

## Psychosocial elements of professionally-relevant behaviour in scrub nurses

**Anna Ribakova** \*, Faculty of Public Health and Social Welfare, Riga Stradiņš University, Anniņmuizas bulvaris 26a, Riga LV- 1067, Latvia.

**Liana Deklava**, Faculty of Public Health and Social Welfare, Riga Stradiņš University, Anniņmuizas bulvaris 26a, Riga LV- 1067, Latvia.

**Kristaps Circenis**, Faculty of Public Health and Social Welfare, Riga Stradiņš University, Anniņmuizas bulvaris 26a, Riga LV- 1067, Latvia.

**Inga Millere**, Faculty of Public Health and Social Welfare, Riga Stradiņš University, Anniņmuizas bulvaris 26a, Riga LV- 1067, Latvia.

### Suggested Citation:

Ribakova, A., Deklava, L., Circenis, K. & Millere, I. (2016). Psychosocial elements of professionally-relevant behaviour in scrub nurses. *Global Journal of Psychology Research: New Trends and Issues*. 6(3), 123-134.

Received April 23, 2016; revised July 06, 2016 ; accepted September 12, 2016;

Selection and peer review under responsibility of Prof. Dr. Tulay Bozkurt, Istanbul Kultur University, Turkey.

©2016 SciencePark Research, Organization & Counseling. All rights reserved.

---

### Abstract

The significance of professionally-relevant behaviour of scrub nurses for teamwork in the operating room is increasing, as proven by the studies carried out over the last decades worldwide. Non-technical skills include both social and cognitive elements. Specific behaviour evaluation system can be used to identify, assess and improve non-technical skills of scrub nurses. Improvement of non-technical skills helps reduce staff errors in the intraoperative period. The objective of the research is to find out whether there are statistically significant differences between scrub nurses' self-assessment of their non-technical skills, their implementation and surgeons' expectations. Demographic questionnaire, interview and Scrub Practitioners List of Intraoperative Non-technical Skills (SPLINT) were used in this study. Scrub nurses tend to engage in minimal communication and only a half of surgeons show expectations for exchange of thoughts and ideas from scrub nurses. This shows that the exchange of information between physicians and scrub nurses is generally insufficient. Surgical team members pay more attention to signals given by the surgical team and surgical process and rarely report on perception of signals given by medical equipment and a patient. Such data may be indicative of insufficient attention to a patient's safety during the surgery.

Keywords: non-technical skills, scrub nurse, scrub nurse's skills

---

\* ADDRESS FOR CORRESPONDENCE: **Anna Ribakova**, Riga Stradiņš University, Faculty of Public Health and Social Welfare, Anniņmuizas bulvaris 26a, Riga LV- 1067, Latvia. E-mail address: [Anna.Ribakova@rsu.lv](mailto:Anna.Ribakova@rsu.lv)

## 1. Introduction

Today's operating theatre is a dynamic, high stress environment, staffed by specialists from different fields in order to provide successful treatment results for patients. A vision of this multidisciplinary teamwork is a key mechanism to a holistic patient care and safe services for patients (Jefferies & Chan, 2004). Interaction between surgeons and scrub nurses is more intense on daily basis and perhaps more important than between other specialists (Undre et al, 2012).

Over the past two decades, attention to patient safety, including reduction of medical errors, has reached an international scale. A great attention is paid to research of successful surgical team models and error-causing factors.

Teams in an operating theatre can be both flexible with changing staff and constant with team members who are used to working together as a unit. However, in case of constant teams, roles of scrub nurses may change. Surgical team compositions may vary, for example, in a number of people involved, in a level of individual experiences, competencies and work expertise as a whole, a dynamic change of team members often working together for a short period of time is possible, surgical teams are comprised of various specialists and integrate different professional cultures (Manser 2009), (Mitchel & Flinn, 2009).

Retrospective studies have shown that errors in an operating theatre often occur due to poor communication and poor teamwork (Gawande et al, 2003). Additional researches on team mental models are required in order to systematically describe those models and to find solutions for the advancement of patient safety (Undre, 2012). Due to training and job differences between physicians and nurses, gaps in passing information are possible. Therefore, it is necessary to arrive at a compromise in communication styles to improve communication in this hierarchical interaction (Timmons & Tanner, 2004).

