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Patients' Perceptions of Perioperative Quality of Care in Relation to Self-rated Health

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1 Patients' perceptions of perioperative quality of care in relation to self-rated health

2 Abstract

3 **Purpose:** To (1) explore associations between patient and perioperative factors
4 and dimensions of quality of care, and (2) to explore perioperative patients' self-rated
5 physical health in relation to information, encouragement and participation.

6 **Methods:** The present study was cross-sectional with a quantitative approach (n = 170
7 participants). Analyses were performed using quantitative techniques, but the collected data
8 were qualitative when the patients' subjective perceptions were quantified. Multiple logistic
9 regressions and Mann-Whitney U-tests were used to analyze the data.

10 **Finding:** The factor associated with patients' satisfaction within the dimension of "identity-
11 oriented approach of the caregivers," including the quality of information, encouragement
12 and participation, was self-estimated physical health. Those who estimated their physical
13 health as being good were generally more satisfied. Patients who rated their physical health
14 as being less than good were significantly less satisfied with the information provided prior to
15 surgery about their stay in the PACU.

16 **Conclusions:** Nurses should chart patients' estimations of their physical health initially in
17 care in order to provide reinforced support for patients who estimate their physical health is
18 less than good. Prior to surgery, patients who have estimated their physical health as being
19 less than good should be given realistic information about their stay in the PACU— that they
20 will be in a PACU postsurgery, what that stay means, and why it is necessary.

21 **Keywords:** Information, Participation, Perioperative, Nursing Care, Quality of Care,
22 Quantitative Design, Satisfaction.

23

24 **Implications for Clinical Practice**

25

26 • Nurses can chart patients' estimations of their physical health initially in care in order
27 to provide reinforced support for patients who estimate that their physical health is
28 less than good.

29

30 • Prior to surgery, patients who have estimated their physical health as being less than
31 good should be given realistic information about their stay in the post-anaesthesia care
32 unit (PACU)—that they will be in a PACU post-surgery, what that stay means and
33 why it is necessary.

34

35 • During post-surgery, patients should clearly and repeatedly be informed about which
36 PACU nurse is responsible for their care, and, if possible, the PACU nurse should
37 visit patients with less than good physical health prior to surgery.

38

39 **Introduction**

40 Quality of care can be viewed as patients' perceptions of satisfaction concerning an existing
41 care structure that is more external to the individual, although the patient is naturally a part of
42 this context.¹ Regardless of gender, age and social status, patients should be completely
43 informed of their rights to both autonomy and participation in their care.² During the
44 perioperative period, patients are usually in a vulnerable situation wherein several factors
45 interact in a complex way. Such factors may comprise causal diagnosis, the nature of the
46 surgery and, not least, patients' own estimation of their physical health status.³ Poor
47 satisfaction with care has been revealed to impair the quality of recovery after surgery.⁴
48 However, it is essential to chart how these factors are associated with patients' perceptions of
49 perioperative quality in order to overcome weaknesses in the quality of care given.

50

51 **Background**

52 Patient satisfaction is a conventional indicator of quality of care.^{5,6} Reviews of determinants
53 of patient satisfaction have shown that, regardless of environment, an important factor in
54 addition to the patient-staff relationship is the information provided and the skill of the staff.
55 Across different settings, the evidence⁷⁻¹⁰ shows that the most important sociodemographic
56 predictor of satisfaction is age, with older patients being more satisfied with healthcare
57 services. In addition, healthier patients have shown^{6,7,9} to be generally more satisfied with
58 their care than those with less than good health. In their literature review Heidegger et al¹¹
59 noted that few validated studies have examined quality of care from the patients' perspective
60 in perioperative care environments. Consistent with Crow et al.,⁷ they revealed that patient
61 satisfaction in perioperative settings correlated to the quality of information and
62 communication. Leinonen et al (2003) showed that patients have indicated satisfaction with
63 their stay in a PACU, while nurses have been less satisfied and occasionally described the

64 environment as restless and overcrowded. Later, Gunningberg and Idvall¹² found that areas in
65 which quality could be improved in perioperative care beyond communication included trust
66 and environmental factors. Idvall and Berg (2008) revealed that orthopedic patients and
67 general surgical patients had similar and too high ratings of postoperative pain, and
68 concluded that this impacted negatively on the patient satisfaction. Perioperative patients with
69 a better self-estimated physical health status upon admission have reported that they had
70 received better information than patients who estimated their health as being poorer.¹³ Given
71 that the preoperative period can be stressful for patients, giving information is a potentially
72 important aspect of quality care.¹¹ Understanding the patients' information needs and the
73 relationship between these needs and subsequent factors can inform future service delivery.
74 As far as we know, however, few studies have explored patients' perceptions of their
75 perioperative quality, and we found no studies using the Swedish quality from a patient
76 perspective (QPP) model to explore factors associated with patients' perceptions of quality of
77 perioperative care. Subsequently, there is a need to explore in detail which parts of
78 perioperative care need improvement.

