The Nordic Patient Experiences Questionnaire (NORPEQ): cross-national comparison of data quality, internal consistency and validity in four Nordic countries

Kjersti Eeg Skudal, Andrew Malcolm Garratt, Birgitta Eriksson, Tuija Leinonen, Jan Simonsen, Oyvind Andersen Bjertnaes

ABSTRACT

Objectives: To evaluate the Nordic Patient Experiences Questionnaire (NORPEQ) for data quality, reliability and validity following surveys of patients in Finland, Norway, Sweden and the Faroe Islands.

Design, methods and participants: The NORPEQ was mailed to 500 patients randomly selected after receiving inpatient treatment in Finland, Norway and Sweden. The NORPEQ was also included in a national survey in Norway and in the Faroe Islands.

Dimensionality was assessed using principal component analysis and internal consistency by item-total correlation and Cronbach’s α. Construct validity was assessed by correlating NORPEQ scores with variables known to be related to patient experiences.

Setting: Somatic hospitals in Finland, Faroe Islands, Norway and Sweden.

Primary and secondary outcome measures: Item missing, internal consistency reliability and construct validity.

Results: Response rates ranged from 45.8% in Norway to 84% for Sweden. Levels of missing data were low for all items across the surveys. Principal component analysis identified one component with six experiences items. Mean NORPEQ scores ranged from 74 to 79 on the 0–100 scale, where 100 represents the best possible experiences. Cronbach’s α ranged from 0.84 in Finland to 0.88 in Sweden.

Conclusions: The NORPEQ is a brief measure of patient experiences that covers important aspects of the healthcare encounter. It shows good evidence of reliability and validity.

Practice implications: The NORPEQ instrument is recommended for cross-national comparisons of healthcare experiences for the four Nordic countries.

INTRODUCTION

The literature relating to the development and testing of healthcare quality indicators that assess patient experiences and satisfaction is extensive. Such indicators have gained increasing importance following the work of international organisations, such as the Organisation for Economic Cooperation and Development and the WHO, which have emphasised the importance of the patient’s...
Cross-national comparison of data quality and validity of the NORPEQ instrument

Although the CAHPS group has applied the CAPHS-questionnaire across Spanish- and English-speaking inpatients in the USA,14 previous cross-national studies of patient experiences have not demonstrated that the questionnaires perform in the same manner cross-nationally.13 This makes it difficult to determine to what extent any differences in patient evaluations are attributable to differences in healthcare quality or questionnaire performance across countries. Hence, the importance of adequate reporting of questionnaire development and survey methodology has been emphasized.2 11 15 It is important to account for cultural and demographic differences, health problems and potential translation problems in cross-national studies of patient experiences.2 Many healthcare quality indicators have been studied at the local level with local providers, but national governments require comparisons of providers.2 11

The NORPEQ was designed to include a core set of questions covering the most important aspects of inpatient experiences that can be used for cross-national comparison of inpatient experiences alongside existing longer-form national survey questionnaires.13 16 This article describes the cross-national questionnaire development based on surveys undertaken among hospital inpatients in Finland, Norway, Sweden and Faroe Islands. Following a rigorous process of questionnaire development including forward—backwards translation, the NORPEQ questionnaire was assessed for levels of missing data, reliability and validity in the four countries. The development of NORPEQ followed recommended criteria including forward—backwards translation necessary for a questionnaire that is to be used cross-nationally.2 17

METHODS
NORPEQ development

The appropriateness of health quality indicators for benchmarking and other aspects of quality improvement is dependent on their reliability and validity,11 18 and criteria for their evaluation have been recommended.3 4 6 11 19–21 These criteria were applied in the development of the eight-item NORPEQ, which was translated into English by two professional translators (online appendix 1). Development followed a literature review of existing questionnaires and consultation with experts within the field of patient experiences in three face-to-face meetings. In the first of these meetings, three main considerations guiding the development of the questionnaire were decided. First, the questionnaire should include the most important aspects of patient experiences following a literature review relevant to patients across the Nordic countries. Second, the questionnaire should be brief so that the questions can supplement existing surveys. Third, the questionnaire should be developed in Norwegian and translated into the other Nordic languages using the forward—backwards methodology.13

