Safety and quality in surgery: surgeons' perception in Brazil.

Segurança e qualidade em cirurgia: a percepção de cirurgiões no Brasil.

Maria Isabel Toulson Davisson Correia, TCBC-MG[1]; Flávio Daniel Saavedra Tomasich, TCBC-PR[2]; Heládio Feitosa de-Castro Filho, TCBC-CE[3]; Pedro Eder Portari Filho, TCBC-RJ[4]; Ramiro Colleoni Neto, TCBC-SP[5]

A B S T R A C T

Objective: to evaluate the perception of surgeons, members of the Brazilian College of Surgeons (CBC), on safety and quality issues in surgery, based on projects of Brazilian Ministry of Health (MS), CBC, World Health Organization (WHO), and American College of Surgeons (ACS). **Methods:** a questionnaire based on WHO, CBC, and ACS initiatives was sent to all active and non-active CBC members, using Survey Monkey, in March 2018. **Results:** out of 7,100 members, 171 professionals answered the questionnaire. Out of these, the majority (63.2%) declared to perform general surgery, 88.9% indicated knowing the project called Safe Surgery developed by MS, 73.1%, the CBC manual, and 14.6%, the ACS Strong for Surgery. Among those who indicated knowing the MS project, 73.1% said that they were accustomed to use it as a routine, and, among those who indicated knowing the CBC manual, 46.2% said that they were accustomed to use it. Most of the surgeons (81.3%) indicated that they had experienced severe surgical failures, being failures related to surgical material (49.7%) and presence of foreign bodies (8.2%) the most common ones. There were distinct opinions on who was responsible for checking over the checklist. **Conclusion:** the importance of safety and quality in surgery is well known by surgeons, but the practice is varied. Serious adverse events had been experienced by many surgeons, mainly related to surgical material and foreign bodies. The concept of interdisciplinarity did not seem to be common practice. Data indicated the need to develop education projects and the obligation of audits.

Keywords: Safety. Quality of Health Care. General Surgery. Near Miss. Healthcare.

INTRODUCTION

Surgical procedures are part of the daily routine of modern Medicine. In Brazil, in 2017, there were around 150,000 operations/month recorded by Brazilian Unified Health System (SUS)[1]. Worldwide, it is estimated that, every year, from 187 to 280 million large surgical cases occur, representing about one operation for every 25 inhabitants[2]. There is no risk-free operation and therefore the indication of surgical treatment should always consider the risk/benefit ratio of the procedure. Many adverse events could be avoided if safety and quality criteria were routinely used. In Australia, a study has indicated that 47.6% of surgical complications could have been avoided[3]. Surgical complications increase hospital costs, hospitalization time, and mortality.

In 2008, the World Health Organization (WHO) published an initiative called Safe Surgery Saves Lives[4], and, based on this project, in 2009, the Brazilian Ministry of Health launched a campaign named Safe Surgery Saves Lives[5]. In turn, in 2014, the Brazilian College of Surgeons (CBC) published the Manual of Safe Surgery[6], based on the principles advocated by the two documents mentioned above. In addition to adopting and disseminating the same initiative, the American College of Surgeons (ACS) developed a project called Strong for Surgery[7]. It was initially launched also in 2014, by Dr. Tom Varghese Jr., as part of the Surgical Care Outcomes Assessment Program (SCOAP) of the Foundation for Health Care Quality. The main objective of this project was to engage patients and surgeons in the fundamental principle of increasing the quality of provided surgical services, and, thus, improving results.

1 - Federal University of Minas Gerais, Medical School, Department of Surgery, Belo Horizonte, MG, Brazil. 2 - Federal University of Parana, Medical School, Departmnnet of Surgery, Curitiba, PR, Brazil. 3 - Federal University of Ceara, Medical School, Department of Surgery, Fortaleza, CE, Brazil. 4 - Federal University of Rio de Janeiro State, School of Medicine and Surgery, Department of General and Specialized Surgery, Rio de Janeiro, RJ, Brazil. 5 - Federal University of Sao Paulo, Paulista School of Medicine, Department of Surgery, Sao Paulo, SP, Brazil.

The clinical benefits and economic impact after implementing these initiatives, regardless of whether in first-world or developing countries' hospitals, are a reality[8-12]. However, we should highlight the importance, well-documented by some authors[8,10], that the lack of standardization and interdisciplinary involvement, as well as the lack of several other essential aspects for the success of the appropriate implementation of the projects, may result in contradictory data[13]. Thus, similarly to the standardization adopted by aviation, it seems clear that the surgical practice guided by protocols, in particular by checklists, is associated with low rates of adverse events[14-17] and should be carefully implemented in surgical centers.