79

80 **Purpose**

81 The purpose was (1) to explore associations between patient and perioperative factors and
82 the dimensions of quality of care and (2) to explore perioperative patients' self-rated physical
83 health in relation to information, encouragement and participation.

84

85 **METHODS**

86 **Design**

87 This study was cross-sectional with a quantitative approach, while the research purpose in
88 this context is to gain quantity knowledge at a group level. Analyses were performed using

89 quantitative techniques, but the collected data were qualitative when the patients' subjective
90 perceptions were quantified.

91

92 **Sample**

93 The present study was based on a consecutively selected sample assembled for a doctoral
94 thesis³ in a general central county hospital in Sweden. The thesis aimed to describe patients'
95 experiences of undergoing two specific surgical procedures, describe patients' perceptions of
96 quality of perioperative care in general and explore patients' perceptions of their
97 postoperative recovery. This study is focused on and develops knowledge about
98 perioperative patients' self-rated physical health in relation to quality of care; information,
99 encouragement and participation. The inclusion criteria sought patients who were
100 undergoing a surgical procedure major enough to warrant a stay in the post-anesthesia care
101 unit (PACU), were hospitalized in the ward for a minimum of one day post-surgery, did
102 remember most of the procedure and were cognitively able to complete the questionnaire.
103 Within these criteria, all patients (n = 187) at two general surgical wards and two orthopedic
104 wards were requested to participate, and 170 patients ultimately participated (Table 1).

105

106

Insert table 1 about here

107

108

109 **Ethical Considerations**

110 Ethical approval was received by the regional ethics review board in Sweden (nr 1230-10).
111 The medical heads of the involved clinics (i.e., the intensive care unit, orthopedic unit and
112 surgical unit) consented to the study. The first author provided oral and written information
113 about participation and the questions. Each patient signed a consent form and was guaranteed
114 confidentiality. The patients were reminded that their participation was voluntary and that
115 declining to participate would not affect their care.

116 **Data Collection**

117 Patient-responsible nurses in the wards identified all patients who met the inclusion criteria
118 from patient ledgers, and the first author questioned patients for participation. The first author
119 next distributed a questionnaire in the ward between one and four days post-surgery and
120 collected the questionnaires after completion. Patients who met the inclusion criteria but had
121 physical limitations and could not complete the questionnaire themselves (n = 70) were
122 assisted. The first author read the questions and possible responses and marked the response
123 chosen by the patient. Patients rated their perceived physical health on a five-point scale from
124 “Very good” to “Very poor.”

125

126 **Instrument**

127 The concept operationalised in the present study is a model—namely, quality from a patient
128 perspective (QPP), developed by Wilde et al.¹ The concept of QPP preceded the QPP
129 questionnaire used in this study and specifies satisfaction with the following areas:
130 perceptions of information, encouragement, participation, physical care, medical care, care
131 equipment, routines and atmosphere. All of these areas can be divided into four interrelated
132 dimensions: the medical-technical competence of the caregivers, the physical-technical
133 conditions of the care organisation, the identity-orientated approach of caregivers and the
134 sociocultural atmosphere of the care organisation.¹

135

136 We used the QPP questionnaire for surgery, which consists of 33 items¹⁴, all listed in Table 2.
137 The QPP questionnaire is widely examined for validity and internal consistency¹⁵⁻¹⁷ with
138 satisfactory results. Every item consists of a positively biased statement (e.g., “I received
139 good information about the surgery prior to surgery”). Responses were given on four-point
140 Likert scales, ranging from “Fully agree” to “Not agree at all.” Participants were told to

141 respond “Do not remember” or “Not applicable” if they could not recall their experience.
142 Participants who responded ‘not applicable’ or ‘did not remember’ were not included and are
143 reported as internal losses.