The content of questionnaires used in surveys was assessed for appropriateness, and patient involvement in
this process was designed to lend the NORPEQ content validity. Analysis of themes and items in existing NORPEQs revealed that the content of the questionnaires was fairly similar, but that there was some variation in question formulation and the choice of scaling. The analysis was based on the most widely used questionnaires in the Nordic countries, which included the national patient experience survey in Denmark, a 20-item measure of patient experience in Finland, a short form of the Quality from the Patient's Perspective questionnaire on Iceland, the Patient Experiences Questionnaire in Norway and the Picker survey in Sweden. Furthermore, the review found that patient experiences with health personnel including whether the doctors were understandable, doctors' and nurses' professional skills, nursing care, whether the doctors and nurses were interested in the patients problems and information related to tests are the most important aspects of patients experiences.

Six of the eight NORPEQ items sum to produce an overall scale from 0 to 100, where 100 is the best possible experience of care. If respondents had missing values on more than half of the items, mean scores were imputed. The NORPEQ is designed to be routinely used alongside longer-form instruments in Nordic and international patient surveys.

The NORPEQ was tested by means of cognitive interviews with six patients. A Norwegian pilot survey of 500 patients receiving inpatient care at a large University hospital found to have evidence for data quality, unidimensionality, internal and test–retest reliability and construct validity.

To ensure valid comparison across countries, questionnaires must demonstrate cross-cultural equivalence. The NORPEQ questionnaire was developed in Norwegian for translation into the other Nordic languages using methods that adhere to minimum standards recommended for translation of patient questionnaires, including the forwards–backwards methodology.

The questionnaire was translated into Danish, Finnish and Swedish by two forward translators fairly acquainted with the area and with some experience in health-related research. Emphasis was put on conceptual rather than literal translation. The backward translators were Norwegians who were not familiar with the original version. The Faroese version went through forward–backward translation from Danish to Faroese and back to Danish. This was because Faroese speak Danish, which is taught at school, and no one from the research group was able to translate from Norwegian to Faroese. Again, this included independent forward and backward translators to ensure that the Faroese questionnaire was conceptually similar to the Danish version. The Norwegian researchers assessed the forward–backward translations following discussions with those responsible in the different countries, and it was agreed that the instructions and questions had retained their original meaning.

The approved translations were then tested by means of cognitive interviews with six patients in Finland (n=6) Sweden (n=11) and the Faroe Islands (n=27). Patients were asked whether they had omitted any questions, if any questions were difficult or too similar, if questions were acceptable and relevant and if they had any other problems with completion.

Data collection
In October and November 2009, 500 patients were randomly selected from adult inpatients at one University hospital in Finland were sent a questionnaire. Postal reminders were sent 3 weeks after the first questionnaire. Five hundred patients were randomly selected from adult inpatients at one Swedish University hospital within a 3-week period in February–March 2009. Two postal reminders were sent to non-respondents at 1 and 3 weeks. The Norwegian national survey included 24141 patients randomly selected among patients discharged from 63 hospitals in a 3-month period in 2006. About a week later, a random sample of 270 respondents was asked to complete an identical second questionnaire for purposes of assessing test–retest reliability. The Faroe Islands has only 50,000 inhabitants and hence a large pilot of the NORPEQ was not possible. Instead the NORPEQ was applied alongside a national patient experience survey. In May 2010, 892 inpatients were discharged from three different hospitals on the Faroe Islands, and these patients were mailed a questionnaire: six patients were not eligible. One postal reminder was sent 3 weeks later to non-respondents.