Besides the reduction of the complication rate associated with the use of checklists, there are also the improvement in communication among peers, encouragement of teamwork, and introduction of general safety attitudes[11]. Despite this, in Brazil, it is still common the fateful report of serious adverse events associated to the lack of standardization and responsibility towards the surgical patient, regardless of the type of hospital where the care is performed, a situation that has been widely disseminated by the media and which makes the population increasingly afraid of surgeons.

The objective of the present study was to evaluate the knowledge of surgeons, in Brazil, regarding safety and quality in surgery.

METHODS

A structured questionnaire (Figure 1) based on WHO, CBC, and ACS initiatives was sent to all active and non-active CBC members[7,10], using Survey Monkey platform, in March of 2018. Firstly, an electronic message was sent to the members inviting them to answer the first 14 questions of the questionnaire, by using the link to Survey Monkey page. If they were interested, they could then answer the other questions. This message was sent twice.

Statistical analyses included frequency and chi-square tests for crossings between variables of interest, performed using SPSS program, version 19.0.

RESULTS

Out of the 7,100 registered members, 171 professionals answered the questionnaire. Out of these, the majority (63.2%) declared to perform General Surgery, 12.3%, Digestive Surgery, 7.6%, Oncologic Surgery, 4.1%, Plastic Surgery, 2.3%, Head and Neck Surgery, 1.8%, Thoracic Surgery, 1.8%, Coloproctological Surgery, 1.2%, Urological Surgery, and 5.7%, surgeries of other specialties.

The types of hospitals where these professionals work are recorded in table 1. The median number of beds of these institutions was 201, ranging from 11 to 2,500.

Table 1. *Types of hospitals where the physicians who answered the questionnaire worked.*

Type of hospital	n	%
Philanthropic	22	12.9
Public	52	30.4
Private	59	34.5
University	38	22.2
General	114	66.7
Specialized	34	19.9
National reference	23	13.5

Most of the interviewees (88.9%) indicated knowing the project called Safe Surgery developed by MS, 73.1% knew the CBC Manual, and 14.6%, the ACS Strong for Surgery.

Based on your experience and routine surgical practice, answer this questionnaire.

1. Register your surgical specialty: _____
2. Type of hospital where you work: _____
   1) private; 2) public; 3) university; 4) philanthropic.
3. Type of hospital where you work:_____
   1) general; 2) specialized; 3) national reference.
4. Number of hospital beds: _____
5. Do you know the project Safe Surgery (Brazilian Ministry of Health)?
   1) yes; 2) no.
6. If yes, is it routine to follow it in the hospital you work? _____
   1) yes; 2) no.
7. If no, justify it:

_____

8. Do you know the Manual of Safe Surgery (CBC)?
   1) yes; 2) no.
9. If yes, is it routine to follow it in the hospital you work? _____
   1) yes; 2) no.
10. If no, justify it:

_____

11. Do you know Strong for Surgery (American College of Surgeons)?
    1) yes; 2) no.
12. If yes, indicate a positive aspect of it:

_____

13. In your hospital, is it routine to register surgical failures? _____
    1) yes; 2) no.
14. If yes, who is responsible for doing so?

_____

15. Have you ever experienced any "serious surgical error" (foreign body; operation on the wrong side; lack of blood reserve when needed; failure related to surgical material etc.) in your surgical practice? _____
    1) yes; 2) no.
16. If yes, indicate which one: _____
17. In your experience, what has been the most frequently observed surgical failure in the routine of the surgical center?
    _____
18. Do you always introduce yourself to the whole team, when you are about to start a surgical procedure? _____
    1) yes; 2) no
19. What do you think about the mandatory use of surgical checklists? _____
    1) great; 2) good; 3) I do not know to give an opinion; 4) pure bureaucracy; 5) others.
20. Who should be responsible for checking over the surgical checklist? _____
    1) surgeon; 2) anesthetist; 3) nurse; 4) all.
21. Give your opinion on this questionnaire or register any subject you consider important to share on the topic:

Figure 1. *Applied questionnaire.*

Among those who knew the MS project, 73.1% said that they were accustomed to use it as a routine in the hospitals where they worked; on the other hand, among those who knew the CBC Manual, only 46.2% used it routinely. There was no statistically significant difference for these questions, considering the type and size of hospital where the surgeons work (p=NS).

