

SELF-REPORTED INDEX OF THE ORTHOPEDIC SURGERY TEAM ON THE SURGICAL SAFETY CHECKLIST AND IMPLEMENTATION PROTOCOL*

Taysa de Fátima Garcia¹, Adriana Cristina Oliveira²

ABSTRACT: Objective: The present study assessed the self-reported index of the orthopedic surgery team regarding the safe surgery protocol and application of the checklist. Method: Descriptive study conducted in two hospitals of Belo Horizonte, Minas Gerais, between June and October 2016, with 133 professionals, doctors (mentors/residents), nurses and nursing technicians. Professionals on medical leave, vacation/ holidays were not included in the survey. Data was analyzed with descriptive statistics using measures of central tendency and dispersion. Results: 83.3% (25) of the physicians and 95.1% (98) of the nursing workers said they were aware of the protocol. Of the surgeons, 30% (9) reported that time out is a common practice in surgeries. The same percentage (30) of surgeons said they have experienced laterality errors or retained surgical items inadvertently left in body spaces. Conclusion: it is concluded that the guidelines for application of the surgical safety checklist must to be more widely disseminated/monitored, to ensure that the appropriate actions targeted to patient safety are taken.

DESCRIPTORS: Patient safety; Patient care team; Knowledge; Orthopedics.

ÍNDICE AUTORREFERIDO PELA EQUIPE DE CIRURGIA ORTOPÉDICA SOBRE O PROTOCOLO E CHECKLIST DE CIRURGIA SEGURA

RESUMO: Objetivo: este estudo avaliou o índice autorreferido pela equipe de cirurgia ortopédica quanto ao protocolo de cirurgia segura e aplicação do *checklist*. Método: estudo descritivo em dois hospitais de Belo Horizonte - Minas Gerais, realizado entre junho e outubro de 2016 com 133 profissionais, médicos (preceptores/residentes), enfermeiros e técnicos de enfermagem. Não foram incluídos profissionais sob licença médica, férias/folga durante a pesquisa. Os dados foram analisados descritivamente, por medidas de tendência central e dispersão. Resultados: 83,3% (25) dos médicos e 95,1% (98) da equipe de enfermagem afirmaram conhecer o protocolo. Dos cirurgiões, 30% (9) relataram que o time out é uma prática comum em cirurgias. Esse mesmo percentual afirmou ter vivenciado troca de lateralidade ou retenção de algum material cirúrgico em cavidades operadas. Conclusão: conclui-se que as bases para aplicação do *checklist* precisam de maior divulgação/monitorização, uma vez que essa lacuna pode comprometer a adoção de ações relevantes impactando na segurança do paciente.

DESCRIPTORIOS: Segurança do paciente; Equipe de assistência ao paciente; Conhecimento; Ortopedia.

ÍNDICE AUTORREFERIDO POR EL EQUIPO DE CIRUGÍA ORTOPÉDICA SOBRE EL PROTOCOLO Y CHECKLIST DE CIRUGÍA SEGURA

RESUMEN: Objetivo: este estudio ha evaluado el índice autorreferido por el equipo de cirugía ortopédica acerca del protocolo de cirugía segura y aplicación del *checklist*. Método: estudio descriptivo en dos hospitales de Belo Horizonte - Minas Gerais, realizado entre junio y octubre de 2016 con 133 profesionales, médicos (preceptores/residentes), enfermeros y técnicos de enfermería. No fueron incluidos profesionales de licencia médica, vacaciones/día libre durante la investigación. Se analizaron los datos de modo descriptivo, por medidas de tendencia central y dispersión. Resultados: 83,3% (25) de los médicos y 95,1% (98) del equipo de enfermería afirmaron conocer el protocolo. De los cirujanos, 30% (9) relataron que el time out es una práctica común en cirugías. El mismo porcentaje apuntó que hubo cambio de lateralidad o retención de algún material quirúrgico en cavidades operadas. Conclusión: se concluye que las bases para aplicación del *checklist* necesitan de más divulgación/monitorización, ya que eso puede comprometer la adopción de acciones relevantes impactando la seguridad del paciente.