Undre et al have expressed the idea of a possible additional training dimension. Usually training is focused exclusively on acquisition of specific skills, while training in relation to non-technical skills for professionals working in an operating theatre are rarely offered in any of stages of professional development. Interaction of these factors can lead to a lack of inter-professional understanding (Undre Sh. et al, 2012). There are also other interpersonal aspects between nurses and surgeons which have developed historically (Reim et al, 2012). Researchers have expressed an assumption of gender-based link to satisfaction with the team climate (Thomas, 2003).

Observations show that relationship between scrub nurses and surgeons are closely related to their roles, genders, stereotypes, as well as their status.

A status of an individual in a group can be explained in accordance with status expectation theory by Bergner and Conner. In the centre of this theory there is an idea that we assess people by both their special skills and abilities related to their conduct such as prior experience or training and status qualities, such as gender, age, race, education, and physical attractiveness which encourage people to think that someone will be superior to others, even if these features have no significance in the working groups (Correll & Ridgeway, 2006).

Implementation of safe and effective practices requires both technical skills (e.g., aseptic technique, handing of instruments) and non-technical skills which tend to complement technical skills and are defined as critical cognitive and social skills. Most non-technical skills are automatic and consist of routine behaviour, and often people have no real idea of the extent of their use (Mitchell & Flin, 2008).

In order to advance patient safety, clinicians and specialists in social sciences in their researches use an approach applied in aviation (Crew Resource Management). The method is based on the fact that through training of non-technical skills - cognitive and interpersonal - human error reduction can be achieved.

By accepting and adjusting Team Resource Management approach to healthcare system, good results were achieved. In those healthcare facilities where Team Resource Management was applied the number of surgical and clinical errors and unfavourable results was reduced (Helmreich R., 2000).

## 2. Objective

The aim of the study is to determine whether there are statistically significant differences between self-assessment of scrub nurses' non-technical skills, their implementation and surgeon expectations.

## 3. Methods

In order to achieve objectives set forth by the study, qualitative research methods - interviews and observations - were used.

Interviews of 15 surgeons were conducted targeted at identification of demographic data of surgeons and their expectations with regard to non-technical skills of scrub nurses, namely, situation awareness, communication and teamwork skills, as well as task management skills.

15 scrub nurses were interviewed to determine their demographic data and self-assessment of non-technical skills.

Principles of taxonomy of SPLINTS were used for observation and assessment of work of 15 scrub nurses. Scrub Practitioners' List of Intraoperative Non-Technical Skills (SPLINTS) is a field-specific behavioural evaluation system, which is used to identify, observe and develop non-technical skills of scrub nurses. The electronic version of the tool was obtained by agreement with a representative of the University of Aberdeen.

Experts of the University of Aberdeen have drawn up this system of developed categories of non-technical skills and elements, as well as behavioural markers that can be observed as non-technical skills-related behaviour and contributes to a better or non-standard action in a particular working environment and is intended for structured observation of behaviour of surgical team specialists, assessment and feedback formation. (Mitchell L et al, 2012). This document precisely defines non-technical skills needed for individuals working in a surgical team, provides a surgical team with structured knowledge of non-technical skills and can be applied in discussions, training and assessment procedures for safe and efficient work practices. The tool has received approval through appropriate research methodologies (Mitchell L, R Flin et al, 2012; Youngson, 2011). Reliability of the tool was measured by within-group agreement ( $r(wg)$ ) and was acceptable for the three skill categories and six out of nine elements:  $r(wg) > 0.7$ . (Mitchell et al., 2012).

SPLINTS taxonomy includes three levels of hierarchy, with three top-level main categories and nine elements. Rating scales for assessment of the behaviour observed and obtaining of feedback are expressed in Likert scale with values from 1 (poor) to 4 (good).

Data on the taxonomy of non-technical skills are summarized in the Table 1.

Category	Element
Situation awareness	Gathering information
	Recognising and understanding information
	Anticipating
Communication and	Acting assertively

teamwork	Exchanging information Co-ordinating with others
Task management	Planning and preparing Providing and maintaining standards Coping with pressure

Scrub Practitioners' List of Intraoperative Non-Technical Skills (SPLINTS), 2010. University Aberdeen, Scotland.

