



Original Article

Errors in Surgery: What Do We Know and How Should We Say It? A Cross-Sectional Survey of Surgeons

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Abstract

Background: Errors can occur during surgery, even with an experienced surgeon and under ideal circumstances. Unfortunately, there is yet to be a consensus on what constitutes a surgical error.

Aim and Objectives: To determine how surgical error is understood, defined, reported, and disclosed among Nigerian surgeons.

Material and Methods: This was a cross-sectional study conducted among surgeons that attended the International College of Surgeons' Conference which held in Port Harcourt, Rivers state, Nigeria in 2015. Data on socio-demographic characteristics, error perception, frequency, reporting, reasons for non-disclosure, and benefits of disclosure was obtained using a self-administered questionnaire and analyzed with SPSS 26.0. Results are presented in tables and figures.

Results: Almost all 96 (95.0%) the respondents were males, and 46 (45.5%) were general surgeons. Thirty-two (42.11%) were in full-time public service. Wrong judgement 94 (93.1%) was the predominant reason for surgical errors. Most 48 (63.16%) surgeons reported that there was no institutional protocol on error where they practice. Majority 66 (86.84%) admitted to committing a non-fatal error, while 42 (55.26%) had made fatal errors. More than half 43 (65.15%) of those that committed non-fatal errors, disclosed this error, while 16 (38.10%) disclosed fatal errors. More than half 52 (68.42%) were in support of error disclosure, 43 (56.58%) agreed that error disclosure was beneficial, and almost all (92%) agreed that reporting errors can improve patients' safety.

Conclusion: Surgical errors are prevalent, and usually preventable. Personal and institutional efforts at reducing errors must begin with understanding what constitutes an error in surgery.

Keywords: Surgical errors, Perception, Reporting, Disclosure, Port Harcourt, Nigeria.

Introduction

The New International Webster's Comprehensive Dictionary of English defines an error as a

deviation from a right standard of judgement or conduct, or a deviation from correctness or accuracy.¹ This 'open-label' definition raises

several questions. Are the right standard of judgement or conduct in surgical practice universal given the differences in human and material resources as one moves from one geographic location to another? What about surgical inaccuracy that occurs in the absence of significant harm? Should this be considered a surgical error as well and should it be reported?

Stone and Bernstein had a rather 'perfectionist' approach to the definition of surgical error. They defined surgical error as any act of omission or commission resulting in deviation from a perfect course for the patient. A perfect course was defined as one in which nothing went wrong, from the smallest detail such as dropping a sponge to the most obvious one that every surgeon would easily recognize.² They argue that 'benign' events like dropping a sponge if not considered an error and nipped in the bud, may result in serious complications in the future. These 'near misses' as they are termed if prevented will, in the long run, prevent the occurrence of most serious adverse events.³

While surgical errors and their adverse consequences have been documented since 1795-1750 BC, when they were described in the ancient Mesopotamian Code of Hammurabi, they continue to have enormous cost in both human and material terms.⁴ Evidence abounds in literature which show that surgical errors can have profound effects on patients and relatives or caregivers with huge financial strain on the health care system. These are usually in form of prolonged hospital stay, disability and sometimes death.⁵ Despite the recent advances in surgical science and interventions, errors continue to contribute significantly to morbidity and mortality, with annual costs totalling tens of billions of dollars. With the advancement of technology, health care delivery in surgery is becoming increasingly sophisticated and globalized. At the same time, modern society's expectation for error-free health care delivery has reached an all-time high, with no room for compromise. To a large extent, this can be

ascribed to increased public knowledge as well as the news media's intense pro-consumer journalism.⁶ There are other reasons why errors have persisted in the public domain. One reason is because of the legal battles and huge financial compensations involved. The other reason is ethical; a breach of trust occurs when a patient or relative discovers an unreported inaccuracy while undergoing treatment.^{7,8}

Recently, our moral compass as surgeons has been subjected to severe scrutiny when a study by Couch et al found that surgical interventions caused more than half of hospital adverse events, and that more than half of these were preventable.⁹ Most physicians agree that it a professional and moral duty for all healthcare professionals to admit their proclivity to errors and attempt to develop personal and institutional mechanisms to mitigate them.^{10,11,12} Bann and colleagues have suggested that surgical skills linked to the surgeon's ability to identify errors and error tracking may be an important aspect of improving surgical mastery.¹³

While awareness about surgical errors and patient safety has continued to increase in both clinical practice and research in recent years, opinions differ among surgeons on what constitutes an error.¹⁴ Understanding the nature of errors in a surgeon's practice or an institution's setting may aid in the prevention of future errors, as well as contribute to quality assurance and functional efficiency.¹⁵

Two questions easily come to the fore. Should the same definitions/standards of error be applied to our practice given the deplorable state of infrastructure in our healthcare system? If not, can we possibly lower the standard and still meet the minimum acceptable global standards? With this in mind, we set out to determine the perception of Nigerian surgeons on error definition, reporting and disclosure.