Eighty-nine professionals (52%) reported that there was no record of surgical failures as routine in the hospitals where they work. Out of the ones who informed that there was such record, 39% work in private hospitals, 26.8%, in university hospitals, 20.7%, in public hospitals, and 13.4%, in philanthropic hospitals ($p<0.05$). In specialized and general hospitals, the frequency of adverse event records was lower (24.3% and 38.6%, respectively) than in reference hospitals (78.3%), with $p<0.05$. In most hospitals, the nurse of the surgical block was responsible for recording the surgical failures, and, in some few cases, it was indicated that there was a safety and quality team, as well as the participation of the clinical director.

Most of the surgeons (81.3%) indicated that they had experienced severe surgical failures, such as foreign body, error in laterality, lack of blood reserve when it has been essential, failures related to surgical material etc. These last ones (49.7%) and presence of foreign bodies (8.2%) were, isolatedly, the most common failures.

However, 35.3% of the surgeons said that they had experienced more than one adverse event; several of them indicated that they had experienced all of those failures listed in the questionnaire (table 2).

Table 2. *Serious adverse events.*

Type of event	n
Lack of material	85
Foreign body	14
Laterality	4
All mentioned	4
Lack of blood products	2
Others	47
Total	152

Regarding the opinion on the use of checklists, the majority of the professionals (84.2%) indicated that they considered the requirement to be a great attitude, and 78.4% reported that they always presented them to the in-room team. Most of the surgeons said that the check over of the checklist should be assigned to the room nurse (65.5%), 18.1% defined that the anesthesiologist should be responsible for this practice, 12.9%, the surgeon himself (herself), and 3.5% said that it should be assigned to all.

DISCUSSION

The second global challenge, launched between 2007 and 2008 by WHO's Global Alliance for Patient Safety, laid the groundwork for starting discussing safety in surgery. This initiative was released, in Portuguese, by MS in 2009 and by CBC in 2014[5]. The campaign's motto was Safe Surgery Saves Lives and aimed to encourage managers of hospital institutions, as well as health professionals, to mobilize efforts to create standard surgical practices that would promote safety in surgery. Interestingly, after more than ten years of this initiative, there are still surgeons who are unaware of this practice, as we could observe among our interviewees, 11.1% said that they did not know such piece of information.

The concept of safe surgery involves measures adopted to reduce the risk of adverse events that may occur before, during, and after operations. Adverse surgical events are incidents that result in harm to the patient. Most of the surgeons who responded to the present inquiry reported that they had already experienced serious failures, the majority related to surgical material, due to lack of or damage to instruments or, still, inadequate instruments for the surgical act, as reported by some professionals specialized in bariatric procedures. Not necessarily, this failure had caused serious damages to the patients, since we did not evaluate this aspect. However, presence of foreign bodies, mostly compresses, and errors in laterality were recorded in considerable numbers, which can be classified as extremely severe. In this sense, if the Safe Surgery Checklist had been adopted, the errors in laterality could have been considerably minimized, since it is one of the first aspects contemplated by the WHO questionnaire and repeated in two moments (before anesthetic induction - sign in - and the surgical incision - time out)[5,8]. The introduction of the WHO checklist, whose standard should be applicable anywhere in the world and in different surgical settings, has been evaluated in eight global hospitals, located in first-world countries, but also in very poor countries[8]. There has been a 36% decrease in the rate of postoperative complications and mortality has fallen from 1.5% to 0.8%.

Several factors certainly contribute to the reduction of complications and mortality when checklists are adopted, of which we highlight interdisciplinary work. It is interesting to note that, among the surgeons who answered the questionnaire,

65.5% said that the check over of the checklist should be assigned to the nurse and only the minority indicated that it was an everyone's job. Teamwork and continuing education, especially when there are integration and respect among peers, have already been evaluated as factors that contribute to better results[8,17-20] in the adoption and follow-up of protocols, similarly to what happens in aviation. Grogan *et al*.[17] have used aviation techniques, such as Crew Resource Management (CRM), in trauma teams, emergency care, surgical services, and others, through an eight-hour course, after the filling of a questionnaire on safety by the participants. After the training, there has been a positive impact in relation to 20 of the 23 items covered. McCulloch *et al*.[18] have evaluated five surgical units in charge of Orthopedic procedures and Plastic and Vascular Surgeries, in the United Kingdom. All team members (surgeons, nurses, anesthetists, and others) have been exposed to several safety topics for four months. The intervention has been performed in different ways and the combination of actions in group/ team has resulted in better adherence rates to the protocols and increase in the quality of techniques/ abilities in relation to individualized actions.