Prior to the assessment of non-technical skills of scrub nurses, translation into Latvian language, adaptation and testing of the tool was carried out on the basis of International Test Commission Guidelines for Translation and Adapting Tests version 10 (International Test Commission, 2010). For testing of the final version of the tool there was conducted a pilot study in a small group of representative sample (5 surgery cases), and it was determined that the structure and the evaluation scale of the tool is understandable and logical, the tool can be used for assessment of scrub nurses' non-technical skills, though previous training of an observer is an important aspect in the use of the tool.

#### 4. Data processing and methods of analysis

Statistical processing of the data was carried out using software SPSS version 16 and MS Office 2003 Excel. The analysis of data was conducted using content analysis of the interview data, descriptive statistics, compliance of the research data obtained with normal distribution was tested by the Kolmogorov-Smirnov test. Through assessment of statistically significant differences, Cronbach's alpha coefficient was determined, as well as univariate analysis of variance and LSD post-hoc test was used.

#### 5. Study results

Scrub nurses and surgeons employed by four hospital participated in the study. Age of the respondents ranged from 27 to 65 years, the mean age of the respondents was 45.1 years (SD = 10.607). Work experience of the respondents ranged from 3 to 42 years, the mean length of service was 20.6 years (SD = 11.264). Most respondents were comprised of females, 15 of which were nurses and 2 were physicians. The mean length of service of the selection group of scrub nurses was 20.2 (SD = 12.01) years, while in the selection group of surgeons - 20 (SD = 10.9) years.

The study covered observations of abdominal surgeries of 7 types both planned and acute; according to access, the observed surgeries were divided into conventional, laparoscopic and laparoscopic with transition to conventional surgeries.

##### 5.1 Descriptive statistics of observable data

During the observation period of the study, there were assessed non-technical skills of 15 scrub nurses by means of scrub Practitioners' List of Intraoperative Non-Technical Skills. Scrub nurses were warned that the observer's objective is to observe the course of a surgery, and to use the resulting data for research, however the nature of the data was not emphasized.

Scrub nurses generally show rather high non-technical skills. The highest mean ratio of 3.87 (SD = 0.35) was observed in the category "Stress Management", the lowest mean ratio of 3.33 (SD = 0.62) was observed in the category of "Providing and maintaining standards", which can be associated with non-compliance with personnel safety demands. The lowest ratio of 2 (nearly poor) was observed in the category "Recognising and understanding information", "Exchanging information" and "Providing and maintaining standards".

### 5.2. Qualitative analysis

During the observation, non-technical skills shown by scrub nurses were recorded in fixed observation minutes selecting description of the observable behaviour-appropriate sample. Though analysis, behavioural examples (markers) were classified in line with definitions of categories of non-technical skills provided for by SPLINTS protocol. Formation of such a coding or classification was necessary for comparison of the observable data and information obtained through interviews using a single approach.

Content analysis of audio records of the interviews was performed using the classification and coding system for content analysis of identical observation data. During the audio content analysis, in the answers given by the interviewees we looked for text units similar or identical in meanings to formulations of the coding system. If any coincidence was found, the answer was coded as positive.

The data obtained in the result of content analysis were subjected to further quantitative analysis and frequencies of self-assessment readings of scrub nurses' non-technical skills, as well as expectations of surgeons with regard to non-technical skills of scrub nurses were determined.

### 5.3. Statistically significant differences in the study results

Data for comparison of data obtained from scrub nurses, surgeons and observations were grouped according to their affiliation to categories of non-technical skills (Table 2). 14 corresponding behavioural features (markers) were included in the category of information awareness, 9 corresponding behavioural features were included in the category of communication and teamwork and 10 corresponding behavioural features were included the category of task management. Prior grouping of the skills, consistency of data obtained during the interviews and observations were checked determining Cronbach's alpha coefficient for all the three study groups in the representative sample.

Table 2. Cronbach's alpha coefficient for categories of non-technical skills

Category	Feature
Information awareness	Watching and listening helps to improve general understanding of essential aspects of surgical environment (a patient, a team, technical means and equipment); understanding of signals and prediction of events. (Cronbach's alpha = 0.83)
Communication and teamwork	Team members exchange information, knowledge, goals and discuss matter in order to achieve a calm conduct of the surgical procedure (Cronbach's alpha = 0.68)
Task management	Organization of resources and activities in order to achieve individual and team-oriented goals, as well as to maintain standards to ensure the least possible stress for the team. (Cronbach's alpha = 0.69)

No comparison of dimensions of elements of non-technical skills was performed, as through determination of the Cronbach's alpha coefficient in categories, we did not get sufficient showings. Showings of the Cronbach's alpha coefficient below 0.7 can be associated with a small size of the representative sample (Voss et al, 2000, as cited by Lane and Ziviani, 2003).

