*Article*

# Factors Affecting Pain Scale Preferences among Populations in Indonesia: Comparison Study between Suburban and Rural Areas

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**Abstract:**

**Introduction:** Pain is considered as the fifth vital sign that should be considered in assessing patients. For clinicians to evaluate and determine the right pain interventions, there should be parameters such as pain scale. Our objective in this study is to determine factors affecting pain scale preferences in suburban and rural populations. The pain scales used in this study are FPS-R (Faces Pain Scale-Revised), VRS (Verbal Rating Scale), VAS (Visual Analogue Scale), and NRS (Numering Rating Scale). **Method:** This study uses observational design with an interview approach and a cross-sectional study. Areas covered are within Indonesia, which are marginal areas of Tangerang district border, and two rural areas in Serukam, West Kalimantan, and Soe, East Nusa Tenggara. Data collected will be analyzed using SPSS 25 software. **Result:** Populations within the suburban areas prefer NRS (52.08%) as their pain scale, and populations in rural areas prefer FPS-R 76.92%). Factors affecting pain scale preferences are location areas, as well as last education, with statistical significance of $p < 0.05$. **Discussion:** Our study showed that the choice of several pain scales is not appropriate for specific demographics due to the complexity of these scales. Factors that should be considered are the location areas and education level, as some population in remote areas have better understanding of simpler pain scales. **Conclusion:** Complexity or simpler components may be an underlying reason for the preference of score selection to assess pain scales in some population. Therefore, the selection of pain scales should be adjusted to specific demographics so that clinicians can provide appropriate management with appropriate pain scales.

**Keywords:** Pain Scale, Comparison, Suburban, Rural, Preferences

## 1. Introduction

Evaluation of pain is a multidimensional concept involving clinical observations, patient disabilities, and subjective feelings that are experienced differently by each individual. Therefore, assessing pain is essential because it relates in selecting appropriate pain management. However, pain measurement tools should also be adjusted according to the demographic features of the patient population. Age, gender, occupation, and educational level of each individuals influence the selection of a suitable pain scale assessment to avoid confusion for clinicians in providing appropriate pain management. This research has been conducted to examine pain assessments that are appropriate for the demographic population in Indonesia, as well as the correlations between factors that influence the preferences of the pain scale.

## 1.1. Objective

To find out the descriptive studies of demographics, pain scale preferences, and the relationship between these variables in patients in rural and suburban areas. These results can guide clinicians to choose a pain scale for specific patient demographics to increase accuracy in determining pain status and selecting appropriate pain management.

## 2. Method

This study used an observational design with an interview approach and a cross-sectional study. The inclusion criteria for the subjects were patients with chief complaint of pain who visited health institutions in rural and suburban areas from November 2020 – January 2021. The suburban areas that are included for this study were the marginal areas of Tangerang City, namely on the border of Tangerang district, Banten. The rural areas were villages in the Samalantan sub-district, Bengkayang, Serukam districts, West Kalimantan, and some villages in the District of Soe, East Nusa Tenggara.

The patient's pain scale will be asked during the interview using several pain scales, and the patient's understanding of determining pain will be assessed based on the pain assessment. The answers of the research subjects will be divided based on their understanding; then, the subject will be asked to determine their preference for pain assessment options that are felt more suitable to use by the subjects in determining their pain status. Data was collected, and statistical analysis was conducted using SPSS 25 software. Categorical data will be displayed as numbers (n) and percentages. The categorical data will then be tested for correlation using the Spearman method. The exclusion criteria in this study were the patients having memory or mental disorders, and participants that are unwilling to be interviewed.

## 3. Result

The total respondents in this study were 261 subjects, with 144 subjects living in suburban areas (55%) and the rest in rural areas (45%). Female gender predominates in this study, with a similar average of occupations, from fieldwork, offices, housewives, unemployed, and others. However, in suburban areas, high school educational level predominates, while in rural areas, educational level varies. The diagnosis of pain is divided to musculoskeletal pain or other types of pain. Out of the four pain scales, there were differences in pain scale preferences selected from the rural and suburban levels based on the understanding of the study subjects (Table 1).