Statistical analysis
Questionnaire evaluation followed recommendations relating to measures of patient satisfaction and questionnaire development more generally. Items were assessed for levels of missing data. Principal component analysis (PCA) with varimax rotation was used to assess the underlying dimensionality of the six items measuring patient experiences. Following previous findings, it was expected that these items would be unidimensional. Internal consistency was assessed using item-total correlation and Cronbach’s α. The former measures the association between the item and the remainder of its scale, the latter determines the overall correlation between items within a scale. In the national Norwegian survey, test–retest reliability was assessed by the intraclass correlation coefficient.

Construct validity assesses the extent to which a questionnaire measures what it is intended and is assessed through comparisons with variables that following empirical and theoretical considerations have expected associations with patient experiences or satisfaction. Research including systematic reviews has found that patient experiences and satisfaction are associated with general satisfaction, perceptions of incorrect treatment, health status, health outcomes, fulfilment of expectations and expectations.
additional items to assess construct validity of the NORPEQ scores including the two items relating to general satisfaction and incorrect treatment that have been widely used in Nordic and international research and items relating to general health, changes in general health and physical health compared with before admission, and fulfilment of expectations. These items all have 5-point descriptive scales. For an overview of stages in the development and evaluation of the NORPEQ instrument see Table 1.

RESULTS

NORPEQ development

Only minor changes were made to the questionnaire on the basis of the forward—backward translations. The results of cognitive interviews showed that the eight items were acceptable, relevant and understandable to Norwegian and Swedish inpatients. One challenge related to the use of the term ‘health personnel’, which in Norwegian includes nurses and licensed practice nurses, whereas in other countries, nurses comprise other groups or they do not have a corresponding concept. While there were no problems for the other patient groups, some Finnish patients found the item about whether doctors and health personnel were interested in patient’s problem difficult because it asked about two occupational groups. However, the majority of informants in Finland did not rate the question as difficult, and most found it relevant with appropriate response categories. Therefore, no changes to the NORPEQ were made following cognitive interviews in Finland, Norway and Sweden. Several patients from the Faroe Islands found the question relating to incorrect treatment difficult to understand, and hence, the question was reformulated.

Data collection

Table 2 shows the response rate and respondent and non-respondent characteristics for each country. Of 496 eligible patients, 383 (77.2%) responded to the Finnish survey, and in the Swedish survey, 412 (84%) patients responded. Of the 24 141 patients included in the Norwegian national survey, 11 079 (45.8%) responded. For the Faroe Islands, 551 (62.2%) responded.

In Finland, the respondents’ mean age was 59.1 (SD=17.6) years and 51.7% were women. Respondents were on average approximately 9 years older than non-respondents, which was statistically significant. Respondents in Sweden were on average approximately 8 years older, which was statistically significant. In the Norwegian national survey, the respondents’ mean age was 60.35 (SD 16.97) years and 53.2% were women (table 2). There were a significantly slightly greater proportion of female respondents. Compared with non-respondents, respondents were also significantly more likely to be admitted in an emergency and have 0.47 fewer days in hospital. For the Faroe Islands, the respondents’ mean age was 57.0 (23.6) years and 47.7% were women.

Statistical analysis

Missing data for the six NORPEQ items ranged from 0.5% to 3.9% across the three smaller surveys in Finland, Norway and Sweden (table 2). For the Faroe Islands, the level of missing data varied between 6.7% and 10%. Incorrect treatment had the highest level of missing data for all surveys, the only exception was Norway where general satisfaction for the national survey had the highest level of missing data. Item means for the four surveys were generally skewed towards positive experiences of care ranging from 3.7 to 4.4 on the 1–5 scale. The mean ranking of items was very similar across the surveys. Patients had the poorest experiences on the two items information relating to tests or health personnel being interested. Patients had the best experiences with nursing care.