Material and Methods

This was a prospective cross-sectional study conducted during the International College of

Surgeons' Conference which held in Port Harcourt, Rivers State, Nigeria in 2015. Participants were Nigerian surgeons who attended the conference from the six geopolitical zones of the country. A 28-item structured self-administered questionnaire was developed after a peer-reviewed pilot study was conducted at the University of Port Harcourt Teaching Hospital, UPTH. It was made up of 6 sections. Section A was used to capture the socio-demographic profile of the respondents, section B was used to obtain information on perception of errors in surgery, Section C was used to gather data on frequency and reporting of errors, while section D was for reasons for non-disclosure of surgical errors. Section E was to obtain information benefits of error disclosure.

Data Analysis

Data was coded and entered in Microsoft Excel Spreadsheet, cleaned, and analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 26.0 software. Descriptive statistics such as means, median, percentages, frequencies, ratios, and standard deviation were used to describe the socio-demographic characteristics. Results are displayed in the form of tables considered statistically significant for p values < 0.05 .

Ethical Consideration

Ethical clearance was obtained from the Research and Ethics committee of the University of Port Harcourt Teaching Hospital before commencement of the study. The data collection tools were labeled with unique identifiers. The study was conducted in compliance with the Helsinki Declaration.

Results

The study sought the perception of 150 surgeons. The data on surgical errors was complete in 101 questionnaires, yielding a 67.3% data completeness rate across all the surgical subspecialties.

Table 1 showed that 37 (36.6%) surgeons were aged 41 - 50 years which constituted the highest proportion, while 14 (13.9%) were aged 31- 40 constituting the lowest. Almost all 96, (95.0%) the surgeons were males, with majority 46 (45.5%) being general surgeons. Thirty-two (42.11%) were in full time public service, 42 (55.26%) in both public and private and 3 (3.95%) in full time private practice. As expected, more than half 59 (58.4%) practiced in the south-south region of the country, since the conference took place in this region.

With regards to surgeon's perception on type of error, wrong judgment 94 (93.1%), technical failure 86 (85.1%), and inappropriate delegation of duty 84 (83.2%) were the predominant opinions, while error in the system 51 (50.5%) constituted the least. This is shown in figure 1.

Most of the surgeons 48 (63.16%) reported that there was no institutional protocol on error where they practice, 15 (19.74%) admitted they had, while 13 (17.11%) were unsure as shown in figure 2. However, all the respondents agreed there was need for an institutional protocol. Figure 3 show that 83 (82%) did not know the estimated daily error.

Figure 4 showed that 66 (86.84%) respondents admitted to committing a non-fatal error at some point in their practice. Of this, 43 (65.15%) disclosed this error to the patient or relative. On the contrary, 42 respondents (55.26%) made fatal errors, of which 16 (38.10%) disclosed such error to the patients' relatives.

Of those that did not disclose their error, 13 (26.53%) thought it was not necessary, while nine (18.37%) were worried about potential litigation. This is as shown in Figure 5. More than half 52 (68.42%) of the respondents were in support of error disclosure, while 13 (54.17%) were opposed to disclosure. Figure 6 show that 43 (56.58%) agreed error disclosure to patients was beneficial, 18 (23.68%) disagreed, while 15 (19.74%) were unsure. All but eight respondents agreed reporting error can improve patients' safety as shown in figure 7.