In order to check statistically significant differences between self-assessment of scrub nurses' non-technical skills, their implementation and surgeon expectations in the categories of non-technical skills such as "Information awareness", "Communication and teamwork" and "Task management", a univariate analysis of variance ANOVA was used and Lcd Post hoch test for comparison of mean values was carried out.

Before the ANOVA test, by the means of the Kolmogorov-Smirnov test we determined conformity of the interview data of the scrub nurses, data from interviews of the selection of surgeons and observation data with normal distribution (p value of all tests equal  $p > 0.05$ ).

Data of the ANOVA analysis show that statistically significant differences exist in all categories of non-technical skills of scrub nurses “Information awareness”,  $F(2;15) = 50.19$ ,  $p < 0.01$  “Communication and teamwork”  $F(2;15) = 21.82$ ,  $p < 0.01$  and “Task management”  $F(2;15) = 23.43$ ,  $p < 0.01$ .

Table 3. LSD post-hoc test

Category	Group	Group	Mean difference	Stat. error	Significance
Information awareness	Physicians	Nurses	-2.60**	0.67	<0.01
		Observer	-6.67**	0.67	<0.01
	Nurses	Physicians	2.60**	0.67	<0.01
		Observer	-4.07**	0.67	<0.01
	Observer	Physicians	6.67**	0.67	<0.01
		Nurses	4.07**	0.67	<0.01
Communication and teamwork	Physicians	Nurses	-1.33*	0.56	<0.02
		Observer	-3.67**	0.56	<0.01
	Nurses	Physicians	1.33**	0.56	<0.02
		Observer	-2.33**	0.56	<0.01
	Observer	Physicians	3.67**	0.56	<0.01
		Nurses	2.33**	0.56	<0.01
Task management	Physicians	Nurses	-1.60**	0.51	<0.01
		Observer	-3.47**	0.51	<0.01
	Nurses	Physicians	1.60**	0.51	<0.01
		Observer	-1.87**	0.51	<0.01
	Observer	Physicians	3.47**	0.51	<0.01
		Nurses	1.87**	0.51	<0.01

\*\*p value < 0.01\*; p value < 0.05

The results of the variance analysis show statistically significant difference between all categories of the non-technical skills, namely “Information awareness”, “Communication and teamwork” and “Task management” in all groups of the representative sample, which is shown by the mean difference and the corresponding p-value. Statistically significant differences in the categories “Information awareness”, “Communication and teamwork”, and “Task management” reveals a similar trend, which shows that surgeons in their questionnaires less chose answers describing work of scrub nurses from the aspect of non-technical skills, while the views of the scrub nurses were closer to the assessment results, compared to the surgeon expectations.

## 6. Discussion

Assessment of non-technical skills of scrub nurses was carried out by means of the intraoperative work management protocol developed by the University of Aberdeen for scrub nurses. This tool for assessment of the work of scrub nurses was chosen due to the fact that this document allows successful assessment of non-technical skills of scrub nurses, it is strongly theoretically grounded and the terminology of the document contains a three-level hierarchy covering significant aspects of scrub nurses’ non-technical skills. The study included translation and adaptation of the observation protocol.

Observation data concerning work of scrub nurses, as well as data from interviews of scrub nurses and surgeons were obtained followed by analysis and descriptive statistics as well as determination of significant differences in showings between the study groups in regard to the results of assessment of non-technical skills of scrub nurses by means of ANOVA analysis of variance.

### 6.1. Information awareness

Information awareness in the interviews of respondents from the groups scrub nurses and surgeons was described mainly as a general understanding of aspects of the operating theatre environment, less frequently in comparison to descriptions of the general understanding thereof, the surgeons expected and the scrub nurses showed their self-assessments that the situation awareness covers also understanding of meanings of various signals used in operating theatres and an ability to anticipate events. Only half of the surveyed physicians expected nurses to acquire information by asking questions, however, physicians more often expected the use of this skills than it was shown in self-assessments of scrub nurses. Observations revealed that, in practice this skill is used more often than it was reflected in the interviews.

