# Measuring the experiences of inpatients in Norway: *A randomised comparison of two approaches to scaling responses*

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## Introduction

There is variation in the scaling of items within patient experiences questionnaires. A review of 195 studies identified a range from three to eleven response categories with five categories as the mode in 61 studies (1). However there is limited evidence to support the use of different response scales. Research including randomised studies has been recommended to determine which form of response scale produces the best quality data (2).

## Objective

To assess the data quality of two approaches to scaling items within the Patient Experiences Questionnaire (PEQ)(3); a five-point scale version with descriptors for all scale points and a ten-point scale version with descriptors only at the end-points.

## Methods

- Following discharge from hospital, questionnaires were mailed to 1000 patients randomised to receive the five-point or the ten-point scale version.
- Missing data, item distributions, means, floor and ceiling effects were compared for the two questionnaires.
- Overdispersed Poisson regression analysis was used to assess the impact of response scale on floor and ceiling-effects after controlling for sociodemographic variables and health status.

**Figure 3: The ten-point scale had larger floor and ceiling-effects**

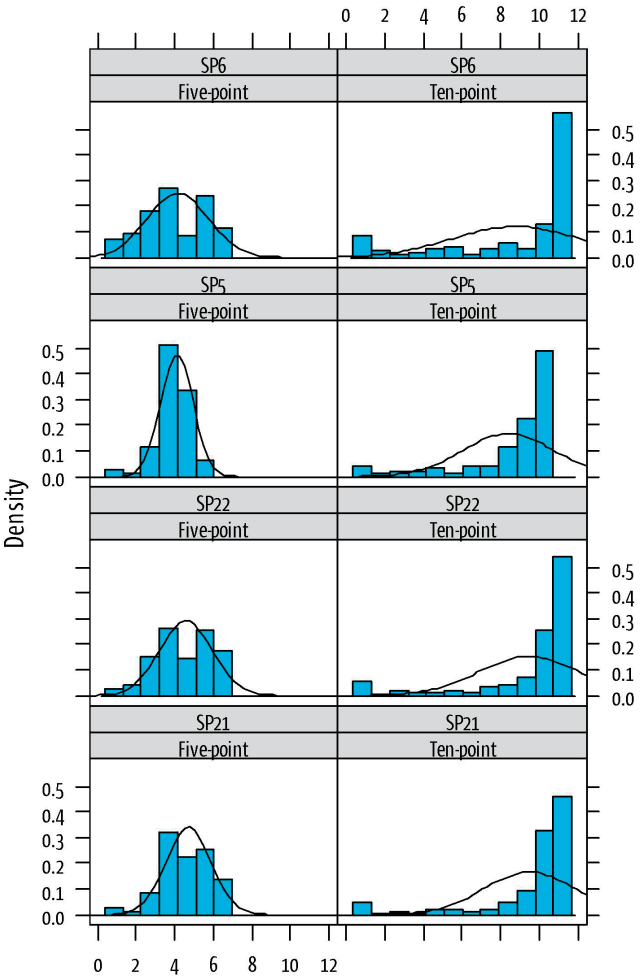


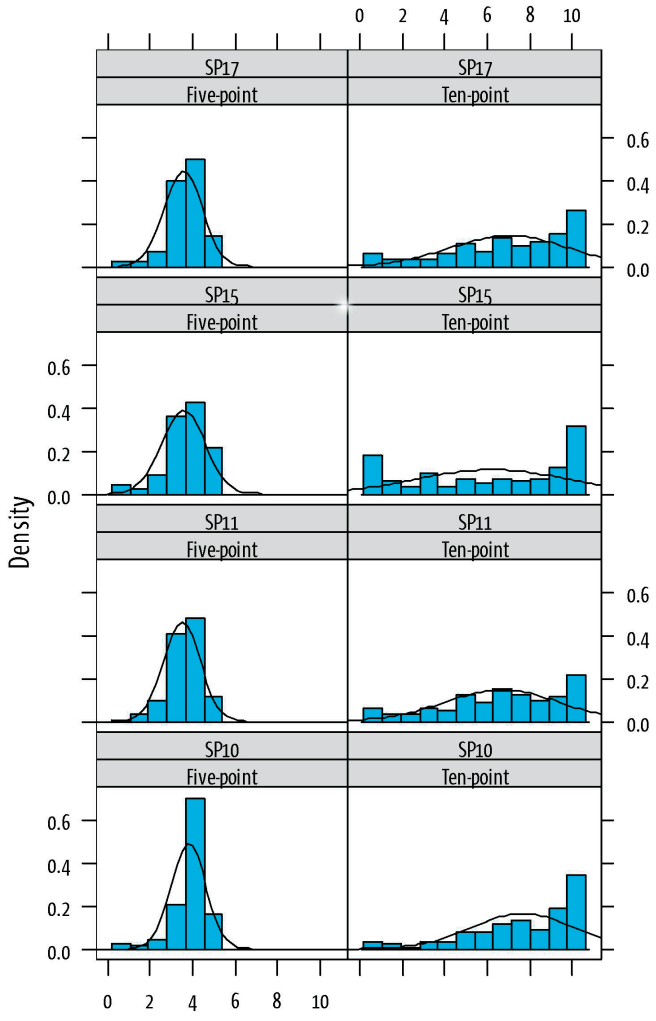
**Figure 1: Item 12 for the two versions of the questionnaire**

12. Did you feel that the nurses cared for you?

No, not at all ☐☐☐☐☐☐☐☐☐☐ Yes, very much

| | Not at all | To a small extent | To some extent | To a large extent | To a very large extent |
|---|---|---|---|---|---|
| 12. Did you feel that the nurses cared for you? | ☐ | ☐ | ☐ | ☐ | ☐ |

**Figure 2: The five-point scale was more unimodal and symmetric**




# Results

- There were no differences in level of missing data between the scales.
- The five-point scale produced data with fairly unimodal and symmetric distributions in contrast to the highly skewed J- and U-shaped distributions for the ten-point scale (figure 2 and 3).
- The five-point scale had lower means for 19 of 24 items. This was statistically significant for four items and for the overall score ($p<0.01$).
- The ten-point scale had the largest floor-effect for 22 of 24 items (figure 3). This was statistically significant for seven items and for the overall score ($p<0.01$).
- The ten-point scale had the largest ceiling-effect for all 24 items (figure 3). This was statistically significant for 15 items and for the overall score ($p<0.01$).
- Regression analysis showed that relative increase in floor-effect was 59% with the ten-point scale compared to the five-point scale.
- Regression analysis showed that relative increase in ceiling-effect was 70% with the ten-point scale compared to the five-point scale (for the median age of 59 years).

# Conclusions

- The ten-point end-anchored scale tended to pull the responses to the upper and lower ends of the scale.
- The five-point scale is more suitable for questionnaires that assess patient experiences and satisfaction.
- The five-point scale is particularly more suitable for elderly patients.
- The five-point scale will be used in future Norwegian national surveys of patients.

## References


1. Sitzia J. How valid and reliable are patient satisfaction data? An analysis of 195 studies. Int J Qual Health Care (1999), 11, 319-328.
2. McColl E, Jacoby A, Thomas L, Soutter J, Bamford C, Steen N et al. Design and use of questionnaires: a review of best practice applicable to surveys of health service staff and patients. Health Technol Assess (2001), 5(31).
3. Pettersen KI, Veenstra M, Guldvog B, Kolstad A. The Patient Experiences Questionnaire: development, validity and reliability. Int J Qual Health Care. (2004), 16, 456-463.



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