Table 1: Socio-demographic characteristics of Respondents

Variables	Frequency (n = 101)	Percent (%)
Age category (years)		
31 – 40	14	13.9
41 – 50	37	36.6
51 – 60	35	34.7
≥ 61	15	14.8
Sex		
Male	96	95.0
Female	5	5.0
Specialty		
Accident & Emergency	1	1.0
Cardiothoracic Surgery	2	2.0
ENT Surgery	1	1.0
General Surgery	46	45.5
Maxillofacial Surgery	2	2.0
Neurosurgery	3	3.0
Obstetrics & Gynaecology	19	18.8
Ophthalmology	1	1.0
Orthopaedic Surgery	8	7.9
Paediatric Surgery	6	5.9
Plastic Surgery	4	4.0
Radiology	1	1.0
Urology	7	6.9
Type of practice		
Fully Private	2	2.0
Fully Public	41	40.6
Private/Public	58	57.4
Location		
North-Central	3	3.0
North-East	1	1.0
North-West	5	5.0
South-East	21	20.8
South-South	59	58.4
South-West	12	11.9

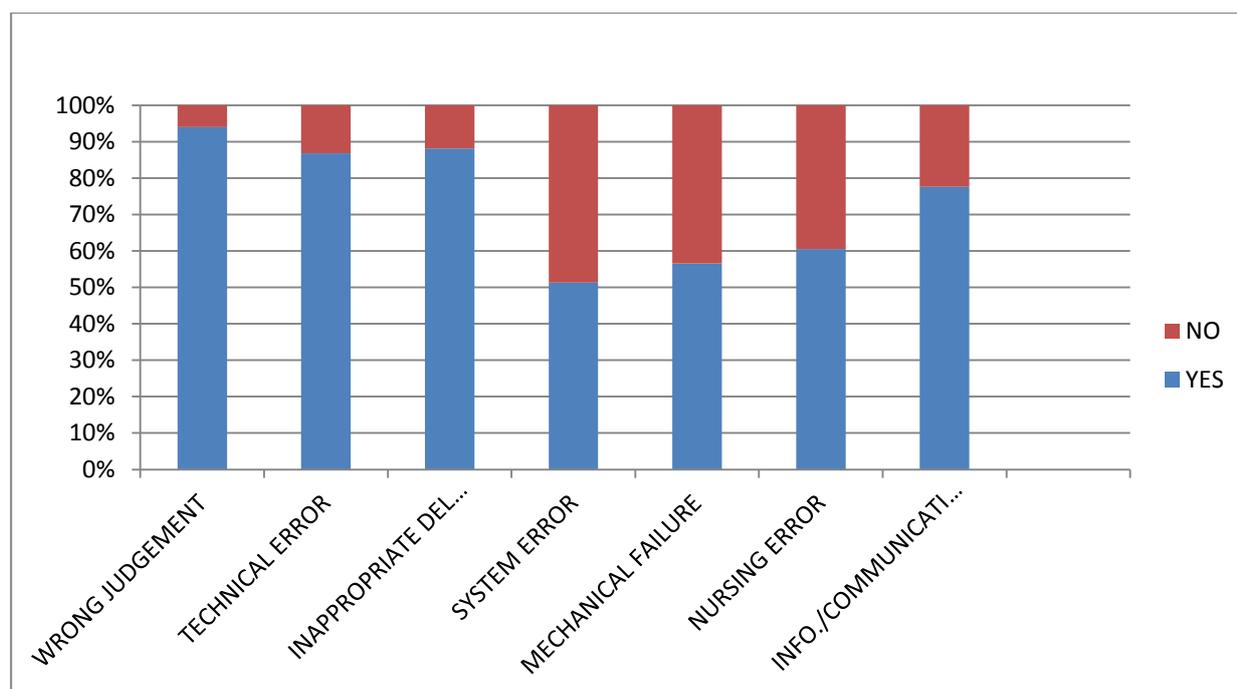


Figure 1: Perception of the type of error in surgery

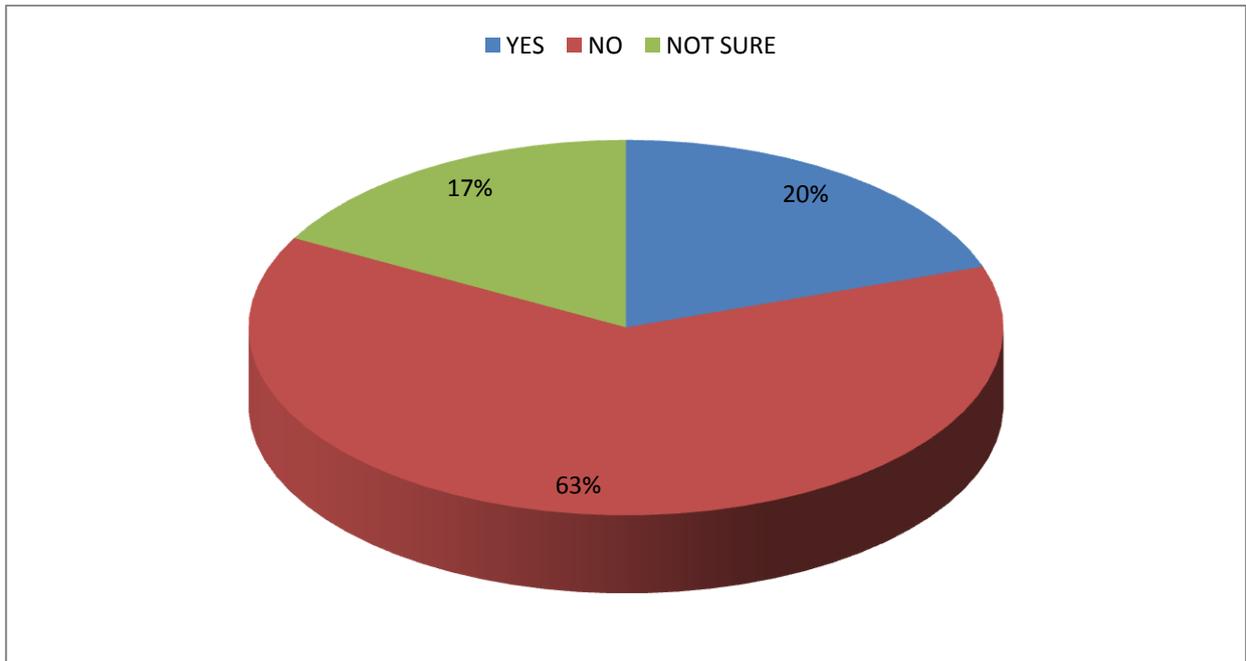


Figure 2: Institutional Error reporting protocol

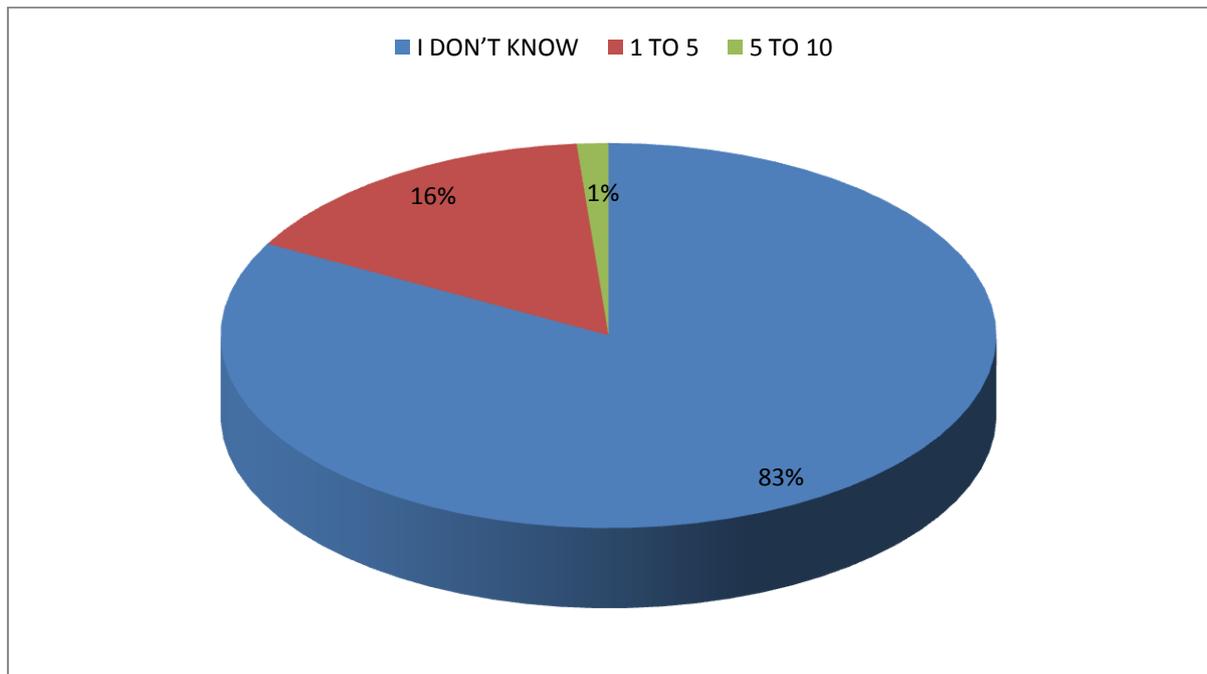