144

145

146

Insert table 2 about here

147

148 **Data Analysis**

149 The analysis of factors associated with dimensions of quality of care was performed via
150 multiple logistic regressions analyses (Table 3). First, a principal component analysis was
151 performed on the actual sample. There was covariance between some groups, such as
152 acute/elective patients versus orthopaedic/general surgery patients. Accordingly, factors with
153 highest variance were chosen, and multiple logistic regressions on the QPP’s dimension
154 levels were performed to investigate impact by gender, age, type of surgery, the American
155 Society of Anaesthesiologists (ASA) physical status classification system and whether
156 patients completed the questionnaire themselves or whether they received assistance and self-
157 estimated physical health. Each dimension in the QPP questionnaire was dichotomised
158 according to “Satisfied” = 0 (“Fully agree” and “Largely agree”) and “Less than satisfied” =
159 1 (“Partly agree” and “Not agree at all”). To generate two groups for self-estimated physical
160 health, we dichotomised the five-point scale into a two-point one: the responses “Very good”
161 and “Good” were grouped into “Good,” whereas the responses “Neither good nor poor,”
162 “Poor” and “Very poor” were group into “Less than good.” P-values < 0.05 (P) and odds
163 ratio (OR) were used to denote a significant impact.

164

165 The analysis in Table 5 was based on results from the logistic multiple regressions analysis,
166 and we selected to further explore the self-estimated physical health related to the dimension
167 “Identity-oriented approach of the caregivers,” including the areas information, participation
168 and encouragement (i.e., Items 1-22; see Table 2). Statistical analyses were performed in the
169 Statistical Package of the Social Sciences version 24 (SPSS Inc., Chicago, IL, USA).
170 Descriptive statistics were used, which are reported as proportions for categorical variables.
171 We used the four-point scales dichotomised into two-point-scales for each item (1-22).
172 Participants who answered “Not applicable” or “Do not remember” were excluded from the
173 analysis. We performed a statistical analysis to gauge differences between groups, and P
174 values of less than 0.05 denoted statistical significance. Mann-Whitney U-tests were used to
175 analyse the data, which were ordinal, using the original four-point scales, not the
176 dichotomised two-point ones.

177

178 Insert table 3 about here

179

180 **FINDING**

181 The multiple logistic regression analysis in Table 3 shows that within the dimensions of
182 physical-technical conditions (Item 29) and socio-cultural atmosphere (Items 30-32), a
183 significant impact emerged regarding whether the surgery was acute or elective. Those who
184 underwent acute surgery procedures were more likely to report a lower satisfaction than the
185 patients who had underwent elective procedures. Moreover, the analyses show that a
186 significant impact occurred depending on the patients’ self-estimated physical health status.
187 Patients who assessed their physical health as being good were more likely to report
188 satisfaction within the dimension of identity-oriented approach of the caregivers (Items 1-22)
189 than those who assessed their physical health as being less than good. The dimension of

190 identity-oriented approach of the caregivers was greatest, so we selected to further explore
191 this in detail at the item level in Tables 4 and 5.

192
193
194
195

Insert table 4 about here

196 Table 4 presents the personal characteristics and perioperative variables distributed among
197 self-estimated good and less-than-good physical health. Proportions indicate that the
198 distribution of gender, age, nature of surgery, ASA classification and hours in the PACU
199 post-surgery was relatively equal among the groups.

200

201 The proportions in Table 5 show that, on the whole, participants who reported their physical
202 health as being good were more satisfied than ones who reported their physical health as
203 being less than good. Only three items showed somewhat higher proportions of perceived
204 satisfaction among participants who estimated their health as being less than good,
205 specifically regarding encounters with the anaesthetist and nurses. The proportions moreover
206 indicated that regarding encounters in terms of empathy, respect and commitment, both
207 groups expressed a high extent of satisfaction without any significant differences. Regarding
208 information, the information received prior to surgery about what to expect in the theatre
209 room, about the stay in the PACU and about which nurses were responsible for care in the
210 PACU was all perceived as being less satisfying among participants who deemed their
211 physical health as being less than good. As such, although the other two items mentioned
212 nearly achieved significance, there was barely a significant difference regarding the item
213 “Good information about the stay in the PACU prior to surgery.” Proportions indicated that
214 participants who reported their physical health as being less than good were less satisfied
215 with their opportunities to influence and participate in decisions about their care and a

216 significant difference was indicated for the item “Good opportunities to influence my body
217 position in the theatre room.”

218

219 Insert table 5 about here

220

221 **DISCUSSION**

222 This study sought to explore associations between patient and perioperative factors
223 and dimensions of quality of care and to explore perioperative patients’ self-rated physical
224 health in relation to information, participation and encouragement. The results showed that
225 the factor associated with patients’ satisfaction within the dimension of identity-oriented
226 approach of the caregivers, including the quality of information, encouragement and
227 participation, was self-estimated physical health. This contrasts with previous research⁸⁻¹⁰
228 showing that the most important predictor of satisfaction across settings is age. Within the
229 dimension of identity-oriented approach of the caregivers, which was the largest dimension,
230 participants who estimated their physical health as being good were more satisfied than those
231 who reported their physical health as being less than good. Such results are consistent with
232 the findings of previous studies^{6,7,9} conducted in other care settings, which were that good
233 health correlates with perceptions of good care.