In practice nurses show a good ability to perceive signals by equipment and patients, however expectations of physicians and self-assessments of nurses in regard to understanding of these signals were relatively low. These results may indicate that the significance of signals by patients and equipment is underestimated, which may lead to insufficient patient safety during a surgery.

Through self-assessment every third scrub nurse reported that any prediction skills tend to develop with experience. However, 1/3 of surgeons did not relate their expectations with the ability of a nurse to predict a situation in the operating theatre environment. Such assessment by surgeons relates to a doctrine formerly used in operating theatres, where a surgeon was regarded as a "Captain of the Ship" who controls everything that happens in the operating theatre, and all the staff involved in the surgery obeys him or her (Capule, 2010).

Self-assessment showings of scrub nurses' prediction skills are higher than they are in surgeon expectations. Physicians do not always relate their expectations with the use of these skills of nurses. In practice, nurses often show good ability to think analytically, to predict events and needs.

The LSD post-hoc test showed statistically significant differences between self-assessment of scrub nurses' non-technical skills, their implementation and surgeon expectations in the category of information awareness.

The observation data show that in practice nurses shows good skills of information awareness, however, by providing self-assessment of this skill, they less give answers describing their behaviour and actions from the angle of non-technical skills. Surgeons expectations even less are related to the non-technical skills compared to self-assessments of nurses and the observation data. Mean values of frequencies of the responses given in regard to the category "Information awareness" increased with the change of the group (Figure 1). Information awareness was assessed by 14 indicators. Mean values in frequencies of answers given by the group of surgeons showed lowest indices, 6.8 (SD = 2.43) responses of 14 possible; scrub nurses in their self-assessments more often than surgeons gave positive responses describing the skill "Information awareness" in an average of 9, 4 (SD = 1.96) cases. Mean values of response frequency in observation data peaked at an average of 13.5 responses (SD = 0.64).

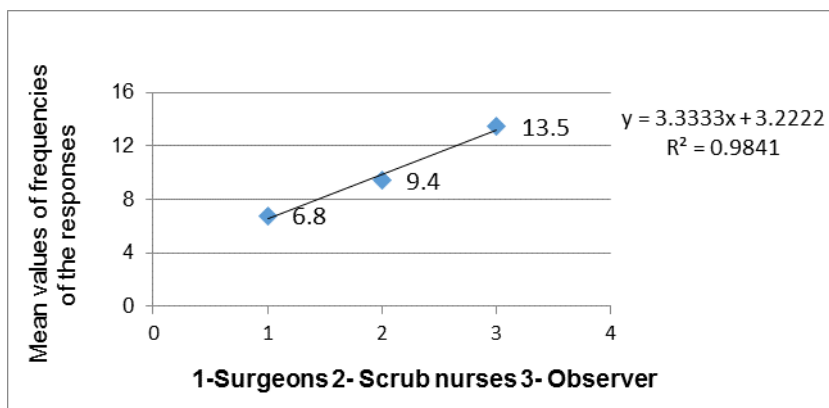


Figure 1. Dynamics changes of mean values in responses given by respondents depending on the group of the representative sample group, Information awareness.

## 6.2 Communication and teamwork

Most of nurses from the representative sample group exchange information with other team members. Surgeons to the lesser extent expect exchange of information from nurses; however they also report that they expect communication that can help in execution of their tasks. More than ½ of scrub nurses and 1/3 of surgeons from the representative sample group believe that it is minimal communication that is appropriate during a surgery. This data makes one wonder whether the existing style of communication provides sufficient exchange of information between members of surgical teams? Does this contribute to patient safety? Conclusions of many researchers suggest that the necessary communication is the primary cause of errors during surgeries. For example, it has been reported by Makary and the colleagues (Makary et al, 2006), as well as Mill et al (2008).

An assertive acting of a scrub nurse respondents tend to associate with surgical count and assurance of sterility during surgery. To a smaller extent, nurses associate decisive action with coordination of a surgical team's work. Respondents do not report that decisive actions of nurses may be associated with patient care or assumption of a leading role in the team, if it falls in the nurse's responsibility. These results coincided with the study by Mitchell and Flynn stressing out that competencies of scrub nurses does not include management of a surgical team, this skill may be significant in cases where a scrub nurse works with less experienced surgeon or care personnel or in order to ensure high standards for clinical care (Mitchell and Flinn, 2008)

Observations show that the majority of nurses are able to act decisively during surgery; self-assessment of nurses in regard to this skill shows slightly lower scores.