Results of PCA and measures of internal consistency are shown in table 3. The Finnish data gave two components, with eigenvalues of 3.38 and 1.02. One component was found for the Swedish, Norwegian national and for the Faroese data with eigenvalues of 3.82, 3.68 and 3.62, respectively. Given the relatively low value for the second component found for the Finnish data that just meets the criterion of 1.0, a single component that comprised all six items was accepted. The six items had high component loadings between 0.70 and 0.82 on this single component. The component loadings had a similar pattern across the different countries with the items ‘health personnel interested in health problem’ and ‘information on tests’ generally having the highest loadings and ‘nursing care’ and ‘doctors understandable’ generally having the lowest loadings. Item-total correlations for the six NORPEQ items were acceptable and ranged from 0.53 to 0.80. Cronbach’s α for the six NORPEQ items ranged from 0.84 to 0.88 for Finland and the Faroe Islands, respectively.

Of 270 randomly selected Norwegian patients asked to take part in the test–retest survey in the national Norwegian survey, 196 (72.6%) returned a second questionnaire. The intraclass correlations ranged from 0.68 to 0.73 for the items relating to information on test and nurses’ professional skills, respectively. The intraclass correlation for the NORPEQ scores was 0.85, which is considered acceptable for group comparisons.9

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Stages in the development and evaluation of the NORPEQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Item derivation</td>
</tr>
<tr>
<td>2</td>
<td>Translation</td>
</tr>
<tr>
<td>3</td>
<td>Patient interviews</td>
</tr>
<tr>
<td>4</td>
<td>Pilot survey</td>
</tr>
<tr>
<td>5</td>
<td>Main survey</td>
</tr>
</tbody>
</table>

NORPEQ, Nordic Patient Experiences Questionnaire.
Table 2 Characteristic of respondents and non-respondents

<table>
<thead>
<tr>
<th></th>
<th>Distribution, N (%)</th>
<th>Age, mean (SD)</th>
<th>Gender, N (%)</th>
<th>Admission type, N (%)</th>
<th>Length of stay, mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>383 (77.2)</td>
<td>59.13 (17.62)**</td>
<td>185 (48.30)</td>
<td>198 (51.70)</td>
<td>174 (45.40)</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>113 (22.8)</td>
<td>50.13 (19.63)</td>
<td>66 (58.40)</td>
<td>47 (41.60)</td>
<td>49 (43.40)</td>
</tr>
<tr>
<td>All</td>
<td>496 (100)</td>
<td>57.07 (18.43)</td>
<td>251 (50.60)</td>
<td>245 (49.40)</td>
<td>223 (45.0)</td>
</tr>
<tr>
<td>Norway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>244 (48.8)</td>
<td>56.67 (19.42)**</td>
<td>120 (49.38)</td>
<td>123 (50.63)</td>
<td>109 (44.86)</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>256 (51.2)</td>
<td>55.85 (21.81)</td>
<td>133 (52.16)</td>
<td>122 (47.84)</td>
<td>95 (37.25)</td>
</tr>
<tr>
<td>All</td>
<td>500 (100)</td>
<td>55.85 (21.81)</td>
<td>253 (50.60)</td>
<td>245 (49)</td>
<td>204 (40.80)</td>
</tr>
<tr>
<td>National Norwegian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>11079 (45.8)</td>
<td>60.37 (21.68)**</td>
<td>5187 (46.80)*</td>
<td>5892 (53.2)*</td>
<td>5398 (48.70)**</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>13111 (54.2)</td>
<td>61.01 (17.02)</td>
<td>6329 (48.30)</td>
<td>6782 (51.7)</td>
<td>7382 (56.30)</td>
</tr>
<tr>
<td>All</td>
<td>24190 (100)</td>
<td>60.66 (19.68)</td>
<td>11516 (47.60)</td>
<td>12674 (52.4)</td>
<td>12780 (53.00)</td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>412 (83.7)</td>
<td>61.13 (18.29)**</td>
<td>206 (50.00)</td>
<td>206 (50.00)</td>
<td>187 (45.40)</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>80 (16.3)</td>
<td>52.91 (22.09)</td>
<td>39 (48.75)</td>
<td>41 (51.25)</td>
<td>28 (36.00)</td>
</tr>
<tr>
<td>All</td>
<td>492 † (100)</td>
<td>59.79 (19.18)</td>
<td>245 (49.79)</td>
<td>247 (50.20)</td>
<td>215 (43.69)</td>
</tr>
<tr>
<td>The Faroe Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td>551 (62.2)</td>
<td>55.96 (23.59)</td>
<td>290 (52.6)</td>
<td>261 (47.4)</td>
<td>350 (63.5)</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>335 (37.8)</td>
<td>50.94 (28.65)</td>
<td>163 (48.7)</td>
<td>172 (51.3)</td>
<td>185 (56.4)</td>
</tr>
<tr>
<td>All</td>
<td>886 (100)</td>
<td>54.07 (25.72)</td>
<td>453 (51.12)</td>
<td>433 (48.9)</td>
<td>535 (60.9)</td>
</tr>
</tbody>
</table>