Figure 3: Estimated daily errors

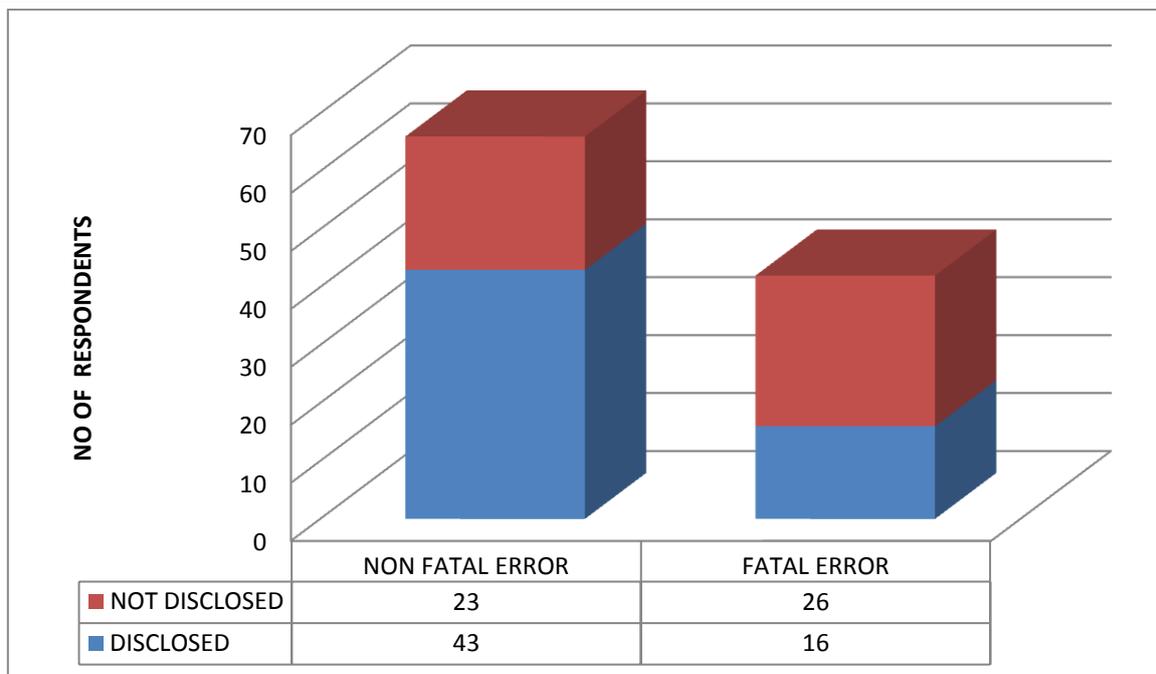


Figure 4: Fatal and Non-fatal error disclosure

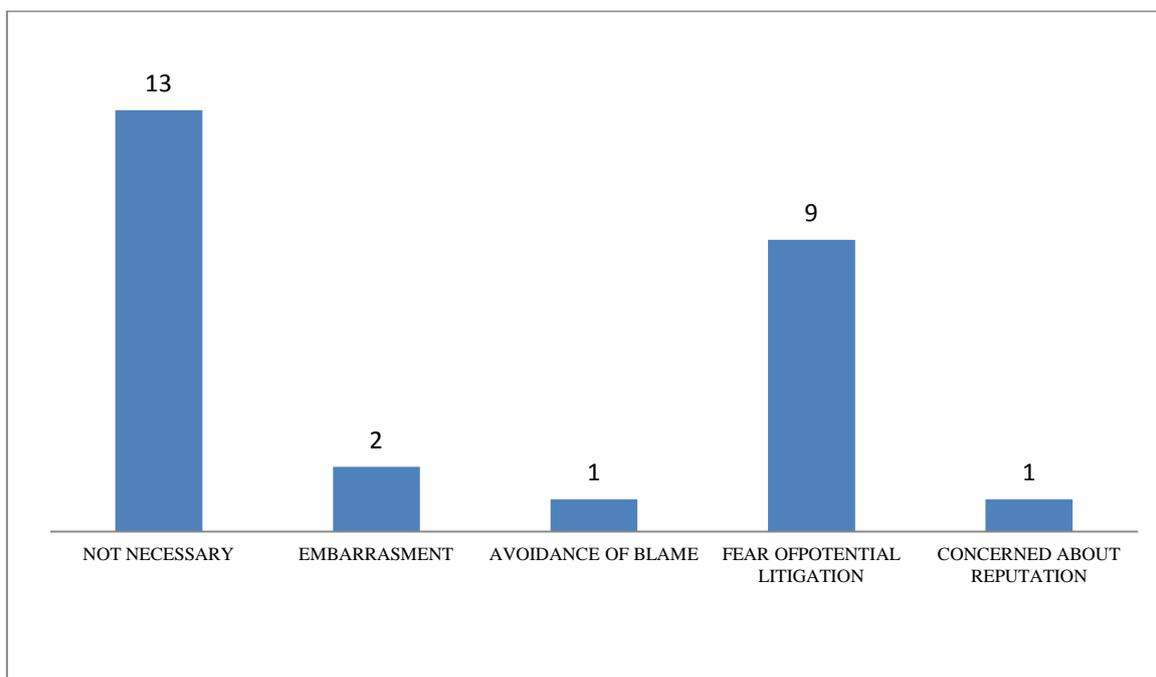


Figure 5: Reasons for Non-disclosure of fatal errors

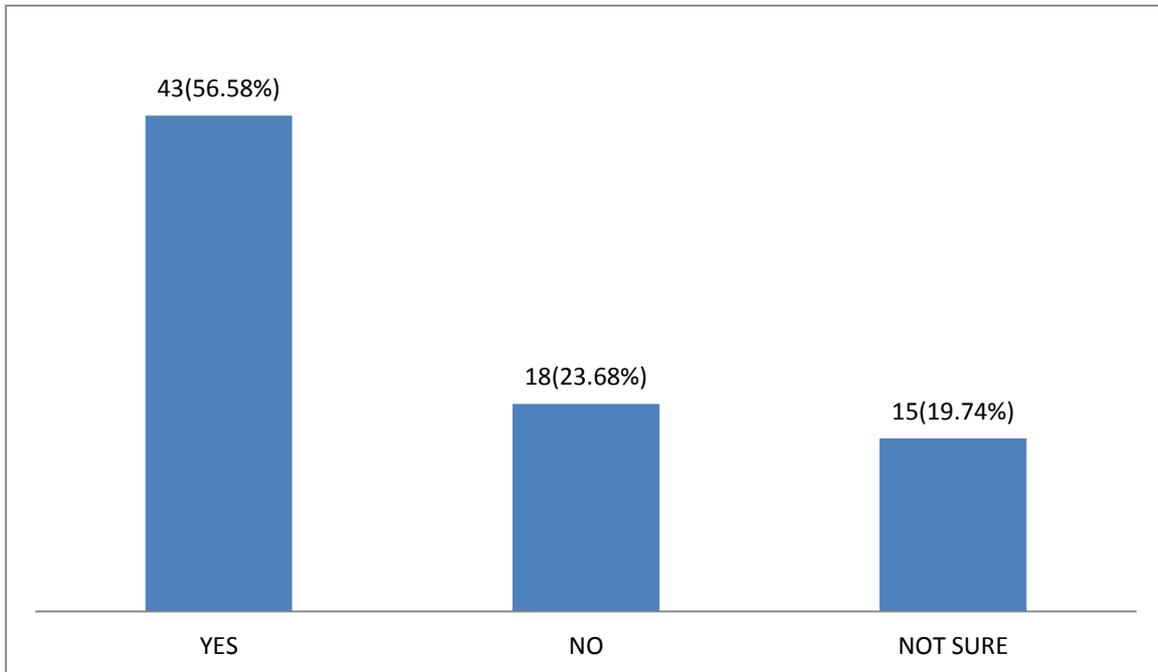


Figure 6: Is error disclosure beneficial?

