Abstract
Background and objective: Prior to elective surgery it is essential to know in advance the patient’s clinical condition. The aim of this study was to compare the preoperative evaluation (POE) through questionnaire responses with preanesthetic evaluation by the anesthesiologist.

Method: Prior to their preoperative evaluation, patients answered a questionnaire with information regarding age, weight, height, scheduled surgery, past medical and surgical history, allergies, medications and doses used, social history (illicit drugs, alcohol, smoking), functional capacity and exercise tolerance. Preoperative evaluation was performed by an anesthesiologist who had no access to the questionnaire data or knowledge about the research. The questionnaire data were compared with the preoperative evaluation by two independent investigators, in order to answer the questions: 1) Was the questionnaire evaluation effective - could the patient undergo surgery without the need for face-to-face consultation? 2) Has been there any relevant information - ability to change the anesthetic approach - not assessed by the questionnaire, but assessed by the face-to-face consultation? 3) Has been there any information added by the health questionnaire that was missed by face-to-face consultation? For statistical analysis, the paired Student’s t-test was used for parametric data and chi-square test for categorical data, with p < 0.05 considered significant.

Results: Of the 269 eligible patients there was one refusal, and four agreed to participate but did not complete the questionnaire, in addition to 52 losses, totaling 212 participants. Questionnaire data added to the consultation in 109 cases (51.4%). The screening questionnaire alone was effective for 144 patients (67.93%), with no need for consultation. The anesthesiologist evaluation...
Introduction

Preoperative evaluation (POE) is performed to ensure comfort and safety to patients and improve operating room performance. It is mandatory before any elective anesthesia, as it is essential to know in advance the clinical condition of the patient. A study of intraoperative incidents showed that 11% of serious incidents are due to poor preoperative evaluation. Of note, half of these incidents could have been avoided.

The lack of knowledge about the clinical condition of patients is responsible for the cancellation of many procedures shortly before the scheduled time, a fact that generates unnecessary cost and inconvenience to physicians and patients. The organizational structure of a clinic for preoperative evaluation varies according to the hospital. Whereas economic and logistical issues may prevent a careful face-to-face preoperative evaluation, several authors argue that completing a structured questionnaire may facilitate an effective evaluation. This would serve as a screening tool to identify patients at high risk for perioperative complications and give opportunity for the referral of patients to a clinic for preoperative evaluation and/or specialist consultation.

Identifying the clinical conditions imposing risk and improving the clinical condition of patients in the preoperative period reduces mortality and postoperative morbidity. However, performing diagnostic tests indiscriminately may have negative consequences, such as increased health care costs, procedure delay, and more importantly, potential exposure of patients to unnecessary risks. This knowledge has motivated the search for a more efficient evaluation process, with cost minimization, reduced further testing, and health care improvement.

The aim of the present study was to evaluate the effectiveness of using a questionnaire to identify patients at risk requiring face-to-face preoperative evaluation, as well as to identify the profile of patients treated at our institution.

Method

After approval by the Ethics Research Committee and obtaining written informed consent, all patients attending the first consultation for preoperative evaluation at the outpatient preoperative evaluation (OPE) of the Anesthesiology Service/Santa Casa de Porto Alegre (SASC) from August 1 to September 1, 2011, were selected to participate in the study. Before preoperative consultation, patients completed the questionnaire voluntarily with information on age, weight, height, scheduled surgery, previous surgical and medical history, allergies, medications and doses, social history (drugs, alcohol, smoking), functional capacity, and exercise tolerance. An anesthesiologist who had no access to the questionnaire data or knowledge of the study performed the preoperative consultation. We compared data obtained from questionnaire with the preoperative consultation by two independent investigators, in order to answer the following questions: 1) Was the questionnaire evaluation effective - could the patient undergo surgery without the need for face-to-face consultation? 2) Has there been any relevant information - able to change the anesthetic approach - not assessed by the questionnaire, but assessed by the face-to-face consultation? 3) Has there been any information added by the health questionnaire that was missed by face-to-face consultation? In case of disagreement among investigators regarding the answer to the questions, we requested the opinion of a third investigator, and the decision was made by consensus.

Data were stored in Access software and analyzed using the statistical package SPSS v.18.0 (SPSS Inc., Chicago, USA). Categorical variables are expressed as absolute and relative frequencies and the association was performed using the chi-square test with Yates correction or Fisher exact test, when indicated. Quantitative variables are expressed as mean and standard deviation and compared using the paired Student’s t-test. Test performance measurement was calculated with its respective 95% confidence interval. A level of 5% was considered significant.

Results

During the period of data collection, 315 consultations were conducted at OPE, of which 46 did not meet the inclusion criteria. From 269 eligible patients, one refused to participate, four agreed to participate but did not complete the questionnaire and 52 were lost to data collection, totaling 212 participants.

Tables 1 and 2 present the anthropometric data, major comorbidities, and referral to surgery during face-to-face consultation. The questionnaire added data to consultation in 109 cases (51.4%). In 22 cases (10.4%), some relevant data not assessed by the questionnaire but able to change the anesthetic approach due to consultation was found. Screening by questionnaire alone was effective in 144 patients (67.93%), dismissing the need for face-to-face consultation.

Patients were referred to surgery in the first consultation at the OPE in 178 opportunities (84%). To identify cases of non-referral to surgery after OPE, the health questionnaire
Table 2 - Major Comorbidities and Referral during Consultation.