Comparing data on application of the skill "Exchanging information", it can be concluded that physician expectations and self-assessments of nurses in relation to the provision of information are low, but the observation data shows that nurses still use these skills. Surgeons have no specific expectations of cooperation during physical tasks, and only half of them showed expectations in regard to exchange of thoughts and ideas, although in practice nurses show full application of this skill. Self-assessment of nurses in regard to the said skills reveals mean showings.

With LSD post-hoc test, it was established that there is a statistically significant difference between self-assessment of scrub nurses' non-technical skills, their implementation and surgeon expectations in the category "Communication and teamwork" of non-technical skills of scrub nurses. The observation data reveal that nurses in practice show good situation awareness skills, but in their self-assessments they less provide answers describing their behaviour and actions from the aspect of the concept of their non-technical skills. Surgeons expectations are even less related to the descriptions of non-technical skills compared to self-assessments of nurses and observation data.



Data in the Figure 2 show that mean values in the frequency of the responses in the category of non-technical skill “Communication and teamwork” tend to grow by changing groups.

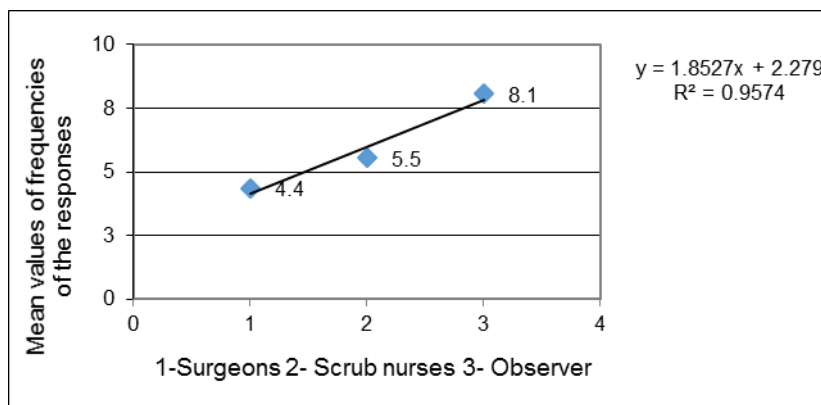


Figure 2. Dynamics changes of mean values in responses given by respondents depending on the group of the representative sample group, Communication and teamwork

Communication and teamwork was evaluated with 9 reference points. By assessing frequency of responses given by the group of surgeons, the mean values obtain lower scores, 4.4 responses (SD = 1.64). Scrub nurses in their self-assessments, more often than surgeons, responded positively, 5.5 times (SD = 1.91), describing their skill “Communication and teamwork”. Mean values of frequency of observation responses peaked at an average of 8.1 responses (SD = 0.88).

### 6.3 Task management

The interviewees associated task management basically with work planning and organization, and - to a small extent - with maintenance of standards.

The observation data shows the highest scores of planning and organizing skills of scrub nurses. In their self-assessments, nurses a little less indicated that they organize their activities and plan their time to avoid making the others wait. Physicians, describing their expectations, less associate them with time management and organization of activities.

Physicians actually do expect that nurses will ensure staff safety. Self-assessment of nurses in this regard is also rather low. The observation data show that staff safety rules are met partly; more often failure to use this skill is associated with failure to use proper eye protection equipment. These results coincide with the author’s research on “Staff infection and injury risk mitigation strategies and methods in operating theatres”, revealing that only 29% of respondents protect their eyes during surgeries. (Ribakova, 2010)

All nurses comply with guidelines for patient safety and good practice. Scrub nurses are able to not only tolerate strain during their work and to take steps to defuse tension within a surgical team; they can also comprehend tension of other team members and assume the role of the comforter. Surgeons show relatively low scores in regard to expectations of abilities of scrub nurses to cope with stress and to comprehend the team’s tension.