**Table 1. Demographic Data and Assessment of Understanding with Score Preferences**

|  | Suburban | Rural |
|---|---|---|
| **Total (N=261)** | 144 (55.17%) | 117 (44.83%) |
| **Age** |  |  |
| 20-29 years | 25 (17.36%) | 20 (17.09%) |
| 30-39 years | 28 (19.44%) | 23 (19.66%) |
| 40-49 years | 29 (20.14%) | 25 (21.37%) |
| 50-59 years | 32 (22.22%) | 27 (23.08%) |
| >=60 years | 30 (20.84%) | 22 (18.81%) |
| **Gender** |  |  |
| Male | 63 (43.75%) | 54 (46.15%) |
| Female | 81 (56.25%) | 63 (53.85%) |
| **Occupation** |  |  |
| Fieldwork | 31 (21.53%) | 20 (17.09%) |
| Office | 25 (17.36%) | 23 (19.66%) |
| Housewives | 35 (24.30%) | 27 (23.08%) |

| | | |
|---|---|---|
| Unemployed | 33 (22.92%) | 20 (17.09%) |
| Others | 20 (13.89%) | 27 (23.08%) |
| **Last Education** | | |
| Primary school | 23 (15.97%) | 25 (21.37%) |
| Elementary school | 35 (24.31%) | 23 (19.66%) |
| High school | 40 (27.78%) | 26 (22.22%) |
| Bachelor/Masters/PhD | 26 (18.06%) | 23 (19.66%) |
| No educational degree | 20 (13.89%) | 20 (17.09%) |
| **Diagnosis** | | |
| LBP (Low back pain) | 70 (48.61%) | 59 (50.43%) |
| Non LBP | 74 (51.39%) | 58 (49.57%) |
| **Score - PFS-R** | | |
| Score 0 (Do not understand) | 15 (17.36%) | 10 (8.55%) |
| Score 1 (Understand with repetition) | 34 (30.56%) | 25 (21.37%) |
| Score 2 (Comprehend) | 65 (52.08%) | 82 (70.09%) |
| **Score - VRS** | | |
| Score 0 (Do not understand) | 32 (22.22%) | 14 (11.97%) |
| Score 1 (Understand with repetition) | 44 (30.56%) | 37 (31.62%) |
| Score 2 (Comprehend) | 68 (47.22%) | 66 (56.41%) |
| **Score - VAS** | | |
| Score 0 (Do not understand) | 21 (14.58%) | 46 (39.32%) |
| Score 1 (Understand with repetition) | 37 (25.69%) | 41 (35.04%) |
| Score 2 (Comprehend) | 86 (59.72%) | 30 (25.64%) |
| **Score - NRS** | | |
| Score 0 (Do not understand) | 9 (6.25%) | 50 (42.74%) |
| Score 1 (Understand with repetition) | 33 (22.92%) | 38 (32.48%) |
| Score 2 (Comprehend) | 102 (70.83%) | 29 (24.79%) |
| **Score Preferences** | | |
| FPS-R | 43 (29.86%) | 90 (76.92%) |
| VRS | 15 (10.42%) | 14 (11.97%) |
| VAS | 11 (7.64%) | 0 (0%) |
| NRS | 75 (52.08%) | 13 (11.11%) |

Based on the data tabulation, the correlation coefficient results show a correlation in several variables to the selection of scores. Location has a relatively strong correlation, and the last educational level is also correlated. Other variables have weak correlations against score selection. Statistically, location and recent educational level have a statistically significant value (p-value <0.05), while not significant for other variables (Table 2).

**Table 2. Correlation between Variables and Score Preferences**

| | | Location | Age Group | Gender | Occupation | Last Education | Diagnosis |
|---|---|---|---|---|---|---|---|
| Score Preferences | r | -.494** | -.092 | -.087 | .021 | .182** | -.055 |
| | p-value | .000 | .139 | .163 | .739 | .003 | .375 |