DESCRIPTORIOS: Seguridad del paciente; Equipo de asistencia al paciente; Conocimiento; Ortopedia.

*Article extracted from the dissertation entitled: "Índice autorreferido pela equipe de cirurgia ortopédica sobre as recomendações e diretrizes internacionais e nacionais para a prevenção de infecção do sítio cirúrgico". (Orthopedic surgery self-referenced index on the international and national recommendations and guidelines for the prevention of surgical site infection) Universidade Federal de Minas Gerais, 2017.

¹Nurse. Master in Nursing. Nurse at Hospital Risoleta Tolentino Neves. Belo Horizonte, MG, Brazil.

²Nurse. PhD in Nursing. Nursing Professor at Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil.

Corresponding author:

Taysa de Fátima Garcia

Núcleo de Pesquisa em Infecções Relacionadas ao Cuidar em Saúde

R. Alfredo Balena, 190 - 30130-100 - Belo Horizonte, MG, Brasil

E-mail: taysafati@hotmail.com

Received: 26/04/2017

Finalized: 24/11/2017

● INTRODUCTION

Based on the World Alliance for Patient Safety launched in 2004, the World Health Organization (WHO) created the “Safe Surgeries Save Lives” program, in 2008, as a second global challenge, with the primary purpose of improving the quality of care provided to surgical patients⁽¹⁻³⁾.

The guidelines of the safe surgery program include the prevention of adverse events in surgical care. Any unintentional and/or unexpected event or occurrence that may result in injury or dysfunction (temporary or permanent), and/or prolongation of hospital stay or death as a consequence of the care provided is considered an adverse event⁽⁴⁾.

It is estimated that these events affect about 3% to 16% of hospitalized patients. Of these, about 3% in surgical procedures, with an overall mortality rate of 0.5%, which means that approximately seven million surgical patients are subject to complications each year, and about one million can cause death during or immediately after surgery⁽¹⁾.

Regarding orthopedic surgeries, an assessment performed in the USA, in 2013, found that, of 174,167 patients who underwent hip arthroplasty, 20.6% experienced at least one adverse event, with occurrence of infection in 0.3%, hip fractures in 0.3% and limb dislocation/displacement in 0.01%⁽⁵⁾.

Therefore, the WHO recommends the use of a checklist, which is intended to make sure that aspects associated with safe performance of procedures are checked prior to anesthetic induction (sign-in), prior to surgical incision (time out), and before the patient leaves the operating room (sign-out), minimizing the possibility of adverse events⁽⁶⁻⁸⁾.

The Safe Surgery program recommends the surgical team pay close attention to small steps that, taken as a whole, are essential for the safety of the surgical procedure. On the other hand, forgetfulness or non-observance of these steps may lead to the occurrence of adverse events, such as wrong patient;; wrong surgical procedure, e.g. laterality, multiple structures or levels; surgical items inadvertently retained in the patients, surgical site infection, among others^(3,9).

However, despite the efforts made by the WHO, the surgical teams have not effectively adhered to the recommendations. Studies have demonstrated the occurrence of adverse events associated with non-compliance with the safe surgical protocol, as well as the reduction in the number of these events, when compliance is effective^(3,9,10).

In Brazil, a study conducted in 2012 in two hospitals in the state of Rio Grande do Norte that assessed the implementation of the checklist in 375 surgeries, found that in 61% of the procedures the protocol was used, but only 4% were adequately completed⁽¹¹⁾.

One common reason for non-adherence to the protocol by the surgical team is unawareness of the importance of the checklist in surgical practice. Thus, knowledge of the surgical safety checklist and implementation protocol is essential to its adequate and effective use by the surgical team, which is not always observed in practice⁽¹¹⁻¹³⁾.

It should be stressed that compliance with this protocol aims to ensure the improvement of the communication among the members of the surgical team, since adverse events are most often avoidable. In this regard, the present study aimed to assess the self-reported index of the orthopedic surgery team on the surgical safety checklist and implementation protocol.

● METHOD

Descriptive cross-sectional study carried out between June and October 2016 in Surgical Centers (CC) of two large hospitals located in the city of Belo Horizonte, Minas Gerais, after approval by the Research Ethics Committee under statement no 1.686.981, on August 12, 2016.