Through LSD post-hoc test analysis we determined statistically significant differences between self-assessment of non-technical skills of scrub nurses, their implementation and surgeon expectations in the category of task management. The observation data show that in practice nurses demonstrate good task management skills, while more rarely they responded in their self-assessments describing their behaviour and actions from the aspect of their non-technical skills. Surgeon expectations are less

related to descriptions of non-technical skills compared to self-assessments of nurses and observation data.

Data of the Figure 3 show that mean values of frequency of responses in regard to the category “Task management” of the non-technical skills tend to grow by changing group. Information element of the task management gained 9 points. Mean values of frequency of responses in the surgeons’ group showed lower scores - 4.6 (SD = 1.82), scrub nurses in their self-assessments, more often than surgeons responded positively describing their “Task management” skill mean value 6.3 (SD = 1.40). Mean values of response frequency in the observation data peaked to an average of 8.3 (SD = 0.70).

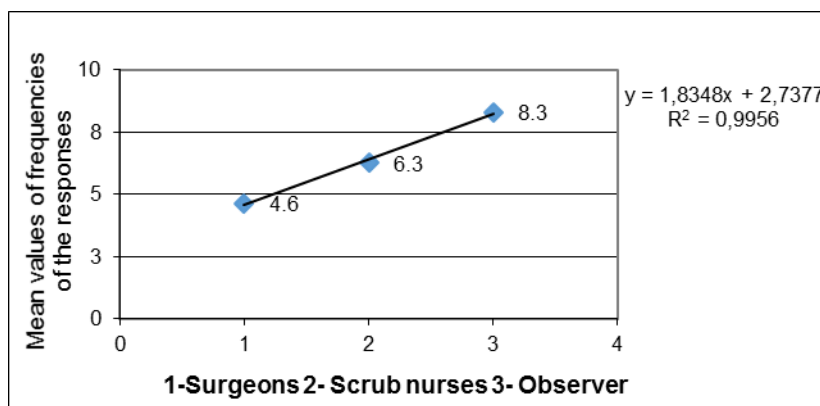


Figure 3. Dynamics changes of mean values in responses given by respondents depending on the group of the representative sample group, Task management

Statistically significant differences between assessments given by nurses and surgeons can be explained by the existence of a formal “monopoly of competences” which is well described in the study of Krogstad et al. During the work course, nurses and physicians exchange their knowledge, observations and objectives. At the same time, they also have different perspectives and different tasks associated with patient care. Krogstad in his study has also reported that physicians do not always have knowledge on nursing competencies, although often it is believed that physicians are highly competent in both nursing and medical matters (Krogstad, Hofoss & Hjortdahl, 2004).

Observations in assessments of scrub nurses’ skills showed better results compared to self-assessment data that can be attributed to the fact that scrub nurses are rather unfamiliar with the concept of non-technical skills, while some non-technical skills can be trained and developed over time and in the course of career.

## 7. Conclusions

- The exchange of information between scrub nurses and surgeons is insufficient, as self-assessment of nurses shows a tendency to ask less and to provide information, nurses in their self-assessments frequently report communication while surgeons expect from scrub nurses minimal communication, and only half of surgeons expect exchange of thoughts and ideas from nurses.
- Data revealing the fact that members of a surgical team during surgery pay more attention to signals of the surgical team and the surgical process and do not report on perception of signals by equipment and a patient may be a sign of insufficient attention to patient safety during surgery.

- In practice, scrub nurses cope with pressure quite well, carry out various activities to reduce tension of the surgical team and are able to provide emotional support to the surgical team. Surgeons expect from nurses calm focus on the activities carried out, and to a lesser extent, they expect emotional support.
- The survey data shows that the respondents are unfamiliar with the concept of non-technical skills. At the same time, the non-technical skills as the psychosocial elements of professionally-relevant behaviour in scrub nurses are important in the work of scrub nurses as they are widely used in everyday practice. Surgeons generally have less understanding of non-technical skills of scrub nurses, compared to self-assessments of scrub nurses and data obtained through observations of surgical procedures.
- In the study, it was established that there is a statistically significant difference between self-assessment of non-technical skills of scrub nurses, their implementation and surgeon expectations, by assessing these skills within categories of the non-technical skills.