Still on teamwork, we should point out that lack of communication is one of the aspects associated with adverse events that can cause harm or be fatal to the patient[21,22]. Green *et al*.[22] have emphasized the importance of questioning, by any member of the team, when who is in charge of the operative act may be performing any inappropriate action. That is, the hierarchy can and should be questioned whenever there is a risk of harm to the patient, and, for that, the team philosophy should prevail as a matter of necessity. It is interesting to note that the great majority of surgeons (88.9%) stated that they knew Safe Surgery Saves Lives project, but more than 20% of the interviewees did not routinely introduce themselves to the other team members, and this is an essential step to be fulfilled, in a loud voice, before the surgical incision (time out)[4,8].

The present study should be evaluated with caution, due to the low number of professionals who electronically answered the questionnaire (<5%). Talking about questionnaries, its is considered a good response when there are at least 20% of returns[23,24], and our rate was much lower. This can be an indicator of professionals' lack of interest in the subject. Besides, CBC's database (7,100 registered members) does not reflect and represent the real number of surgeons in Brazil, which is a large continental country. We also did not evaluate the type of hospital and geographic region of the professionals who answered the inquiry, which prevented us from discussing the influence of these variables on the overall results. The study also did not allow us to associate number of reported adverse events with impact on risk for the patient, hospital costs, and general quality of care.

Although better results on safety and quality aspects occurred in private and reference hospitals, initiatives of continuing education and development of a safety and quality culture, as well as the valorization of interdisciplinarity, should be fostered. In this sense, specialist entities, such as CBC, will be able to play a relevant role in developing partnerships with various institutions, providing information and teaching, besides working in partnership with MS in order to establish national security and quality rules.

Our questionnaire showed that the importance of safety and quality in surgery was known by surgeons, but the practice was varied.

Serious adverse events had been experienced by many surgeons, mainly related to surgical material and foreign bodies. The concept of interdisciplinarity did not seem to be common practice. Data indicated the need to develop education projects and the obligation of audits.

R E S U M O

Objetivo: *avaliar a percepção dos cirurgiões, membros do Colégio Brasileiro de Cirurgiões (CBC), sobre temas de segurança e qualidade em cirurgia, com base em Projetos do Ministério da Saúde (MS), do CBC, da Organização Mundial de Saúde (OMS) e do Colégio Americano de Cirurgiões (ACS).* **Métodos:** *questionário com base nas iniciativas da OMS, do CBC e do ACS foi enviado pelo Survey Monkey a todos os sócios, ativos e não ativos, do CBC em março de 2018.* **Resultados:** *responderam ao questionário 171 profissionais dentre os 7.100 sócios. Desses, a maioria (63,2%) declarou praticar Cirurgia Geral, 88,9% indicaram conhecer o Projeto Cirurgia Segura do MS, 73,1%, o Manual do CBC e 14,6%, o Strong for Surgery do ACS. Entre os que conhecem o Projeto do MS, 73,1% disseram usá-lo como rotina e, entre os que conhecem o Manual do CBC, 46,2% usam-no. A maior parte dos cirurgiões (81,3%) indicou que já vivenciou falha cirúrgica grave, sendo aquelas relacionadas com material cirúrgico (49,7%) e presença de corpos estranhos (8,2%), isoladamente, as mais comuns. Houve opiniões distintas sobre a responsabilidade de conferência do checklist.* **Conclusão:** *a importância da segurança e qualidade em cirurgia é conhecida pelos cirurgiões, mas a prática é variada. Eventos adversos graves foram vivenciados por muitos cirurgiões, principalmente relacionados com material cirúrgico e corpos estranhos. O conceito de interdisciplinaridade parece não ser prática comum. Os dados indicam a necessidade de desenvolver projetos de educação e a obrigatoriedade de auditorias.*

Descritores: *Segurança. Qualidade da Assistência à Saúde. Cirurgia Geral. Near Miss.*

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Received in: 02/06/2019
Accepted for publication: 06/20/2019
Conflict of interest: none.
Source of funding: none.

Mailing address:
Maria Isabel Toulson Davisson Correia
E-mail: isabel_correia@uol.com.br