The study population consisted of orthopedic surgeons (mentors and residents), nursing technicians and nurses from the surgical centers of the two hospitals of this study. Professionals on medical leave

or vacation during the survey, or who did not answer the questionnaire after three approach attempts were excluded from the study.

Due to the small size of the sample of medical professionals and nurses in this survey, mentors and residents were grouped in the category “medical staff”, and nurses and nursing technicians, in the category “nursing team”, assuming that, in what regards patient safety, the two categories have similar knowledge and perform similar activities.

The professionals who accepted to participate in the study signed the Informed Consent form and subsequently, in face-to-face interviews, they answered questions about their sociodemographic characteristics and knowledge about the protocol of safe surgery. The questionnaire was based on the patient safety measures recommended in the WHO Safe Surgery Protocol (2009) and previously submitted to content, criterion and construct validation.

The professionals were given forms with open-ended questions. Unlike close-ended questions, open-ended questions prompt people to answer with sentences, not limiting the answers. The data obtained was analyzed through descriptive statistics, using Stata 14 software, and presented in tables of frequency distribution, measures of central tendency and dispersion.

● RESULTS

Of the total sample of 186 professionals from the two hospitals, 133 (71.5%) participated in the study, and 30 (22.5%) of them were orthopedic surgeons, 11 (8.3%) were mentors and 19 (14.3%) were residents; 10 were (7.5%) nurses and 93 (69.9%) were nursing technicians. Also, 53 (28.4%) were on vacation, leave, or absent for other reasons and therefore were not included in the study. Information on sociodemographic characteristics is shown in Table 1.

Table 1 – Sociodemographic characteristics of the professionals who participated in the study. Belo Horizonte, MG, Brazil, 2016 (n=133)

Variable	n	%
Gender		
Female	82	61.6
Male	51	38.3
Age*		
< 35 years	62	46.6
> 35 years	71	53.4
Professional Background		
Physician	30	22.5
Nurse	10	7.5
Nursing Technician	93	69.9
Marital Status		
Single	50	37.6
Married	74	55.6
Divorced	9	6.7
Length of time working in the profession*		
< 8 years	55	41.3
> 8 years	78	58.6
Length of time working in the institution*		
< 3 years	57	42.8
> 3 years	76	57.1

*Variable categorized according to the median.

There was a prevalence of women: 82 (61.3%); age > 35 years 62 (53.4%); 74 (55.6%) were married, 78 (58.6%) had been working in the profession for > 8 years, and 76 (57.1%) have been working in the institution for > 3 years. The predominant work shift was morning: 49 (36.8%), followed by the afternoon shift for 45 (33.8%), 10 (7.5%) at night and 29 (21.8%) were on-callers. Regarding other employment contracts, 103 (77.4%) said they did not have other employment contracts and 30 (22.5%) had another employment contract in the same field; of these, 20 (66.6%) worked in another institution, three (10%) worked in two institutions, five (16.6%) in three institutions, and two (6.7%), in more than three institutions.

Of the professionals with higher education, 12 (40%) doctors and nine (90%) nurses said they had a specialization. Of these, two (16.6%) had a master's degree, one (8.3%) had a PhD, and 10 (83.3%) had a *lato sensu* specialization. None of the nurses reported having any master or doctoral degree.

Regarding knowledge about the Safe Surgery protocol proposed by the WHO, 25 (83.3%) physicians and 98 (95.1%) nursing professionals said they were aware of the protocol. Regarding training on the implementation of the checklist in 2015 or 2016, 17 (56.7%) and 97 (94.2%) of the surgeons and the nursing professionals respectively, reported having received some training, generally provided by a nurse: 110 (83.3%). Regarding the use of the checklist to prevent surgical complications, 132 (99.2%) respondents said the tool prevents complications from surgery and 123 (92.5%) used it routinely.

Table 2 shows the percentages of the self-reported responses on the protocol of safe surgery per professional occupation.