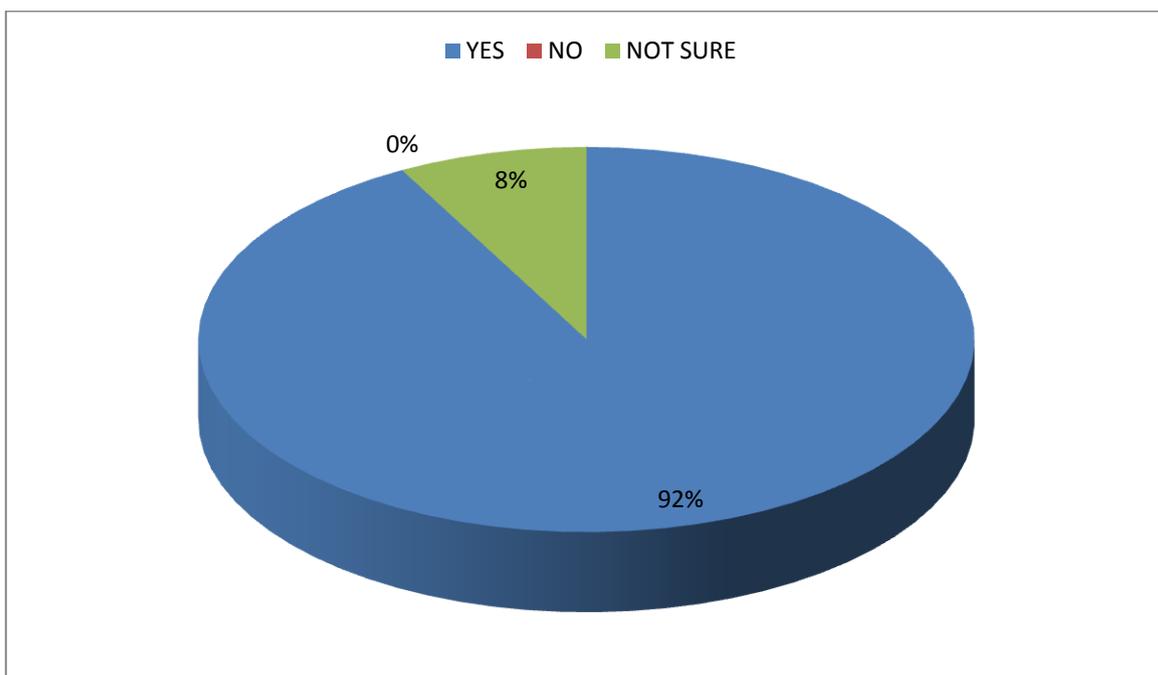


Figure 7: Can error reporting improve patients' safety?

Discussion

This will be the first study in Nigeria that addresses surgeons' definition of errors, their perception of error, 'error consciousness', as well as opinion on error reporting and disclosure. The respondents' definition of error largely reflects a divergent opinion on what they perceived as error in surgical practice. Nearly all respondents agreed that technical error, wrong judgement, and

inappropriate delegation of duty constituted a surgical error. It seems that error here is perceived as direct consequence of a surgeon's action or inaction. What Dankelman and colleague referred to as a 'person' approach to surgical errors.¹⁶ Whereas this approach holds specific people accountable when error occurs and encourages practitioners to change habits and adopt measures to reduce it. Unfortunately, blaming individuals

for errors may result in hiding of errors, and when errors are hidden it is not possible to learn from them. Additionally, there is the issue of indirect errors and who takes responsibility for it. For example, if a drill bit broke because the hospital policy was to resharpen equipment rather than replace the part as per the manufacturer's recommendations, who should be held responsible? The surgeon or the hospital? Dankelman et al again argue that causes of errors should be searched for in the system. Systems and not individuals should be providing insight into the weak parts of the system and their consequences and encouraged to be modified to absorb these errors using buffers, automation, checklists, and redundancy.¹⁷

Our respondents held widely divergent opinion on whether system error (like power outage in the middle of a surgical procedure), mechanical error or nursing error constituted a surgical error. We see a tendency to 'person' approach to the perception of surgical error in our study cohort. This study provided new insight into the common arguments presented by professionals to explain why they regard some events as errors and not others.

Regardless of the cause of surgical error, the Nuremberg code considers the vulnerability of human subjects within the healthcare system and seeks to protect all human beings.¹⁸ Therefore, the goal of any surgical team should be to identify variables whether 'personal' or 'systemic' leading to preventable errors, with actual or potential adverse events, to reduce their prevalence, severity, or even to eliminate them altogether.

