Research Article

Anesthesia & Perioperative Management Journal

Patients' Understanding of the Role of Anesthesiologists among Predominantly African-American Patients from an Inner City Preoperative Anesthesia Testing Clinic

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Abstract

Background: The role of anesthesiologists is vaguely understood by most patients undergoing surgery. The aim of this study was to determine if patients had knowledge of the responsibilities of an anesthesiologist in their surgical care.

Method: In a prospective study conducted over 3 months in the Pre-Admission Testing Clinic (PATC) of a large inner city university hospital, 200 patients were randomly selected to complete a questionnaire to evaluate their knowledge about the routine functions of the anesthesiologist. Missing data were excluded from the study (0% non-responders).

Results: Of all the variables analyzed, age>70 was significantly associated ($p<0.05$) with a knowledge and understanding of the role of the anesthesiologist. Past surgical history was also significantly associated ($p<0.05$) with the respondents correctly identifying most roles performed by the anesthesiologist. Overall, patients had a poor understanding of the role of the anesthesiologist. Only 76% of the patients who attended the PATC actually felt that the role of the anesthesiologist was adequately explained to them.

Discussion: Our study has the unique advantage of having a large homogenous sample of African-American patients. A similar study comprising 300 predominantly Hispanic patients was conducted in an inner city Los Angeles hospital in 2014; their conclusions, parallel to ours, demonstrated that the patients' knowledge of the anesthesiologist's role was deficient; they also felt that the surgeon was more recognized ($p < 0.05$) than the anesthesiologist in post-operative care, as well as in blood transfusions and pain management. From our study we conclude that the true role and wide range of responsibilities of the anesthesiologist is not fully understood or appreciated by patients. Education during PATC visits, supplemented with literature/media can increase patients' awareness, leading to better communication, trust and improved clinical outcomes.

Keywords: Role of anesthesiologists

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Received Date: January 19, 2017

Accepted Date: October 31, 2017

Published Date: November 15, 2017

Citation: Chinn LW, Gupta S, Patel S, Iannaccone F (2017) Patients' Understanding of the Role of Anesthesiologists among Predominantly African-American Patients from an Inner City Preoperative Anesthesia Testing Clinic. J Anes Perio Manag 1: 002.

Introduction

Many studies and surveys have demonstrated that patients' understanding of the role of the anesthesiologist in their healthcare is limited [1-7]. Most studies have focused on the general population; the understanding and knowledge of specific racial or ethnic groups regarding the role of anesthesiologists have not been explored. In particular, African-American patients may harbor greater reservations about the healthcare system as well as toward physicians, due to the deeply ingrained historical and personal experiences over the years. In order to decrease patient anxiety and improve overall satisfaction it is vital to provide patients with comprehensive information about the care the anesthesiology team will provide to them [8-10]. Often the initial contact with a patient and their anesthesiologist occurs during their pre-anesthesia testing clinic PATC visit. Typically, during this visit the anesthesiologist explains his or her role to the patient and answers any questions or concerns that the patient may have. Studies also show that the principal setting where most of this information is conveyed and exchanged is the PATC, overshadowing the impact of multiple postoperative visits, where neither the patient's satisfaction, nor the ability to recall the identity of their anesthesiologist was improved [11]. Satisfaction outcomes on the day of surgery may be influenced either positively or negatively by the quality of the initial PATC visit, as may the resulting patient-physician relationship; negative relationships have been linked to a higher potential of possible litigation [12,13]. The overall objective of this study is to determine if the role of anesthesiologists is adequately perceived and appreciated, specifically from the perspective of an African-American population in an inner city hospital.