Table 2 – Self-reported index on the protocol of safe surgery per professional occupation. Belo Horizonte, MG, Brazil, 2016 (n=133)

Variable	Professional Occupation		
	Medical team	Nursing team	Total
	n=30 (%)	n=103 (%)	n=133 (%)
Objectives of the safe surgery protocol			
Ensure the safety of the surgical procedure	17 (56.7)	67 (65.0)	84 (63.1)
Improve team communication	3 (10)	3 (3)	6 (4.5)
Reduce complications	4 (13.3)	44 (42.7)	48 (36)
Reduce mortality	0 (0)	2 (1.9)	2 (1.5)
Complications avoidable with the use of the checklist			
Prevention of surgical site infection	9 (30)	24 (23.3)	33 (24.8)
Wrong patient	20 (66.8)	73 (70.9)	93 (69.9)
Wrong surgical site	27 (90.0)	75 (72.8)	102 (76.7)
Wrong surgical procedure	12 (40)	32 (31)	44 (33)
Retention of surgical items in the patient's body	0 (0)	4 (3.8)	4 (3)
Lack of communication	5 (16.7)	11 (10.7)	16 (12)
Errors in medication administration	3 (10)	28 (27.2)	31 (23.3)
Blood loss	0 (0)	27 (26.2)	27 (20.3)
Inspection of equipment	1 (3.3)	12 (11.6)	13 (9.8)
Obstacle to the use of the checklist			
Lack of time	6 (20)	22 (21.4)	28 (21)
Reluctance of the team	8 (26.7)	63 (61.2)	71 (53.3)
No obstacles	16 (53.3)	18 (17.5)	34 (25.6)

Regarding the use of the safe surgical checklist in their daily practice, when the professionals were asked what would their thoughts on the implementation of the process in the institution be if they

were patients, all the professionals (100%) reported that they would like the process to be performed. However, when asked if they believed the checklist would be implemented, only 105 (78.9%) said yes.

Improvement of team communication, a primary objective of the protocol of safe surgery, obtained a low self-reported index: it was mentioned by only three (10%) of the surgeons and three (3%) nursing workers. Also, only four (3.8%) of the nursing team reported that retained items in body spaces is a complication that is completely avoided with the use of the checklist.

Another interesting finding was that 63 (61.2%) of the nursing staff reported reluctance of the surgical team among the greatest obstacles to the effective use of the checklist, while 16 (53.3%) physicians did not report any obstacles to compliance with the protocol.

Chart 1 (below) presents the global means for the self-reported index of the professionals regarding the protocol of safe surgery.

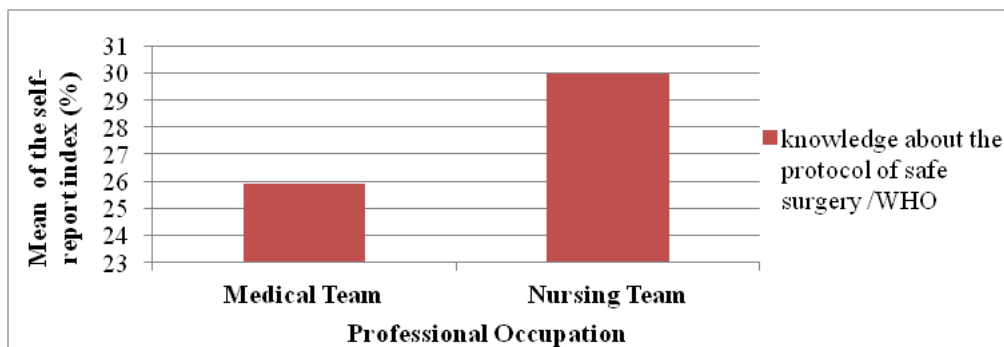


Chart 1 – Global mean of the self-reported index of the professionals regarding the safe surgery protocol per professional occupation. Belo Horizonte, MG, Brazil, 2016 (n=133)

The questions related to time out or “surgical pause”, included in the safe surgery checklist, were exclusively answered by the team of orthopedic surgeons, to gain insight on their self-reported knowledge and adherence to the checklist in surgeries involving laterality and implant placement.