When asked about the existence of system protocol in their various institutions, only 19.74% admitted they had institutional protocols for surgical error reporting. This is consistent with prior findings from Uganda.¹⁹ When there is no surgical error reporting process in place, doctors and other healthcare workers are unable to learn from their mistakes or mistakes of other colleagues to improve patient safety. To buttress a system-based philosophy, the World Health

Organization defines two types of systems: the Accountability System, which is a mandatory reporting system that is limited to a list of defined serious events such as unexpected death, transfusion reaction, and wrong site surgery; and the Voluntary Reporting System, which aims to identify errors and hazards and investigate them to uncover underlying system failures with the goal of redesigning the system to reduce the likelihood of patient injury. As a result, safeguards are put in place to assure the implementation of a surgical error reporting protocol to record and detect surgical errors that occur in the hospital.²⁰

Despite the lack of a consistent surgical error reporting system, most responders revealed their non-fatal errors. This is consistent with prior results that health workers tend to discuss their mistakes with their co-workers.^{21,22} Although informal reporting may be a beneficial endeavour (i.e. "better than nothing"), it may be more concerning since it fosters a false sense of security. Informal reporting, such as "reporting to a senior in charge" and "recording somewhere," may be a technique to discharge personal responsibility but not jeopardizing power dynamics. Informing one individual or a small number of colleagues does not create system-wide awareness and prevention.^{21,22,23}

The reasons for non-disclosure given by the surgeons in our study were embarrassment, avoidance of blame, fear of future litigation, and concerns about reputation. This is consistent with prior research, which identified non-disclosure because of fear of blame, fear of punishment, fear of repercussions and reprisal, intimidation, job loss, lack of confidentiality, and legal implications.^{7,24} Health care professionals are afraid of being punished or sued, thus non-punitive legislation that protects individuals who disclose medical errors should be enacted to encourage medical error reporting.²⁵ This is consistent with findings in Uganda, where health workers fear penalty from managers and contract termination.¹⁹ These findings are consistent with those of others who observe that a lack of

confidentiality is a barrier that leads to a culture of silence.^{26,27} The World Alliance for Patient Safety Forward Programme advocated that reporting be safe and that those who report incidents not be penalized or suffer other adverse consequences because of reporting.²⁰

Over half of the respondents (56.58%) agreed that error reporting was beneficial to the healthcare system. Almost a quarter (23.68%) did not agree and 19.74% were unsure. However, system-wide reporting has been shown to improve patient safety when errors are reported because data are collected, analysed to find (possible) errors and change effected in the system such that these errors do not occur anymore or become of no consequence.²⁸

This attempt at trying to understand error definition and ‘consciousness’ among surgeons of various subspecialties in Nigeria has several limitations. The first is the limitations caused by the study instrument. The issue of flexibility in questionnaire-based studies where respondents are ‘forced’ to choose from options even when they have alternative option or opinion is an inherent limitation in questionnaires. Also, it was not possible to do a multivariate analysis to see how various demographic like age, sex, affected definition and reporting in the study cohort due to small sample size. We also could not analyse how each surgical subspecialty responded to the survey questions due to unbalanced representation of the various surgical specialty surveyed.

Conclusion

Surgical errors are prevalent, usually preventable, and frequently have a clinical impact. Personal and institutional efforts at reducing errors must begin with understanding what constitutes error in surgery. Surgeons across all specialty in Nigeria have a nuanced view of what surgical errors are, and how they should be reported. While most surgeons admit to committing errors frequently, most of them would rather not make any disclosures. Although the consensus was that error

reporting was beneficial, institutional frameworks for error reporting were lacking in Nigeria.

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Ethical Statement and consent to participate:

Ethical clearance was not obtained from a hospital before the commencement of the research because it was a questionnaire-based survey that involved surgeons that attended a conference and did not involve patients or hospital data.

Authors’ contribution

Author AU conceived the idea of the work and designed the questionnaire. Author AU and Author AJO reviewed the questionnaire, literature review, data collection, and analysis. Both authors did the writing of the paper, editing, and review of the first manuscript. Both authors read and approved the final manuscript.

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Declaration of interest

The authors have no conflicts of interest to declare.

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