Group	N (%)	Determining if patient is fit for surgery	Putting patient to sleep before operation	Monitoring vitals during surgery	Controlling pain during surgery	Monitoring blood loss in surgery	Admin blood	Waking you up after surgery	Controlling pain after surgery	Controlling N/V after surgery	Avg Num of Checks
All	200 (100%)	54%	93%	58%	71%	51%	32%	72%	55%	48%	5.3
Age											
20-29	21 (11%)	52%	86%	48%	62%	24%	19%	57%	48%	43%	4.4
30-39	34 (17%)	62%	94%	79%	68%	56%	26%	76%	62%	50%	5.7
40-49	38 (19%)	58%	97%	63%	82%	61%	42%	89%	68%	61%	6.2
50-59	51 (26%)	43%	92%	51%	78%	55%	31%	76%	57%	49%	5.3
60-69	38 (19%)	50%	89%	53%	66%	37%	21%	58%	39%	34%	4.5
70-79	15 (8%)	73%	93%	40%	60%	67%	60%	60%	53%	47%	5.5
80-89	3 (2%)	67%	100%	100%	33%	67%	67%	67%	33%	67%	6.0
Race											
Black	95 (48%)	53%	94%	61%	72%	53%	33%	75%	55%	45%	5.4
Hispanic	51 (26%)	47%	86%	57%	63%	43%	20%	57%	47%	43%	4.6
White	45 (23%)	62%	96%	56%	76%	51%	40%	80%	62%	56%	5.8
Other	5 (3%)	60%	100%	40%	**80%**	60%	40%	80%	40%	40%	5.4
Missing	4 (2%)										
Education											
8th Grade or Less	16 (8%)	44%	81%	63%	44%	31%	31%	56%	31%	31%	4.1
Some HS	27 (14%)	59%	93%	48%	74%	56%	44%	78%	63%	63%	5.8
HS Graduate	84 (42%)	45%	92%	62%	65%	45%	31%	63%	49%	39%	4.9
Same College	43 (22%)	67%	95%	51%	84%	56%	28%	81%	60%	56%	5.8
College Gradute	29 (15%)	59%	100%	66%	83%	66%	31%	90%	72%	59%	6.2
Missing	1 (1%)										
Gender											
Male	93 (47%)	49%	92%	61%	70%	44%	26%	70%	47%	43%	5.0
Female	107 (54%)	58%	93%	55%	72%	56%	37%	74%	62%	52%	5.6

Table 1: Percent of Answers Selected by Demographic.

Shading indicates difference between groups is statistically significant; Differences in individual question responses were evaluates using Chi-Square test or Fisher's exact test, where appropriate; Total score differences evaluated using non-parametric Kruskal-Wallis test; Missing responses were excluding from testing.

Methods

This study was conducted after Institutional Review Board (IRB) approval at Rutgers New Jersey Medical School and University Hospital in Newark, New Jersey. The data was generated from a 12-question survey distributed among 200 randomly selected patients in the PATC to evaluate their knowledge about the routine functions of the anesthesiologist both inside and outside the operating room. Demographic information (age-group, gender, race, level of education, etc.,) comprised 4 questions (Table 1) and was collected along with information about their history and the source of their knowledge on anesthesiologists (7 questions Table 2). The patients were given the questionnaire on the day of surgery. The survey was expected to take 10-15 minutes.

There was 100% participation in the survey as there were no non-responders.

The study was conducted over 3 months (January 2013 - March 2013). The patients were instructed to complete the survey after the anesthesiologist had evaluated them in the preoperative holding area.

The patient's knowledge of anesthesiologists was tested in a single question that listed nine responsibilities. The survey asked the patient to "Check any of the following that apply to the role you think anesthesiologists play in surgery". The correct response would be to check all nine of the answers.

Statistical significance between groups was determined using a chi square test for individual responses (or Fisher's exact test if the sample size was too small) and the Kruskal-Wallis test for averages.

Results

The role of anesthesiologist was subdivided into 9 separate functions. If the patient knew the anesthesiologist to perform that role, the patient checked that category. The total number of checks for each respondent was calculated, ranging from 0 to 9, with 9 being a perfect score. The averages used to determine overall knowledge of the respondents as well as to make comparisons between different groups.

Group	N (%)	Determining if patient is fit for surgery	Putting patient to sleep before operation	Monitoring vitals during surgery	Controlling pain during surgery	Monitoring blood loss in surgery	Admin blood	Waking you up after surgery	Controlling pain after surgery	Controlling N/V after surgery	Avg Num of Checks
All	200 (100%)	54%	93%	58%	71%	51%	32%	72%	55%	48%	5.3
Surgery in the past?											
Yes	164 (82%)	57%	94%	60%	74%	54%	34%	72%	57%	51%	5.5
No	36 (18%)	39%	86%	50%	58%	36%	22%	72%	47%	36%	4.5
Location of Predmission Testing											
DOC	171 (86%)	55%	94%	59%	73%	51%	32%	74%	58%	50%	5.5
Primary Doctor	15 (8%)	40%	87%	40%	60%	33%	13%	53%	20%	27%	3.7
Both	3 (2%)	100%	100%	67%	67%	67%	67%	67%	67%	67%	6.7
N/A	9 (5%)	44%	78%	67%	**56%**	56%	44%	78%	56%	44%	5.2
Missing	2 (1%)										
Internet Access											
Yes	137 (69%)	58%	94%	62%	80%	53%	32%	79%	61%	53%	5.7
No	63 (32%)	46%	89%	49%	51%	46%	32%	57%	43%	37%	4.5
Do you understand the role of the anesthesiologist?											
Yes	179 (90%)	56%	92%	59%	72%	53%	34%	73%	56%	49%	5.4
No	19 (10%)	32%	95%	42%	58%	32%	16%	63%	47%	37%	4.2
Missing	2 (1%)										
Role explained at the PAT visit?											
Yes	160 (80%)	58%	93%	62%	73%	54%	34%	75%	57%	51%	5.6
No	29 (15%)	34%	97%	34%	62%	24%	17%	55%	41%	34%	4.0
N/A	11 (6%)	45%	82%	64%	64%	64%	45%	73%	64%	46%	5.4
Role explained by primary care doctor?											
Yes	74 (37%)	66%	93%	58%	77%	62%	41%	80%	65%	66%	6.1
No	77 (39%)	40%	88%	45%	62%	39%	21%	64%	42%	35%	4.4
N/A	48 (24%)	56%	98%	77%	75%	52%	38%	73%	60%	40%	5.7
Missing	1 (1%)										

