Interprofessional Preoperative Briefing Enhances Surgical Teamwork Satisfaction and Decrease Operative Time: A Comparative Study in Abdominal Operation

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Background: *Preoperative briefing of interprofessional surgical team (Surgeon group, Anesthetic group and Operating nurse group) shows improvement of surgical teamwork satisfaction. However, preoperative briefing protocol is not well set in surgical practice in Thailand.*
Objective: *To study the interprofessional preoperative briefing effectiveness in term of teamwork satisfaction score and operative time loss due to preventable causes.*
Material and Method: *Prospective experimental trial was done before and after implementation of preoperative briefing in abdominal operation using visual analog score questionnaire and operative records. Paired t-test was analyzed in this study.*
Results: *During March-October 2009, data analysis of 35 surgical staffs (Surgeon group 11 staffs, Anesthetic group 10 staffs, Operating nurse group 14 staffs) showed 19 of 35 staffs (54.29%) had increase individual satisfaction score but average satisfaction score to three interprofessional surgical teamwork increased 0.50 from 10 which was no statistical significant. The preventable operative time loss decreased from 8.6 to 5.3 minutes per 60 minutes operative time. Analysis of the satisfaction score to preoperative briefing protocol was 7.53 from 10 scores and the individual staff opinion to continue preoperative briefing protocol were 29 from 35 staffs (82.86%).*
Conclusion: *Interprofessional preoperative briefing increased satisfaction level of surgical teamwork and decreased operative time due to preventable causes. Most of surgical staff agreed to continue preoperative briefing project for patient benefit.*

Keywords: *Surgical teamwork satisfaction, Operative time, Interprofessional preoperative briefing*

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Surgical treatment is a complex process and involved multidisciplinary staffs. The surgical team has three main groups: Surgeon group, Anesthetic group and Operating nurse group. The abdominal operation that take more than 2 hours operative time need well coordination and communication between those three groups to achieve better surgical result. Awareness of patient safety and timely operation will increase efficiency of operating room and cost-effectiveness.

The Princess Maha Chakri Srindhorn Medical Center, a new medical school hospital has no preoperative briefing protocol. The authors setup a trial protocol for abdominal operations to improve surgical teamwork and decrease preventable time loss.

Therefore, the objective of this study is to evaluate 1) teamwork satisfaction score compare between before and after preoperative briefing. 2) operative time loss due to preventable causes compare between before and after preoperative briefing.

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Material and Method

Prospective experimental trial is studied in abdominal surgery that will take more than 2 hours operative time. The authors collect two periods of research data.

1. The first 4 months data are collected before implementation of preoperative briefing protocol.

2. The second 4 months data are collected after implementation of preoperative briefing protocol.

All surgical staffs are included in the present

study, but only staffs that complete questionnaire before and after implementation of preoperative briefing protocol are analyzed. This trial was approved by the ethical committee on April 23, 2009.

Surgical staffs consist of 3 main groups.

1. Surgeon group: surgeon, assistant surgeon, surgical fellow and internship.

2. Anesthetic group: anesthesiologist and anesthetic nurse.

3. Operating nurse group: scrub nurse, assistant nurse and circulating nurse.

Preoperative briefing protocol is explained to all surgical staffs after the first 4 months data (control data) have been completely done.

Preoperative briefing protocol:

1. Operative schedule must be set at least before 12 am of the date before surgery.

2. All interprofessional surgical team take operative schedule and do preparation before 4 pm of the date before surgery by using preoperative checklist.

3. All interprofessional surgical team meet together at operating room 10 minutes before the operative time. The leader of each team starts briefing his job that had been prepared within 2-3 minutes. First team is Surgeon team follow by Anesthetic team and Operating nurse team. At the end of briefing, all surgical staffs can ask open questions and discuss the non-understanding issue. The total preoperative briefing time must no more than 10 minutes. This process is similar to preflight checklist of airline system.

4. All interprofessional surgical staffs start their jobs and the operation begin.

At the end of operation, the data are collected by visual analog score questionnaire and operative records of all three surgical team. Pair t-test analysis is done by SPSS version 13.

Results

During April-October 2009, 40 surgical staffs enrolled to the present study, but only 35 surgical staffs completed questionnaire before and after implementation of preoperative briefing protocol. (Surgeon group 11 staffs, Anesthetic group 10 staffs, Operating nurse group 14 staffs) There were 38 major abdominal operations (Before 20 operations/After 18 operations): Hepato-biliary-pancreas operation 11 cases (6/5), Small intestine operation 6 cases (3/3), Large intestine operation 15 cases (8/7) and Kidney operation 6 cases (3/3). All these abdominal operations need standard preparation and instruments set. So, the author didn't compare head to head of each operation. The operation analysis between before and after implementation of preoperative briefing protocol had no statistical difference in term of number (20/18 operations) and total operative time (2,495/2,360 minutes).