Only nine (30%) physicians reported that time out is a common practice in orthopedic surgeries; 29 (96.7%) stated that the operated limb was marked, nine (30%) reported at some point in their careers having performed a wrong side surgery (laterality) and unintended retention of a foreign object in a patient, such as surgical sponges, cited by three (33.3%) surgeons; gauze, by five (55.6%) surgeons, or other items mentioned by one (11.1%) professional.

However, 18 (60%) physicians said they did not count the items at the end of the surgery, and, when this procedure was done, this responsibility was assigned to one member of the nursing team or the surgical technologist: 27 (91.7%). Descriptive analysis of data is shown in Table 3.

Table 3 – Self-reported index on the time out of the checklist of safe surgery by the surgical team. Belo Horizonte, MG, Brazil, 2016 (n=30) (continues)

Variable	Medical team	
	(n=30)	(%)
Information confirmed during time out		
Patient identity	13	43.3
Identification of the surgical procedure	9	30
Identification of allergies	2	6.7
Marking the surgical site	14	46.7

Availability of patient exams	6	20
Presentation of the surgical team	4	13.3
Type of signaling adopted to mark the surgical site		
Marking an "X" on the site	23	76.7
Marking an arrow on the site	6	20
Written information on the site	1	3.3

Concerning the behavior of the surgical team, regarding laterality, structures or level of the surgery site, when the respondents were asked if they believed the surgical site was marked by the surgeon, 13 (43.3%) respondents said that the surgical site was marked in 100% of the surgeries; 10 (33.3%) believe that this practice occurs in 70%-95% of the procedures and seven (23.3%) estimate that this occurs in only 10%-50% of the surgeries performed at the institution.

● DISCUSSION

In the present study, most health professionals were women (61.3%), particularly because the nursing team was represented by a large number of professionals, and nursing is a typically female profession, as shown in many studies^(3,14).

Regarding the age group, most participants were > 35 years old (53.4%) and had been working in the profession for more than 8 years (58.6%). This finding is corroborated by studies on the profile of health workers and were similar to this study, where the participants were aged 21-60 years and have been working in the profession for 5 to 10 years⁽¹⁴⁻¹⁵⁾.

Regarding the protocol of safe surgery, purposes such as improving the communication of the surgical team, showed low self-reported rates: it was mentioned only by 10% of the surgeons and 3% of the nursing team. The "Safe Surgery Saves Lives" program aims to improve surgical patient safety, reduce complications and mortality through effective communication between the surgical team, which represents their greatest challenge^(1,8,16).

Thus, implementation of the checklist is essential to ensure effective communication among professionals and early identification of failures at the different stages of surgical patient care, with a direct impact on the reduction of adverse events. Studies have shown that the use of this tool significantly improves the perception and communication of the surgical team, with a direct impact on care and behavior⁽³⁾.

Regarding surgical site marking, 76.7% of the physicians mentioned the use of an "X" to mark the incision site. However, 30% reported having performed a wrong side surgery (laterality), at some point in their careers. According to the universal protocol proposed by the Joint Commission, surgical site marking is expected to avoid any ambiguity, and it is recommended that the surgical site is marked with an arrow on the limb, since the use of an "X" or a cross may be ambiguous, resulting in confusion during incision^(1,17).

Concerning time out before the patient's skin incision, only 30% of the surgeons reported that it is a common practice in orthopedic surgeries. Time out is one of the most important stages of adherence to the surgical safety checklist. During time out (brief pause) the patient, the surgical procedure and the site of operation are confirmed⁽¹⁷⁻¹⁹⁾.

Some studies have demonstrated the effectiveness of time out in the multidisciplinary implementation of the safe surgical protocol^(8,16,19). In the assessment of the incidence of adverse events after the systematic implementation of time out, a study of neurosurgical procedures showed that no errors occurred in a period of six months⁽¹⁸⁾.

A similar finding was obtained by a study conducted in Los Angeles (USA). The study that encouraged time out among 98 members of the surgical team found that 97.8% felt confident about performing the

surgical procedures after using the tool⁽²⁰⁾.