Table 2: Percent of answers selected by information distribution.

Shading indicates difference between groups is statistically significant; Differences in individual question responses were evaluated using Chi-Square test or Fisher's exact test, where appropriate; Total score differences evaluated using non-parametric Kruskal-Wallis test; Missing responses were excluding from testing.

Chart 1 shows the distribution of total checks. 13.5% patients checked all 9 responses and 4.5% checked none. 51.5% checked 6 or more answers.

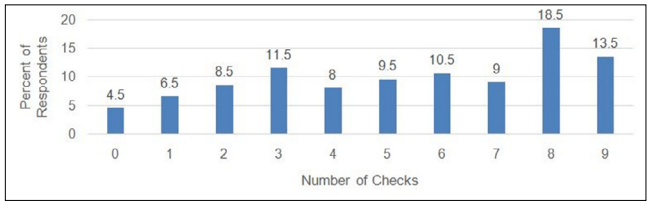

Chart 1: Distribution of Total Checks.

The demographics of the sample can be demonstrated in the first column of table 1. We divided age-groups into 7 categories; the maximum number of patients fell in the 50-59 age-group (26%), and the least in the 80-89 age-group (3%). 48% of respondents were African-American, 26% were Hispanic, 23% were White and the remaining 3% described themselves as "other". A total of 2% did not respond to this question.

Most patients attested to a High School (HS) education (42%), followed by Some College (22%), College Graduate (15%), Some HS (14%), 8th grade or less (8%) and no response (1%). 54% of all respondents were female.

The first row of table 1 shows the percentage of patients who checked each of the nine potential answers. The most commonly checked item was acknowledgement of "Putting you to sleep before the operation" (93%), followed by "Controlling pain before surgery" (72%) and "Controlling pain during surgery" (71%). The least commonly checked items were "Administer blood" (32%) and "Controlling nausea/vomiting after surgery" (48%). Overall, each patient responded with an average of 5.3 checks.

The subsequent rows subdivide the respondents into different demographic groups. The last column shows the average number of checks (affirmative answers) per group. Percentages and averages that were found to be significantly different are indicated by shading. Significance was tested by Chi-square tests for individual responses (or Fisher's exact test if the sample size was too small) and the Kruskal-Wallis test for averages. For example, 62% of females versus 47% of males checked "Controlling pain after surgery", rendering this difference statistically significant, as indicated by the shading in the

table. On average, males checked 5.0 answers, while females checked 5.6 answers (last column).

Among different age-groups, statistically significant differences were found between these 4 responses: "Monitoring vitals during surgery", "Monitoring blood loss during surgery", "Administering blood" and "Waking you up after surgery". Education-wise differences were observed in the following 3 categories: "Controlling pain during surgery", "Waking you up after surgery" and "Controlling pain after surgery". The only other statistically significant difference was demonstrated by females over males in their knowledge of the anesthesiologist "Controlling pain after surgery".

Table 2 shows the percentage of patients who answered questions regarding their surgical history, location of PAT clinic, internet access, perception of their own knowledge and lastly, the source of the information they possessed. Again, the last column represents the average number of affirmative responses/checks.

The first column of table 2 comprises the frequency and percentage of responses to questions 5-11. 82% of the patients had surgery in the past, 86% were tested at the Doctors Office Center (DOC, an outpatient doctor's office), 69% had internet access and 90% claimed to understand the role of the anesthesiologist. A majority of 74% stated the role was explained to them by their surgeon, while only 37% stated receiving that information from their primary care doctor. An overwhelming majority of 80% asserted that the role was explained to them during their PAT visit.