Statistical significance: *p < 0.05; **p < 0.01.
†The questionnaire was sent to 500 adults, eight of these were not eligible and the gross population is 492.
Cross-national comparison of data quality and validity of the NORPEQ instrument

Table 3 Component loadings and internal consistency of the NORPEQ

<table>
<thead>
<tr>
<th></th>
<th>Finland</th>
<th>Norway</th>
<th>National</th>
<th>Sweden</th>
<th>Faroe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comp load</td>
<td>CA/item total</td>
<td>Comp load</td>
<td>CA/item total</td>
<td>Comp load</td>
</tr>
<tr>
<td>NORPEQ score</td>
<td>0.84</td>
<td>—</td>
<td>0.85</td>
<td>—</td>
<td>0.87</td>
</tr>
<tr>
<td>Doctors understandable</td>
<td>0.74</td>
<td>0.62</td>
<td>0.71</td>
<td>0.59</td>
<td>0.76</td>
</tr>
<tr>
<td>Doctors’ professional skills</td>
<td>0.76</td>
<td>0.63</td>
<td>0.76</td>
<td>0.63</td>
<td>0.78</td>
</tr>
<tr>
<td>Nurses’ professional skills</td>
<td>0.70</td>
<td>0.56</td>
<td>0.76</td>
<td>0.64</td>
<td>0.79</td>
</tr>
<tr>
<td>Nursing care</td>
<td>0.68</td>
<td>0.53</td>
<td>0.73</td>
<td>0.60</td>
<td>0.77</td>
</tr>
<tr>
<td>Health personnel interested in problem</td>
<td>0.82</td>
<td>0.71</td>
<td>0.81</td>
<td>0.71</td>
<td>0.83</td>
</tr>
<tr>
<td>Information on tests</td>
<td>0.80</td>
<td>0.69</td>
<td>0.78</td>
<td>0.66</td>
<td>0.76</td>
</tr>
</tbody>
</table>

NORPEQ, Nordic Patient Experiences Questionnaire.

Table 4 shows that the NORPEQ scores for the four countries were skewed towards positive experiences and varied from 75.3 to 78.6 for Finland and Sweden, respectively. Approximately 10% of the patients in both the Norwegian and the Swedish surveys scored 60 or below. In Finland, 15.7% of Finnish patients scored 58.3 or below, while on the Faroe Islands, 16.3% scored 58.3 or below. Scores for the six items were also similar with all three countries scoring lowest on the item relating to information on test and examinations. Finland, Sweden and the Faroe Islands had the highest scores on the item relating to nursing care, while Norway had very similar high scores for this item and two others. Scores for the satisfaction item were also generally high.