## 4. Discussion

*The International Association for the Study of Pain* (IASP) defines pain as an unpleasant sensory and emotional experience related to the process or breakdown of a particular tissue [1,2]. The severity of such unpleasant sensory and emotional experiences is sometimes subjective to each individual and cannot be evaluated using supportive

examinations. Thus, assessing the severity of pain is essential, and therefore, using the most appropriate pain score to describe pain complexity is required. Pain assessment is also critical because it can be used to determine and assess whether the pain management that has been given is adequate, then whether a change in the dose of analgesics or types of analgesics is needed, and whether additional intervention is needed, especially if the pain is felt very severe and provides disability to the patient [3]. Therefore, the decision to choose pain management depends on the scale of pain described by the patient. Four measuring instruments are often used in daily practice, namely *the Face-Revised Pain* Scale (FPS), Numerical Rating *Scale (NRS), Visual Analog* Scale (VAS), and *Verbal Assessment Scale* (VRS) [4,5,6]. Previous studies have reported that all four are valid and trustworthy pain instruments [7,8,9].

From several existing studies, VAS and NRS are equally sensitive and are able to describe patients' subjective feelings of pain intensity [10,11]. However, this scale sometimes has some constraints in clinical application to populations with low levels of cognitive function and level of education [12,13]. Other pain scales that has fewer instruments, such as VRS, are sometimes a more straightforward option for some patient with specific demographic populations. However, fewer options sometimes narrow the precision of a patient's pain condition because it has broader limitations and can sometimes influence the clinician's choice to determine pain management. Other pain scales, such as FPS, are sometimes advantageous, because the modalities such as facial images are easier to understand for patients, making it easier for clinicians to determine the position of the pain scale felt in patients. Several options for pain assessment should be considered in certain particular circumstances, such as emergencies, as mentioned in a previous study by Hjermstad, where VRS instruments are preferred in patients with low education levels and the elderly population [10,11].

Research conducted by Clark showed that VRS was superior to VAS (52.8% and 28.3%) because the elements in VRS were easier to understand, and study subjects preferred communicating pain through words rather than numbers.[5] Thus, this study will examine the pain assessment preferences chosen by demographic populations at different levels.

From the results of this study, for PFS-R scores, suburban and rural populations have the highest rates of patient understanding. In rural populations, this score is the preferred primary pain assessment option compared to other pain assessment score options. Elements in PFS-R make it easier for patients to determine the pain scale because, with visual diagrams, patients with difficulty or limitations in reading or interpreting the meaning of words can still use visual understanding modalities to determine the position of the perceived pain scale [12].

In the suburban population, the patient's education level predominates with high school, so the ability to understand and comprehend is better. This finding is supported by a better understanding of suburban subjects of slightly more complex pain assessment scores such as NRS. It even becomes the preferred choice of pain assessment scores.

In terms of samples, the demographics of the sample are sought evenly in terms of age, gender, education, and also occupation. Diagnosis in the sample was also evenly distributed between low back pain and other pain, to minimize bias. The results of the computational data show that the choice of several pain scales is not appropriate for specific demographics due to the complexity of these scales, considering mainly the influential factors, such as the location and last educational level of subjects in more remote areas. Both factors can affect the patient's understanding of the pain scale, therefore affecting the interpretation of the pain intensity or severity, and the management or intervention chosen by the clinician.

The weakness of this study is that this study can be improved by investigating more for the relationships and correlations between each variable to the type of score. Because currently, score preferences are only separated by suburban and rural areas. Inferring

more specific factors that play a role in score preference in the sample population is challenging. This research can be further developed by looking at the segment details of the variable components in the sample.

What can be developed in further studies is that this study only covers rural areas and suburban areas whose scope is still small; it is recommended that in the future, researchers can form a wider area with a larger sample so that the results can provide a more exact representation.

### 5. Conclusion

From the results of the existing scores, all scores measure pain intensity with the exact dimensions, and no scores is superior between one score and another. However, there are differences in preferences chosen by study subject populations in rural and suburban communities, where rural populations prefer using FPS-R scores, and suburban populations prefer using NRS scores in pain scale assessments. Complexity or simpler components may be an underlying reason for the preference of score selection to assess pain scales in that population. Therefore, the selection of pain scales should be adjusted to specific demographics so that clinicians can provide appropriate management with appropriate pain scales.

### Disclosure

The authors have no conflict of interest to declare and take full responsibility of the data integrity.

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