<table>
<thead>
<tr>
<th>Comorbidities #</th>
<th>Yes/No</th>
<th>%</th>
<th>POE referral (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH</td>
<td>67/145</td>
<td>31.6%</td>
<td>Yes</td>
<td>45/67 (67.2%)</td>
</tr>
<tr>
<td>Depression</td>
<td>39/173</td>
<td>18.4%</td>
<td>Yes</td>
<td>30/39 (76.9%)</td>
</tr>
<tr>
<td>Palpitation/arrhythmia</td>
<td>33/179</td>
<td>15.6%</td>
<td>Yes</td>
<td>25/33 (75.8%)</td>
</tr>
<tr>
<td>Smoker</td>
<td>27/185</td>
<td>12.7%</td>
<td>Yes</td>
<td>24/27 (88.9%)</td>
</tr>
<tr>
<td>Malignancy</td>
<td>22/190</td>
<td>10.4%</td>
<td>Yes</td>
<td>15/22 (68.2%)</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>20/192</td>
<td>9.4%</td>
<td>Yes</td>
<td>13/20 (65%)</td>
</tr>
<tr>
<td>Asthma</td>
<td>20/192</td>
<td>9.4%</td>
<td>Yes</td>
<td>13/20 (65%)</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>18/194</td>
<td>8.5%</td>
<td>Yes</td>
<td>10/18 (55.6%)</td>
</tr>
<tr>
<td>Neurological Disease</td>
<td>14/198</td>
<td>6.6%</td>
<td>Yes</td>
<td>10/14 (71.4%)</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>14/198</td>
<td>6.6%</td>
<td>Yes</td>
<td>8/14 (57.1%)</td>
</tr>
<tr>
<td>Stroke</td>
<td>8/204</td>
<td>3.8%</td>
<td>Yes</td>
<td>6/8 (75%)</td>
</tr>
<tr>
<td>AMI</td>
<td>6/206</td>
<td>2.8%</td>
<td>Yes</td>
<td>2/6 (33.3%)</td>
</tr>
</tbody>
</table>

# Data expressed as absolute and relative frequencies and classified in descending order of occurrence. POE: Preoperative Evaluation. AH: Arterial Hypertension. AMI: Acute Myocardial Infarction.
Table 3. Screening through the Questionnaire. Need for Face-to-face Evaluation Referral from the OPE.

<table>
<thead>
<tr>
<th>OPE - Consultation</th>
<th>Face-to-face evaluation required</th>
<th>Face-to-face evaluation not required</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26</td>
<td>8</td>
<td>34 (16.04%)</td>
</tr>
<tr>
<td>No</td>
<td>42</td>
<td>136</td>
<td>178 (83.96%)</td>
</tr>
<tr>
<td>Total</td>
<td>68 (32.07%)</td>
<td>144</td>
<td>212 (100%)</td>
</tr>
</tbody>
</table>

OPE: Outpatient Preoperative Evaluation.

The use of information technology is a useful tool and may be used to collect information and preoperative evaluation, considering that many candidates for surgery are relatively healthy and do not require full evaluation in a preoperative evaluation clinic 14.

Dignier reported a telephone preoperative evaluation of outpatient surgery candidates and demonstrated that it not only allowed the selection and preparation of patients for outpatient procedures, but also reduced the number of hospital visits and length of stay 15. A similar study was conducted with ASA I-II patients undergoing outpatient breast surgery 16.

There is an increased request for services provided by anesthesiologists and a clear need for reassessment and adequacy of these services to meet demand. The initial priority should be the development of an efficient mechanism for acquiring information from patients before surgery, without requiring a hospital or evaluation center visit, and, thus, direct the human resources to areas that are most needed 10.

It is important to note that postoperative evaluation using a self-administered health questionnaire requires correct reading, understanding, and completion by the patient. Some patients may have difficulty completing the questionnaire, or do so incompletely, particularly those with visual impairment and/or low level of education. Indeed, there were four patients in our study who agreed to participate but did not complete the questionnaire, perhaps due to difficulty understanding, especially considering that the patients’ average education was 7.08 years of schooling. The average level of education found is near the national average, estimated by IBGE (Brazilian Institute for Geography and Statistics) in 7.2 years, which does not seem to have influenced the quality of responses 17. It is noteworthy that among the 212 cases only 8 patients not referred to surgery after face-to-face consultation were not identified by the questionnaire due to screening failure (4 for lack of additional tests, 3 due to lack of clinical conditions, and 3 for administrative problems).

The lack of a physical examination performed in advance by the anesthesiologist is a limitation of non-traditional methods of preoperative evaluation. Airway assessment before any anesthesia is a relevant issue, but it does not need to be made well in advance. Anesthesiologists are prepared to assess and manage the airway in a very short time period. Thus, a prolonged plan is not always necessary, as long as the difficult airway management tools are promptly provided 10.

Another limitation of this study is the short period of data collection, which may receive the seasonal variation effects on presentation or exacerbation of comorbidities.

The use of a POE questionnaire is considered a screening test and should have a high negative predictive value and sensitivity. Despite the high negative predictive value (94.4%) found in this study, sensitivity (76.5%) needs to be improved. Therefore, in addition to exploring other risk factors and family history, the questionnaire should be modified in order to increase sensitivity.

Sandberg et al. reported that without effective communication, the patient may not understand the diagnosis, proposed treatment, or effectively consider the available options 18. Increased satisfaction has been demonstrated with improved communication during preoperative evaluation in an assessment clinic 19,20. Future clinics should focus on new methods to communicate and educate the patient.

In short, the use of a questionnaire appears to be effective in identifying patients requiring further evaluation. The implementation of such a system allows individualized preoperative evaluation according to patient’s needs, without unnecessary increase in costs caused by routine face-to-face evaluation. More importantly, it allows the early identification of situations that are risk-related and/ or require management.

References