Table 5 shows the results of validity testing. The correlations across the different surveys are broadly consistent. High levels of correlations were found between the NORPEQ scores and general satisfaction in the range 0.72–0.77 and correlations with incorrect treatment were lower and in the range 0.24–0.39 for all surveys. For Finland, Norway and Sweden, correlations with expectations relating to treatment and care were moderate and in the range 0.51–0.58. Correlations with expectations relating to health outcome were lower and in the range 0.30–0.38. Lower levels of correlation were found for the health-related variables, for example, general health had low correlations with NORPEQ scores in Norway and Sweden, whereas in Finland, general health did not correlate with NORPEQ. The health-related variables were not available for the Faroe Islands.

DISCUSSION AND CONCLUSIONS

Discussion

The NORPEQ is a short self-completed questionnaire with evidence for data quality, reliability and validity. The NORPEQ includes what are judged to be the most important aspects of experiences for patients. Levels of missing data were very low across the eight items for Finland, Norway and Sweden. The results of PCA showed one uniform measure of patient experiences based on the six NORPEQ items, and general satisfaction and incorrect treatment are treated as supplementary items. Overall, this shows that NORPEQ meets the objective to develop a short questionnaire covering the most important aspects of patient experiences within the Nordic countries.

Furthermore, the NORPEQ shows evidence for construct validity in tests that were based on hypothesised associations with variables relating to general satisfaction, incorrect treatment, health status, health outcomes and fulfilment of expectations. Previous studies have found comparable results for different analyses still produced satisfactory results and different aspects of health will help determine whether this finding has implications for cross-cultural validity.

The test–retest reliability of the NORPEQ has been found to be acceptable in two Norwegian surveys at the local and national levels. It would be an advantage to have test–retest data for the other countries as well. Previous studies have found comparable results for internal consistency and test–retest reliability for measures of patient experiences. Therefore, it is reasonable to assume similar levels of test–retest reliability for the other countries given the similarity of the results across the countries.

Compared with other surveys of patient experiences at a national level, the samples for the surveys were small and three of them were pilot studies. However, the different analyses still produced satisfactory results and items performed very similarly across the countries. Mean item scores, component loadings and item-total correlations were similar across countries. Results of validity testing were in line with those following national surveys that have used longer questionnaires comprising scales relating to different aspects of patient experiences and satisfaction. NORPEQ scores had similar significant levels of correlation with those for the additional

## Table 4. Missing data, means (SD) for NORPEQ items and scale scores

<table>
<thead>
<tr>
<th>Item</th>
<th>Finland</th>
<th>Norway*</th>
<th>National Norway</th>
<th>Sweden</th>
<th>Faroe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysed sample size (n)</td>
<td>382 (1 (0.3))</td>
<td>243 (1 (0.4))</td>
<td>10 849 (230) (2.1)</td>
<td>400 (12)</td>
<td>514 (37)</td>
</tr>
<tr>
<td>Missing, n (%)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>NORPEQ† score</td>
<td>75.3 (14.92)</td>
<td>74.37 (15.69)</td>
<td>77.03 (16.3)</td>
<td>78.57 (16.11)</td>
<td>75.45 (16.43)</td>
</tr>
<tr>
<td>Were the doctors understandable?‡</td>
<td>3.88 (0.84)</td>
<td>4.0 (0.80)</td>
<td>4.08 (0.84)</td>
<td>4.07 (0.81)</td>
<td>3.86 (0.91)</td>
</tr>
<tr>
<td>Did you have confidence in the doctors’ professional skills?</td>
<td>4.21 (0.72)</td>
<td>4.13 (0.69)</td>
<td>4.2 (0.8)</td>
<td>4.31 (0.71)</td>
<td>4.09 (0.87)</td>
</tr>
<tr>
<td>Did you have confidence in the nurses’ professional skills?</td>
<td>4.17 (0.62)</td>
<td>4.07 (0.66)</td>
<td>4.21 (0.74)</td>
<td>4.26 (0.68)</td>
<td>4.18 (0.72)</td>
</tr>
<tr>
<td>Did the nurses take care of you?</td>
<td>4.27 (0.72)</td>
<td>4.14 (0.81)</td>
<td>4.2 (0.78)</td>
<td>4.34 (0.78)</td>
<td>4.29 (0.76)</td>
</tr>
<tr>
<td>Were the health personnel interested in your problem(s)?</td>
<td>3.83 (0.86)</td>
<td>3.73 (0.92)</td>
<td>3.92 (0.90)</td>
<td>3.96 (0.92)</td>
<td>3.85 (0.85)</td>
</tr>
<tr>
<td>Did you receive sufficient information about tests and examinations?</td>
<td>3.71 (0.95)</td>
<td>3.8 (0.98)</td>
<td>3.82 (0.92)</td>
<td>3.93 (0.92)</td>
<td>3.86 (0.95)</td>
</tr>
<tr>
<td>Overall, was the treatment and care you received in the hospital satisfactory?</td>
<td>4.14 (0.82)</td>
<td>4.03 (0.86)</td>
<td>4.24 (0.76)</td>
<td>4.19 (0.77)</td>
<td>4.15 (0.79)</td>
</tr>
<tr>
<td>Was there a time you thought a medical mistake was made in your treatment and care?</td>
<td>1.39 (0.82)</td>
<td>1.44 (0.85)</td>
<td>1.39 (0.87)</td>
<td>1.53 (1.14)</td>
<td>1.33 (79)</td>
</tr>
</tbody>
</table>