## References

- Atty, & Capule, R. V. (2010). Surgeon is not always the "Captain of the Ship". *Philippine Journal of Internal Medicine*, 49(2), 4-5.
- Correll, S.J., & Ridgeway, C.L. (2003) Expectation states theory. In DeLamater, J. (Ed.), *Handbook of Social Psychology*. New York: Kluwer-Plenum, 29-51.
- Endsley, M.R. (1988). Design and evaluation for Situation Awareness enhancement. *Proceedings of the Human Factors Society 32nd Annual Meeting* (Vol. 1, pp. 97 - 101). Santa Monica, CA: Human Factors Society.
- Flin, R., & Maran, N. (2004). Identifying and training non-technical skills for teams in acute medicine. *Quality & Safety in Health Care*, 13 (2), 180-184.
- Gaffney, F. A., Harden S., & Seddon R. (2005). The Flight Plan for Lasting Change in Patient Safety: HCPro, Inc.
- Helmreich R. (2000). *On error management: lessons from aviation*. *BMJ*, 18 (3), 320.
- Helms, J.E., Henze, K.T., Sass, T.L., & Mifsud, V.A. (2006). Treating Cronbach's alpha reliability coefficients as data in counseling research. *The Counseling Psychologist*, 34(5), 630-660.
- Jefferies H., & Chan K. K. (2004). Multidisciplinary team working: is it both holistic and effective? *Int J Gynecol Cancer* 2004, 14, 210—211.
- Krogstad U., Hofoss D. & Hjortdahl P. (2004). Doctor and nurse perception of inter-professional co-operation in hospitals. *International Journal for Quality in Health Care*, 16(6), 491-497.
- Lane, A. & Ziviani, J. (2003). Assessing children's competence in computer interactions: Preliminary reliability and validity of the test of mouse proficiency. *OTJR: Occupation, Participation and Health*, 23(1), 18-26.
- Makary, M. A., Sexton, J. B., Freischlag, J. A., Holzmueller, C. G., Millman, E. A., Rowen, L., & Pronovost, P. J. (2006). Operating room teamwork among physicians and nurses: teamwork in the eye of the beholder. *J Am Coll Surg* 2006, 3, 202:746-52.
- Manser, T. (2009). Teamwork and patient safety in dynamic domains of healthcare: a review of the literature. *Acta Anaesthesiol Scand*, 53 (2), 143-51.
- Mills, P., Neily, J., & Dunn, E. (2008). Teamwork and communication in surgical teams: implications for patient safety. *Journal of the American College of Surgeons*, 206, 107-12.
- Mitchell, L., Flin, R., Yule, S., Mitchell, J., Coutts, K., & Youngson, G. (2012). Evaluation of the Scrub Practitioners' List of Intraoperative Non-Technical Skills (SPLINTS) system. *International Journal of Nursing Studies*, 49.
- Mitchell, L. & Flin, R. (2008). Non-technical skills of the operating theatre nurse: Literature review. *Journal of Advanced Nursing*, 63, 15-24.
- Mitchell, L., Rhona, R., Yule, S., Mitchell, J., Coutts, K., & Youngson, G., (2011). Thinking ahead of the surgeon. An interview study to identify scrub nurses' non-technical skills. *International Journal of Nursing Studies*, 48, 818-828.
- Mitchell, L. & Flin, R. (2009). *Analysing Behaviour in the Operating Theatre Scrub Practitioners' List of Intra-Operative Non-Technical Skills: SPLINTS*. Farnham: Ashgate.

Ribakova, A., Deklava, L., Circenis, K. & Millere, I. (2016). Psychosocial elements of professionally-relevant behaviour in scrub nurses. *Global Journal of Psychology Research: New Trends and Issues*, 6(3), 123-134.

*Scrub Practitioners' List of Intraoperative Non-Technical Skills (SPLINTS)* (2010). University Aberdeen, Scotland.

Timmons, S., & Tanner, J. (2004). A disputed occupational boundary: operating theatre nurses and operating department practitioners. *Sociology of Health and Illness*, 26 (5), 645-666.

Ribakova, A. (2010). *Personāla inficēšanas riska mazināšanas stratēģiju pielietojums operāciju zālēs Latvijā* (Bachelor's thesis), RSU, Latvia.

Undre, S., Sevdalis, N., Healey, A. N., Darzi, S., & Vincent, C. A. (2012). Teamwork in the operating theatre: cohesion or confusion?. *Journal of Evaluation in Clinical Practice*, 2, 182-189.