1. Teamwork satisfaction analysis

1.1 Changing of individual satisfaction score to interprofessional surgical teamwork showed 19 staffs increased and 16 staffs decreased (Table 1). Satisfaction score of 35 surgical staffs to interprofessional surgical teamwork showed average satisfaction score changed +0.50 comparing before (7.84 from 10) and after (8.34 from 10) (Table 2).

1.2 Changing of individual satisfaction score to surgeon teamwork showed 19 staffs increased and 16 staffs decreased (Table 3). Satisfaction score of 35 surgical staffs to surgeon teamwork group showed average satisfaction score changed +0.24 comparing before (7.92 from 10) and after (8.16 from 10) (Table 4).

1.3 Changing of individual satisfaction score to anesthetic teamwork showed 17 staffs increased and 18 staffs decreased (Table 5). Satisfaction score of 35 surgical staffs to anesthetic teamwork showed average satisfaction score changed +0.21 comparing before (8.32 from 10) and after (8.53 from 10) (Table 6).

1.4 Changing of individual satisfaction score to operating nurse teamwork showed 18 staffs increased, 15 staffs decreased and 2 staffs unchanged (Table 7). Satisfaction score of 35 surgical staffs to operating nurse teamwork showed average satisfaction score changed +0.29 comparing before (8.30 from 10) and after (8.59 from 10) (Table 8).

2. Operative time analysis

Average preventable operative time loss was decreased comparing before (8.6 minutes per 60 minutes) and after (5.3 minutes per 60 minutes) (Table 9).

These are the causes of preventable time loss.

1. Surgeon group: Non-ordered special instruments and equipments, No preoperative communication to teamwork and stakeholder (intensive care unit, inpatient ward, blood bank and patient's family), Forget reading laboratory or x-ray investigation before operation, Need more competent assistant.

2. Anesthetic group: Unstable of anesthetic period that need time to stabilized anesthetic patient, Need surgical interruption for anesthetic procedure, Need more blood and blood components due to

Table 1. Changing of individual satisfaction score to interprofessional surgical teamwork compare between before and after implementation of preoperative briefing

Satisfaction score	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Increased	19	9	2	8
Decreased	16	2	8	6
Unchanged	0	0	0	0
Total	35	11	10	14

Table 2. Average satisfaction score to interprofessional surgical teamwork compare between before and after implementation of preoperative briefing

Satisfaction score (10 score)	Average score in all staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Before	7.84	6.88	8.52	8.11
After	8.34	8.44	7.91	8.58
Score change	+0.50	+1.56	-0.61	+0.46
p-value	0.14	0.09	0.18	0.12

Table 3. Changing of satisfaction score to surgeon teamwork compare between before and after implementation of preoperative briefing

Satisfaction score	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Increased	19	7	4	8
Decreased	16	4	6	6
Unchanged	0	0	0	0
Total	35	11	10	14

Table 4. Average satisfaction score to surgeon teamwork compare between before and after implementation of preoperative briefing

Satisfaction score (10 score)	Average score in all staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Before	7.92	8.56	7.62	7.63
After	8.16	8.64	7.42	8.30
Score change	+0.24	+0.08	-0.20	+0.67
p-value	0.36	0.82	0.66	0.20

Table 5. Changing of satisfaction score to anesthetic teamwork compare between before and after implementation of preoperative briefing

Satisfaction score	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Increased	17	5	5	7
Decreased	18	6	5	7
Unchanged	0	0	0	0
Total	35	11	10	14

Table 6. Average satisfaction score to anesthetic teamwork compare between before and after implementation of preoperative briefing

Satisfaction score (10 score)	Average score in all staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Before	8.32	8.43	8.27	8.27
After	8.53	8.52	8.84	8.32
Score change	+0.21	+0.09	+0.57	+0.05
p-value	0.44	0.77	0.45	0.90

Table 7. Changing of satisfaction score to operating nurse teamwork compare between before and after implementation of preoperative briefing

Satisfaction score	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Increased	18	6	3	8
Decreased	15	5	6	5
Unchanged	2	0	1	1
Total	35	11	10	14

Table 8. Average satisfaction score to operating nurse teamwork compare between before and after implementation of preoperative briefing

Satisfaction score (10 score)	Average score in all staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Before	8.30	8.36	8.17	8.35
After	8.59	8.48	8.11	9.04
Score change	+0.29	+0.12	-0.06	+0.69
p-value	0.34	0.63	0.95	0.07

underestimated.

3. Operating nurse group: Non-prepared or missed-prepared of instruments and equipments, No preoperative communication to teamwork and stakeholder (instruments and equipments supplier, inpatient ward) Need more time for prepare non-maintenance equipment.