Significant differences in check rates were observed in 6 categories: "Role explained by primary care doctor", "Determining if patient is fit for surgery", "Monitoring vitals during surgery", "Monitoring blood loss in surgery", "Administering blood", "Controlling pain after surgery" and "Controlling N/V after surgery". Generally, patients who were apprised by their primary care doctors were more cognizant of the diverse responsibilities of the anesthesiologist, as indicated by the number of checks to each question.

Check rates were higher for answers if the patient reported having internet access, specifically in the 4 categories of "Controlling pain during surgery", "Waking you up after surgery", "Controlling pain after surgery" and "Controlling N/V after surgery".

Based on whether or not the surgeon adequately explained the anesthesiologist's role, the patients responded differently to whether they knew about the anesthesiologist's role in "Monitoring blood loss in surgery", "Administering blood" and "Waking you after surgery". Five other check rates were significantly different between the four remaining questions.

Differences in the average number of checks were significant for "Surgery in the past" (5.5 vs. 4.5), "Internet access" (5.7 vs 4.5), "Role of anesthesiologist adequately explained by surgeon" (5.5 vs 4.6), "Role explained at the PAT visit" (5.6 vs. 4.0 vs. 5.4) and "Role explained by primary care doctor" (6.1 vs. 4.4 vs. 5.7).

Discussion

A majority of our patients had attended the PATC but only 76% of them felt that the role of the anesthesiologist was appropriately explained to them during those visits. When asked about specific roles (e.g., judging a patient's eligibility for surgery, "putting you to sleep", monitoring vitals etc.,) of anesthesiologists, most patients did not have knowledge of the wide breadth of the anesthesiologist's services. In another study 800 patients were surveyed regarding the level of "importance" of the anesthesiologist compared to the surgeon and the primary care doctor; the majority of them placed their anesthesiologist at the same level as their primary care doctor. Only 5% of those patients understood that their anesthesiologist played a vital role in monitoring vital signs and maintaining homeostasis throughout their surgery [1].

There are numerous ways to improve patient education. One such way is supplementing PATC visits with literature or media. A survey found that after a PATC visit, the question "How do you breathe during general anesthesia" was correctly answered by only 71% of patients who experienced a face-to-face interview, but increased dramatically to 88% and 98% when a brochure or video was added as an adjunct, respectively [14]. A meta-analysis reviewing the anesthesia education of patients, augmented by the use of literature or video, found that use of video and printed information resulted in increased patient knowledge and a small albeit measurable decrease in anxiety levels [15,16]. Preoperative anxiety can be alleviated to a small but reliable extent by educating the patient on the different aspects of anesthesia. Patients who experience preoperative anxiety are nearly three times more likely to experience postoperative anxiety, which in turn is associated with moderate to intense postoperative pain, decreasing overall patient satisfaction [15]. Timely and appropriate patient education can mitigate all of the above spiraling consequences.

It is important to note that the patient's level of education was a major determinant of their responses. Only 52% of the patients were high school graduates; a mere 10% were college graduates. Thus, in order for patients to comprehend the medical information preferred to them during these visits, we must endeavor made to provide lucid verbal, written and visual educational material to them at an appropriate level, recommended as 4^{th}-6^{th}-grade level by the American Medical Association (AMA) [17].

Our study has the unique advantage of having fairly large-sized, homogenous demographics of African-American patients. A similar study comprising 300 predominantly Hispanic patients was conducted in an inner city Los Angeles hospital in 2014; their conclusions, parallel to ours, demonstrated that the patients' knowledge of the anesthesiologist's role was deficient; they also felt that the surgeon was more recognized ($p < 0.05$) than the anesthesiologist in post-operative care, as well as in blood transfusions and pain management [18].

Oftentimes, patients may have questions after their PATC visit; they should be given the appropriate information about how to contact their anesthesia provider regarding individual queries or concerns, or regarding specific recommendations (ex: smoking cessation or stopping anticoagulants). To that same end, PATC personnel and physicians should be encouraged to use a standardized checklist to ensure thoroughness of the visit and make use of educational literature and media to make that visit as effective and efficient as possible [19].

Conclusion

We found that the role of the anesthesiologist was poorly understood by a vast majority of patients surveyed in our study. The demographics of our patients lend a unique perspective to the questions

explored in the study. By continuing to improve communication during the PATC visit, we can enhance the patient's overall perception of the true range and depth of anesthesia care. We can also contribute to our patients' appreciation of the unique role of the anesthesiologist in patient care, which would in turn correlate to a greatly improved per surgical experience.

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