*These results were reported in a previous article.13

† The NORPEQ total score is calculated by summing the six items to produce an overall scale of patient experiences from 0 to 100, where 100 is the best possible experience of care.

‡ All items have 5-point descriptive scales of ‘not at all’, ‘to a small extent’, ‘to some extent’, ‘to a large extent’ and ‘to a very large extent’.

NORPEQ, Nordic Patient Experiences Questionnaire.
items used in validity testing, the exception being general health for Finland. The strong associations between patient experiences as measured by NORPEQ and general satisfaction in each country confirm the importance of the NORPEQ items as a measure of patient experiences across countries.

The measurement of patient experiences is an important component of patients’ evaluation of healthcare services. During the past decade, measures of patient experiences have gained increasing interest as healthcare quality indicators. Most studies of healthcare quality indicators have taken place at the local level, and few studies have conducted comparisons across countries. It is thus difficult to know whether variations in patient experiences reflect differences in culture, health systems or actual differences in quality as perceived by patients.

Methodological concerns aside, existing research has implied that there is cross-national variation in patient experiences. The Commonwealth Fund and the WHO have conducted surveys of the general population and within primary care. Recipients of the survey results have included health ministers and decision-makers in each of the countries. Commonwealth Fund surveys include a large number of single items, and there has been no reporting of data quality, reliability and validity. The Picker Institute has compared patients’ perceptions of the quality of acute hospital care as well as more focused surveys of patient experiences across Germany, Sweden, Switzerland, the UK and the USA. These studies have focused on results of surveys and have not described the translation processes and cross-cultural testing. The Consumer Assessment of Health Plan Surveys has published the results of one cross-national comparison of public trust in healthcare providers including doctors. However, patient experiences and public trust are different constructs, and the two surveys of these constructs were undertaken in different populations. The NORPEQ is the first questionnaire developed to compare general hospital inpatients’ experiences across countries, which is the most studied and largest group of healthcare users.

Furthermore, patient experiences were assessed in four countries with highly similar healthcare delivery. This similarity may have contributed to the consensus in identifying important aspects of experiences for inclusion in the NORPEQ. The process of item development included experts from the different countries who subsequently monitored all phases of the project. The translation process followed recommended procedures relating to cross-cultural adaptation within health-related research.