Data analysis of the interprofessional preoperative briefing protocol quality showed average satisfaction score of surgical staffs to preoperative briefing protocol was 7.53 form 10 (Table 10). The opinion to do preoperative briefing routinely showed 29 staffs agreed, 5 staffs disagreed and 1 staff had no opinion (Table 11).

Discussion

In Thailand, the authors do have gap analysis of surgical safety checklist presented by the Institute of Hospital Quality Improvement & Accreditation of Thailand (HA-Thailand) on November 1998, but the authors don't have any surgical quality study about preoperative briefing. Benefits of preoperative briefing have been reported including surgical safety[1-3], surgical efficiency and cost-effectiveness[4,5].

The present study showed interprofessional preoperative briefing protocol increased average satisfaction score of surgical teamwork with no statistical significant due to the small number of surgical staff enrollment. The authors should design for multicenter trial with selected operation. However, 19 from 35 surgical staffs (54.29%) have increased individual satisfaction score. The operative time analysis founded that the preventable operative time loss decreased average 3.3 minutes per 60 minutes of operative time. The average satisfaction score of surgical staffs to preoperative briefing protocol was 7.53 from 10 score. The preoperative briefing protocol should be revised for a better version to increase satisfaction score. Participation of interprofessional staffs in protocol development is a crucial factor of

Table 9. Operative time loss due to preventable cause in interprofessional surgical team

Operative time	Time loss (minutes)	Total operative time (minutes)	Ratio per 60 minutes
Before preoperative briefing	357	2,495	8.6
After preoperative briefing	209	2,360	5.3
Change of operative time loss per 60 minutes			-3.3

Table 10. Satisfaction score of surgical staffs to preoperative briefing protocol

Satisfaction score (10 score)	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Average score	7.53	8.47	5.62	8.51

Table 11. Opinion to do preoperative briefing routinely

Opinion	All staffs (n = 35)	Subgroup analysis		
		Surgeon group (n = 11)	Anesthetic group (n = 10)	Operating nurse group (n = 14)
Agree	29	10	5	14
Disagree	5	0	5	0
No opinion	1	1	0	0
Total	35	11	10	14

success and decrease communication errors. Share and learn from each others about problems and goal of operation will make a competent teamwork. 29 from 35 surgical staffs (82.86%) agreed to continue doing the preoperative briefing showed that the majority of the authors surgical staffs have quality awareness. 5 from 35 surgical staffs (14.29%) in anesthetic group disagreed because of preoperative time consumption and pre-anesthetic system is done in preoperative room before the patient come to the operating room.

The authors founded that the protocol development is important as well as the protocol implementation. The preoperative briefing project should be set up by the interprofessional committee. The project must engage the surgical standard and surgical patient expectation. There are many tools to achieve the project:- Appropriated preoperative briefing protocol, Surgical team training[6], Teamwork building[7-9]. The appropriated preoperative briefing protocol should be shaved up to the hospital contexts, the interprofessional surgical staff working system and the organizational culture. The authors have to consider all factors that impact to the operative results and patient safety. There are many methods to improve the surgical quality:- Operative checklist, Surgical Time Out checklist (STO)[10], Poster guide briefing on the operating room wall. So, the authors can do more than one parallel methods and the pilot trial is recommended before the whole system starts.

Inclusively, the advantages of preoperative briefing are:

1. Improve surgical patient safety.
2. Improve surgical efficiency.
3. Increase surgical quality awareness.
4. Change surgical team behavior to do better qualified job.
5. Understanding the job descriptions of others surgical staffs.
6. Make a happy workplace by improve surgical team satisfaction.
7. Decrease communication error.
8. Maximize utilization of operating room and cost-effectiveness.

The authors would like to propose the 4A strategy for preoperative briefing protocol implementation.

1. Awareness. Enhances quality awareness to all surgical stakeholders.
2. Action. Strongly do preoperative briefing continuously by using teamwork leadership.
3. Assessment. Do assess the results against the objective.
4. Adaptation. Modifies the protocol if the objective isn't met.

Conclusion

Interprofessional preoperative briefing protocol increased satisfaction score of surgical teamwork and decreased operative time due to preventable causes. It will improve surgical quality and patient safety. Most of surgical staffs agreed to continue doing preoperative briefing for patient benefit but the protocol of preoperative briefing have to be revised effectively and integrated to existing surgical system appropriately. The consensus of inter-professional surgical team on "Why and How to do preoperative briefing" is the key success factor.

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Potential conflicts of interest

None.