Regarding other events that could be avoided with the implementation of the safe surgery checklist, only 3.8% of the nursing team and no one of the surgeons reported that the complication retention of materials in the patient's body is avoided with the use of the checklist. Regarding the count of surgical instruments and materials at the end of the surgery, 60% of the physicians stated that they did not adhere to this practice, and when this count was performed, it was usually done by the nursing team or the surgical technologist (91.7%).

Assessment of whether or not this practice was performed in 59 surgeries where surgical materials were left in surgical wounds revealed that the count of surgical instruments and materials was not performed in 6.4% of the surgeries, and in 93.2% of them the count was not appropriately performed, resulting in adverse events⁽²¹⁾. Similarly, 30% of the surgeons reported retention of materials such as surgical sponges (33.3%) gauze (55.6%) or other items (11.1%) in the patients. at some point in their careers.

The retention of gauze, surgical sponges or other items in the operative cavity is commonly related to the size and type of surgery (emergencies), large amount of blood loss and the involvement/participation of various members of the surgical team⁽⁶⁻⁸⁾.

Systematic count of instruments and surgical materials should be performed by the surgical team, with the involvement of the multidisciplinary team during all the stages of the surgery, with methodical exploration of the operative field before the end of the surgery^(1,6-7). This is particularly important since this process comprises the whole surgery, from the preparation of the operative field to incision closure.

However, some studies have demonstrated that non-adherence to this practice may result in serious events related to retention of surgical materials or instruments in the patients⁽²²⁾. Non-adherence may be associated to the following beliefs of some members of the surgical team: 1) the belief that the nursing team is entirely responsible for checking surgical materials, since the surgeons, with their overloaded schedules, do not have time for performing such activities, and 2) the belief that adverse events are not likely to occur with their patients⁽²³⁻²⁴⁾.

Another interesting finding concerned the fact that 61.2% of the nursing professionals cited reluctance of the surgical team as one of the main obstacles to the effective implementation of the checklist, while 53.3% of the surgeons did not report any obstacles to compliance with the protocol.

Other studies have shown that implementation of the checklist is frequently performed by nurses (78.7%), followed by anesthesiologists (42.5%), which reinforces the need for greater involvement of the surgeons in the referred practice⁽⁸⁾. Although the mean values of the self-reported index on the surgical safety checklist and implementation protocol were much lower than expected (100% of desired results) for both categories, 100% of the professionals in this study claimed they would like to see the protocol implemented if they were the patients undergoing surgery.

The main limitation of this study was the difficulty in accessing the surgical team, especially the physicians, due to their overloaded schedules in the institutions, as well as due to unforeseen events related to surgical scheduling, such as cancellations and/or rescheduling. Also, some interviews that were started, had to be postponed and conducted later the same day or another day and other interviews that were interrupted could not be concluded, resulting in sample loss.

● CONCLUSION

Regarding the self-reported index of health professionals on the protocol of safe surgery, although the team reported being aware of the recommendations, when they were asked open-ended questions, which do not provide specific pre-set answer options, the means obtained fell below expectations. Objectives considered "gold standard", such as the improvement of team communication and prevention of retention of materials in the patients' surgical site, obtained a self-reported index below 50%.

Regarding time out, few respondents said it is a common practice among orthopedic surgeons, and more than half of the surgeons said they did not count the surgical instruments at the end of the surgery. Wrong patient and surgical site were recognized as complications that could be avoided with the implementation of the protocol, obtaining a self-reported index close to 50%.

Therefore, a multidisciplinary debate on all the steps involved in patient safety is necessary, with investment in training focused on the impact of the actions of health, both individual and collective, on the care delivered to surgical patients. Such training should be offered to all the teams.

It should be stressed that routine audits of processes, knowledge and adherence of the surgical team to the surgery protocol is of utmost importance and aims to ensure the continuous updating of health professionals on these issues, improving their performance and adherence to the recommendations of the surgical safety checklist, in order to prevent surgical site infections.