234

235 Within the dimension of identity-oriented approach of the caregivers, the multiple logistic
236 regression analyses showed an impact on satisfaction, depending on the patients’ self-
237 estimated physical health status, but not on ASA classification (i.e., physical health status)
238 rated prior to surgery by the anaesthetist. The ASA classification is the most common method
239 the world over for risk stratification prior to surgery¹⁸ and is de facto well-studied.¹⁸⁻²⁰

240 Higher ASA scores (III or more) is a predictor of higher rates of postoperative mortality,^{18,19}

241 more postoperative complications and slower recovery speed.²¹ However, the ASA
242 classification system has been criticised as vague and far from perfect.¹⁸ Notable in our study
243 was that the proportion of patients rated as representing ASA III or greater (i.e., lower
244 physical health status) by the anaesthetist was somewhat greater in the group who estimated
245 that their physical health was good than in the group who estimated their physical health less
246 than good. However, the ASA classification is only an external assessment of the patients'
247 preoperative physical status.^{22,23} Functional capacity, including the patients' own estimation
248 of physical health and mental fitness, has been shown²³ to be strong predictors of
249 postoperative outcomes. According to Larsson et al.,²⁴ patients' satisfaction can be evaluated
250 as an emotion based on personal and external objective conditions. In that sense, considering
251 satisfaction as an emotion has an intuitive appeal, for patients indeed have feelings or
252 perceptions of satisfaction or dissatisfaction. Summarising, the perception of one's physical
253 health may be subjective and not always correlated with objective measurements of physical
254 disease. Whether the patients estimate their own health differently than the anaesthetist does,
255 the information received about their poor physical status may cause decreased wellbeing
256 during the perioperative period.

257

258 In our study, three items regarding encounters with the anaesthetist and nurses showed
259 somewhat higher proportions of satisfaction for patients who estimated their health as being
260 less than good. This is consistent with the results of other studies²⁵⁻²⁷ made in perioperative
261 settings. An explanation for that consistency might be that staff resources are limited and that
262 a patient who appears to be in worse health receives more attention from available staff.
263 Smedley²⁷ described care in the PACU as a situation in which numerous patients at once
264 present multiple risk factors based on their preoperative baseline health status and their
265 specific response to both anaesthetics and the surgical intervention. Subsequently, staff must

266 prioritise caring for patients who need immediate and extensive attention. However, for
267 patients in good physical health undergoing minor surgical procedures, surgery can be a
268 major life event associated with anxiety, and such patients also need support.²⁵ The
269 proportions in our results indicated that patients who estimated their health as being less than
270 good were less satisfied with their opportunities to influence and participate in decisions
271 about their care, and a significant difference was indicated regarding the item “Good
272 opportunities to influence my body position in the theatre room.” Patients’ experiences in the
273 theatre-room have previously been revealed^{28,29} and have involved experiences of feelings of
274 helplessness, loss of control over decision-making and loss of body control. According to
275 Forsberg et al.,³ the patients’ ability to participate in decisions in their perioperative care thus
276 suggested a correlation between the information that they received with the aim of giving
277 them knowledge about their conditions, treatments and their possible choices; patients stated
278 that they missed such knowledge and that the possibility of their participation was therefore
279 decreased. Patients’ experiences in the theatre-room have involved being in a situation in
280 which one is dependent on the staff’s expert-knowledge.²⁹ Patients have emphasized the
281 importance of obtaining professional information about different options, such as the
282 opportunity to choose the type of anesthetic or their body-position.³

283

284

285 The present study showed that the item “Good information about the stay in the PACU prior
286 to surgery” indicated a significant difference, thereby revealing that patients who estimated
287 their health as being less than good were less satisfied with such information than those who
288 estimated their health as being good. This occurred despite extensive research that
289 emphasises the importance of preoperative information and education.^{30,31} Moreover, the
290 proportions in our study indicated that patients who had estimated that their physical health

291 was less than good were less satisfied with the information they received about which nurses
292 were responsible for the care in the PACU. According to Suhonen and Leino-Kilpi,³⁰
293 critically ill patients might be more concerned about their health and survival after surgery
294 and thus might need a greater extent of personal support. In our study, patients were prepared
295 for surgery in the ward and had not met the nurses in the PACU prior to surgery. In exploring
296 nurse-patient relationships in the PACU, Reynolds and Carnwell³² found that PACU nurses
297 met each patient both before and after surgery, which allowed nurses to discern what kind of
298 information each patient warranted and to understand each patient's wishes and needs for
299 support. If possible, there is a good idea that the PACU nurse should visit patients at the
300 wards prior to surgery. We may chart patients' estimations of their physical health and needs
301 for support initially in the care episode to provide reinforced support postoperatively, for
302 those who estimate their physical health is less than good.