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การประชุมเตรียมพร้อมของทีมสหวิชาชีพก่อนผ่าตัด เพิ่มระดับความพึงพอใจของทีมงานผ่าตัด และลดระยะเวลาที่ใช้ในการผ่าตัด: กรณีศึกษาเปรียบเทียบในการผ่าตัดใหญ่ของช่องท้อง

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***ภูมิหลัง**: การประชุมเตรียมความพร้อมร่วมกันก่อนผ่าตัดของทีมสหวิชาชีพ ประกอบด้วยทีมศัลยแพทย์ ทีมวิสัญญี ทีมพยาบาลห้องผ่าตัด จะช่วยทำให้ผลการผ่าตัดรักษาคนไข้มีคุณภาพมากขึ้น คนไข้ได้รับความปลอดภัยจากการผ่าตัดสูงขึ้น เพิ่มความพึงพอใจของทีมงานและเพิ่มความร่วมมือในการทำงานเป็นทีมมากขึ้น แต่รูปแบบและกระบวนการจัดประชุมกลุ่มมีความหลากหลาย และใช้เวลาเพิ่มขึ้นก่อนผ่าตัด จึงทำให้การจัดประชุมกลุ่มเตรียมพร้อมร่วมกันก่อนผ่าตัดของ 3 ทีมวิชาชีพ ไม่มีการดำเนินการอย่างแพร่หลายในประเทศไทย*

***วัตถุประสงค์**: 1) ศึกษาความสัมพันธ์ระหว่างการประชุมเตรียมพร้อมร่วมกันก่อนผ่าตัดของทีมศัลยแพทย์ ทีมวิสัญญีแพทย์ ทีมพยาบาลห้องผ่าตัด กับระดับความพึงพอใจของทีมงาน 2) ศึกษาความสัมพันธ์ระหว่างการประชุมเตรียมพร้อมร่วมกันก่อนผ่าตัด ของทีมศัลยแพทย์ ทีมวิสัญญี ทีมพยาบาลห้องผ่าตัด กับระยะที่สูญเสียไประหว่างกระบวนการผ่าตัดโดยสาเหตุที่ไม่สมควร*

***วัสดุและวิธีการ**: เป็นการวิจัยเชิงทดลองกลุ่มเดียวที่วัดผลเปรียบเทียบระหว่างข้อมูล กรณีที่ไม่มีการประชุมกลุ่มและหลังจากมีการประชุมกลุ่มเตรียมความพร้อมร่วมกันก่อนการผ่าตัดใหญ่ของช่องท้องโดยใช้แบบ สอบถามและแฟ้มบันทึกการผ่าตัด วิเคราะห์เปรียบเทียบ Paired t-test ในการศึกษานี้*

***ผลการศึกษา**: ผลการศึกษาในช่วงเดือนมีนาคมถึงเดือนตุลาคม พ.ศ. 2552 จำนวน 35 คน ประกอบด้วยทีมศัลยแพทย์ 11 คน ทีมวิสัญญี 10 คน และทีมพยาบาลห้องผ่าตัด 14 คน มี 19 จาก 35 คน (54.29%) พบว่ามีระดับความพึงพอใจเฉลี่ยต่อการทำงานเป็นทีมเพิ่มขึ้น โดยมีระดับความพึงพอใจเฉลี่ยต่อการทำงานเป็นทีมร่วมกันของ 3 ทีมวิชาชีพ เพิ่มขึ้น 0.50 จาก 10 แต่ไม่มีนัยสำคัญทางสถิติ เวลาที่ใช้ในการผ่าตัดที่สูญเสียไปโดยเหตุผลที่ไม่สมควร ลดลงจาก 8.6 นาที เป็น 5.3 นาที ต่อ 60 นาทีของเวลาผ่าตัด ความพึงพอใจต่อรูปแบบและกระบวนการประชุมกลุ่ม 7.53 จาก 10 และความเห็นที่ต้องการให้มีการจัดให้มีการประชุมกลุ่มร่วมกันก่อนผ่าตัด 29 จาก 35 คน (82.86%)*

***สรุป**: การประชุมกลุ่มเตรียมพร้อมร่วมกันก่อนผ่าตัดของทีมสหวิชาชีพ สามารถเพิ่มระดับความพึงพอใจต่อการทำงานเป็นทีมให้สูงขึ้นได้และสามารถลดเวลาที่ใช้ในการผ่าตัดที่สูญเสียไปโดยเหตุผลที่ไม่ควร ส่วนใหญ่ของทีมผ่าตัดเห็นด้วยที่ควรจัดให้มีการประชุมกลุ่มก่อนผ่าตัด แต่ต้องปรับปรุงรูปแบบ และกระบวนการที่เหมาะสมสอดคล้องกับระบบการทำงานของทั้ง 3 ทีมวิชาชีพ เพื่อให้เกิดประโยชน์สูงสุดแก่คนไข้ที่เข้ารับการผ่าตัด*