● REFERENCES

1. World Health Organization (WHO). World Alliance for Patient Safety: Safe Surgery Saves Lives. [Internet] Geneva: WHO; 2009 [acesso em 13 abr 2016]. Disponível: http://www.who.int/patientsafety/safesurgery/knowledge_base/SSSL_Brochure_finalJun08.pdf.
2. Diego LAS, Salman FC, Silva JH, Brandão JC, de Oliveira Filho G, Carneiro AF, et al. Construção de uma ferramenta para medida de percepções sobre o uso do checklist do Programa de Cirurgia Segura da Organização Mundial da Saúde. Rev. Bras. Anesthesiol. [Internet] 2016;66(4) [acesso em 9 dez 2016]. Disponível: <http://dx.doi.org/10.1016/j.bjane.2014.11.011>.
3. Cabral RA, Eggenberger T, Keller K, Gallison BS, Newman D. Use of a Surgical Safety Checklist to Improve Team Communication. AORN J. [Internet] 2016;104(3) [acesso em 8 dez 2016]. Disponível: <https://doi.org/10.1016/j.aorn.2016.06.019>.
4. Moura MLO, Mendes W. Avaliação de eventos adversos cirúrgicos em hospitais do Rio de Janeiro. Rev. bras. epidemiol. [Internet] 2012;15(3) [acesso em 5 dez 2015]. Disponível: <http://dx.doi.org/10.1590/S1415-790X2012000300007>.
5. Culler SD, Jevsevar DS, Shea KG, Mcguire KJ, Wrigth KK, Simon AW. The incremental hospital cost and length-of-stay associated with treating adverse events among medicare beneficiaries undergoing THA during fiscal year 2013. J Arthroplasty. [Internet] 2016;31(1) [acesso em 15 out 2016]. Disponível: <https://doi.org/10.1016/j.arth.2015.07.037>.
6. Motta Filho GR, da Silva LFN, Ferracini AM, Bahr GL. Protocolo de Cirurgia Segura da OMS: O grau de conhecimento dos ortopedistas brasileiros. Rev Bras Ortop. [Internet] 2013;48(6) [acesso em 9 dez 2015]. Disponível: <http://dx.doi.org/10.1016/j.rbo.2013.08.002>.
7. Russ S, Rout S, Caris J, Mansell J, Davies R, Mayer E, et al. Measuring variation in use of the WHO surgical safety checklist in the operating room: a multicenter prospective cross-sectional study. J Am Coll Surg. [Internet] 2015;220(1) [acesso em 19 jul 2016]. Disponível: <https://doi.org/10.1016/j.jamcollsurg.2014.09.021>.
8. Candas B, Gursoy A. Patient safety in operating room: Thoughts of surgery team members on implementing the Safe Surgery Checklist (An example from Turkey). Perioperative Care and Operating Room Management. [Internet] 2016;(5) [acesso em 11 jan 2017]. Disponível: <http://dx.doi.org/10.1016/j.pcorm.2016.08.001>.
9. Beks RB, Claessen FMAP, Oh LS, Ring D, Chen NC. Factors associated with adverse events after distal biceps tendon repair or reconstruction. J Shoulder Elbow Surg. [Internet] 2016;25(8) [acesso em 10 dez 2016]. Disponível: <http://dx.doi.org/10.1016/j.jse.2016.02.032>.
10. Reed S, Ganyani R, King R, Pandit M. Does a novel method of delivering the safe surgical checklist improve compliance? A closed loop audit. Int J Surg. [Internet] 2016;(32) [acesso em 28 nov 2016]. Disponível: <http://dx.doi.org/10.1016/j.ijssu.2016.06.035>.
11. de Freitas MR, Antunes AG, Lopes BNA, Fernandes FC, Monte LC, Gama ZAS. Avaliação da adesão ao checklist de cirurgia segura da OMS em cirurgias urológicas e ginecológicas, em dois hospitais de ensino de Natal, Rio

Grande do Norte, Brasil. *Cad. Saúde Pública*. [Internet] 2014;30(1) [acesso em 13 dez 2015]. Disponível: <http://dx.doi.org/10.1590/0102-311X00184612>.

12. de Mello JF, Barbosa SFF. Cultura de segurança do paciente em terapia intensiva: recomendações da enfermagem. *Texto Contexto Enferm*. [Internet] 2013;22(4) [acesso em 30 out 2015]. Disponível: <http://dx.doi.org/10.1590/S0104-07072013000400031>.

