONCLUSION

Numerical and Paisa Scale can be used interchangeably for assessment of pain. Paisa Scale especially can be considered in patients with lower educational status.

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