303

304 **Limitations**

305 After surgical procedures patients may have poor recalls of the event, which may complicate
306 explorations of this area. None of the patients in our study received preoperative sedation
307 prior to surgery. The surgical patients had their anesthesia provided mostly with short-acting
308 agents; Propofol and Remifentanil and/or epidural analgesia. The orthopedic patients often
309 had an intermittent spinal analgesia and stayed awaked during the surgery. Mostly of the
310 patients were awake when they arrived to the PACU or short thereafter. Although, the
311 internal loss regarding certain items (Table 5) was considerable, due to that the patients had
312 responded 'did not remember'. This meant that the groups were small. Regarding the issue of
313 whether an adequate sample size gives a statistical test enough power to determine a true
314 negative result, a small sample size might produce a false negative result, known as a type II

315 error.³³ Subsequently, our interpretation is that the detected differences are true. It is possible,
316 however, that there were additional underlying differences that went undetected.

317 Several patients (n = 70) could not complete the questionnaire themselves and were assisted
318 by the first author, who read the questions and possible responses, which poses a risk for bias
319 due to the researcher's impact. However, the multiple logistic regressions showed that no
320 effect on perceptions of quality of perioperative care existed according to whether patients
321 completed the questionnaire themselves or received assistance when other variables were
322 taken into account. Moreover, patients in our study may have experienced uncertainty about
323 how their responses might influence their care. Assurances were given that their participation
324 should not affect their care and confidentiality should apply even against health staff.

325

326 Dichotomising a validated instrument and creating a new scale could present the risk of
327 misinterpretation. We dichotomised the five-point scale of self-estimated physical health into
328 a two-point scale; the responses "Very good" and "Good" physical health were grouped as
329 "Good physical health," whereas the responses "Neither good nor poor," "Poor" and "Very
330 poor" physical health were grouped as "Less-than-good physical health" in order to create
331 two groups. The response "Neither good nor poor" was neutral, and transferring a neutral
332 response into a biased one was a concern. Unambiguously, however, the interpretation that
333 participants who rated their health as being "Neither good nor poor" indicated less-than-good
334 physical health relative to those who rated their health as being "Very good" or "Good" has
335 to be correct. That most participants estimated their physical health as being very good or
336 good is gratifying, but this meant that the sizes of the groups were unequal. Although it is
337 statistically most efficient if the two groups are equal in size, there are still benefits to
338 studying more individuals; even if additional individuals belong to one of the groups.³³ The
339 internal loss regarding certain items (Table 5) was considerable, which meant that the groups

340 were small. Regarding the issue of whether an adequate sample size gives a statistical test
341 enough power to determine a true negative result, a small sample size might produce a false
342 negative result, known as a type II error.³³ Subsequently, our interpretation is that the
343 detected differences are true. It is possible, however, that there were additional underlying
344 differences that went undetected.

345

346 **Conclusion**

347 This study indicates that the factor associated with patients' satisfaction within the dimension
348 of "identity-oriented approach of the caregivers," including the quality of information,
349 encouragement and participation, was self-estimated physical health. Patients who estimated
350 their physical health as being good were more satisfied with the information provided and
351 their opportunities to participate in decisions about their care during the perioperative period,
352 except regarding certain rates of encounters with the anaesthetist and nurses, which showed
353 higher proportions of satisfaction for patients who estimated their health as being less than
354 good. Patients who estimated that their physical health was less than good were significantly
355 less satisfied with the information provided prior to surgery about their stay in the PACU
356 than those who estimated that their physical health was good. Participants who thought that
357 their physical health was less than good were also less satisfied with the information provided
358 about which nurses were responsible for their care in the PACU. Nurses should chart
359 patients' estimations of their physical health initially in care in order to provide reinforced
360 support for patients who estimate their physical health is less than good. Prior to surgery,
361 those patients should be given realistic information about their stay in the PACU—that they
362 will be in a PACU postsurgery, what that stay means, and why it is necessary. Postsurgery,
363 patients should clearly and repeatedly be informed about which PACU nurse is responsible
364 for their care. Better provision of information could prompt an increased wellbeing and

365 additionally, an improved possibility for that group to participate in decisions about their
366 care. That participants' estimation of their own physical health differed from anaesthetists' is
367 noteworthy and warrants further exploration.

368

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