13. Santana HT, de Freitas MR, Ferraz EM, Evangelista MS. WHO Safety Surgical Checklist implementation evaluation in public hospitals in the Brazilian Federal District. *J Infect Public Health*. [Internet] 2016;9(5) [acesso em 30 dez 2016]. Disponível: <https://doi.org/10.1016/j.jiph.2015.12.019>.

14. Veríssimo L, Poeira A. Tipologia de perfis socioprofissionais e a identificação profissional numa organização de saúde. *Rev Port Saúde Pública*. [Internet] 2012;30(2) [acesso em 30 abr 2016]. Disponível: <https://doi.org/10.1016/j.rpsp.2012.07.001>.

15. Carrillo-García C, Solano-Ruiz MC, Martínez-Roche ME, Gómez-García CI. Influência do gênero e da idade: satisfação no trabalho de profissionais da saúde. *Rev. Latino-Am. Enfermagem*. [Internet] 2013;21(6) [acesso em 30 dez 2015]. Disponível: <http://dx.doi.org/10.1590/0104-1169.3224.2369>.

16. Kozusko SD, Elkwood L, Gaynor D, Chagares SA. An innovative approach to the surgical time out: a patient-focused model. *AORN J*. [Internet] 2016;103(6) [acesso em 12 dez 2016]. Disponível: <https://doi.org/10.1016/j.aorn.2016.04.001>.

17. The Joint Commission. National Patient Safety Goals Effective January 2017. Office-Based Surgery Accreditation Program. *TJC*. [Internet] 2017 [acesso em 2 fev 2017]. Disponível: https://www.jointcommission.org/obs_2017_npsgs/.

18. Oszwald A, Vatter H, Byhahn C, Seifert V, Güresir E. "Team time-out" and surgical safety-experiences in 12,390 neurosurgical patients. *Neurosurg Focus*. [Internet] 2012;33(5) [acesso em 30 jan 2015]. Disponível: <https://doi.org/10.3171/2012.8.FOCUS12261>.

19. Molina G, Jiang W, Edmondson L, Gibbons L, Huang LC, Kiang MV, et al. Implementation of the Surgical Safety Checklist in South Carolina Hospitals is associated with improvement in perceived perioperative safety. *J Am Coll Surg*. [Internet] 2016;222(5) [acesso em 14 dez 2016]. Disponível: <https://doi.org/10.1016/j.jamcollsurg.2015.12.052>.

20. McLaughlin N, Winograd D, Chung HR, Van de Wiele B, Martin NA. Impact of the time-out process on safety attitude in a tertiary neurosurgical department. *World Neurosurg*. [Internet] 2014;82(5) [acesso em 8 mai 2015]. Disponível: <https://doi.org/10.1016/j.wneu.2013.07.074>.

21. Stawicki SP, Moffatt-Bruce SD, Ahmed HM, Anderson HL, Baliya TM, Bernescu I, et al. Retained surgical items: a problem yet to be solved. *J Am Coll Surg*. [Internet] 2013;216(1) [acesso em 15 fev 2015]. Disponível: <http://dx.doi.org/10.1016/j.jamcollsurg.2012.08.026>.

22. Mahran MA, Toeima E, Morris EP. The recurring problem of retained swabs and instruments. *Best Pract Res Clin Obstet Gynaecol*. [Internet] 2013;27(4) [acesso em 20 set 2014]. Disponível: <http://dx.doi.org/10.1016/j.bpobgyn.2013.03.001>.

23. Umit UM, Sina M, Ferhat Y, Yasemin P, Meltem K, Ozdemir AA. Surgeon behavior and knowledge on hand scrub and skin antisepsis in the operating room. *J Surg Educ*. [Internet] 2014;71(2) [acesso em 3 fev 2015]. Disponível: <https://doi.org/10.1016/j.jsurg.2013.08.003>.

24. Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA, et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *The Lancet*. [Internet] 2015;386(9993) [acesso em 30 mar 2016]. Disponível: [http://dx.doi.org/10.1016/S0140-6736\(15\)60160-X](http://dx.doi.org/10.1016/S0140-6736(15)60160-X).