The study included two national surveys for Norway and the Faroe Islands, but two surveys of just one University hospital for two other countries, Finland and Sweden, which limits the conclusions that can be drawn in terms of the appropriateness of the NORPEQ and cross-cultural equivalence. However, the national survey results for Norway and the Faroe Islands were very similar to those reported in an earlier study of the NORPEQ that included patients from one Norwegian University hospital using the similar survey design that was reported here for Finland and Sweden. Hence, it is reasonable to hypothesise that the NORPEQ will perform similarly in national surveys within these countries and in other Nordic countries following
recommended translation procedures and cognitive testing. To further assess the NORPEQ for cross-cultural equivalence, evaluation following national surveys based on representative samples including the other Nordic countries should be conducted. Moreover, the inclusion of NORPEQ alongside existing instruments used in national surveys of inpatient experiences or other patient groups’ experiences will further contribute to the cross-national evaluation of validity.

**Practice implications**

This study has demonstrated that it is possible to cover important aspects of the healthcare experiences in a short-form measure. Furthermore, the 8-item questionnaire has proved relatively easy to translate and evaluate across the Nordic countries. Through the inclusion of the NORPEQ in national surveys of Norway and the Faroe Islands, the current study has shown how the brevity of the questionnaire lends it feasibility for inclusion as part of existing national surveys. Hence, we consider the NORPEQ suitable as a supplement to future national healthcare surveys conducted in the Nordic countries that can facilitate cross-national comparisons to inform Nordic citizens, patients, politicians and leaders in healthcare about patient experiences as a measure of the quality of healthcare. This will promote a mutual understanding of quality in healthcare across the Nordic countries.

**Conclusions**

Although NORPEQ is brief, it measures important aspects of patient experiences directly related to the care patients receive in the hospital. Items typically used in longer questionnaires such as hospital access, hospital equipment or standards of patient facilities are not included. Still, results of testing for validity including the high level of correlation with responses to the general satisfaction item follow previous findings for longer questionnaires. The strength of NORPEQ is the focus on important aspects of healthcare summed to form a single score that is, supplemented with two items relating to patient perceptions of incorrect treatment and satisfaction. The NORPEQ is acceptable and feasible for cross-national comparisons of hospital care but should also be considered for applications alongside existing national surveys for the Nordic countries. Overall, the NORPEQ scores show that there is considerable scope for improvement in delivery of care in the Nordic countries.

To conclude, the NORPEQ has acceptable data quality, reliability and validity within the Faroese, Finnish, Norwegian and Swedish inpatients. The questionnaire has been translated into other Nordic languages, cognitive interviews have taken place in Denmark and further testing is planned in Iceland. Following further evaluation, the NORPEQ will be used in future national and cross-national surveys. The NORPEQ was developed and tested as part of a Nordic quality indicator project that aims to assess and compare health service performance across the Nordic countries. Such cross-national comparisons of health system performance offer greater accountability and transparency, support strategy review and development, and give potential for mutual learning.

**Contributors**

KES planned the paper together with AMG, BE, TL, JS and OAB, carried out the statistical analysis and drafted the paper. AMG, BE, TL, JS and OAB revised the draft critically and approved the final version.

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**Competing interests**

None.

**Patient consent**

The data are anonymised in accordance with ethical rules in the participating countries, and it is thus not possible to reach patients for filling such a consent form.

**Ethics approval**

In Norway, ethics approval was provided by the Norwegian Regional Committee for Medical Research Ethics, the Data Inspectorate and the Norwegian Directorate of Health and Social Affairs. On the Faroe Islands, the Faroese Data Inspectorate approved the study. In Finland, it was not necessary to apply for approval from ethics committee/data inspectorate to ask patients about their experiences. In Finland, it is usual to ask ethics committee/data inspectorate about permission only if the study seeks to change the medical care for patients. This is not the case in NORPEQ. However, the Finnish NORPEQ team got approval from the hospital leaders to conduct the study. In Sweden, no approval was obtained because the study was regarded anonymous.

**Provenance and peer review**

Not commissioned; externally peer reviewed.

**Data sharing statement**

All data are used in the paper. Also, the countries did not apply for consent to share data.

**REFERENCES**

Cross-national comparison of data quality and validity of the NORPEQ instrument