

Communication failures in surgery in the Asia Pacific region: a systematic review

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Abstract

Introduction

Communication failure among healthcare professionals causes preventable surgical morbidity and mortality. Asia-Pacific region has its own cultural norms and customs sometimes causing perplexities and acting as a barrier in communication in a surgical setup. This systematic review summarizes the communication failures in surgery in countries belonging to the Asia-Pacific Region.

Methods

Data were obtained by a stepwise process using electronic databases such as MEDLINE, EMBASE and Google Scholar. MeSH subheading 'Surgery' and MeSH terms such as anaesthesia, operating rooms and communication were used.

Results

The literature search yielded 447 articles. Additional five articles were selected from the references. Twelve eligible articles were selected for the final analysis. The causes of communication failure were identified in four domains. Those were failures in communication in teamwork, individual factors, work environment related factors and technical factors.

Conclusions

Professional power, hierarchical approach, gender-based discriminations and not being open for constructive criticism leading to communication failures were seen in Asia-Pacific region. Debriefing on areas in communication errors and implementations such as creating awareness through non-technical skills education, protocols, checklists, and introducing other methods to minimize the failure rates perhaps need to be done in this region.

Background

Alfred Cuschieri wrote, "the attitude to adverse events has changed from the defensive 'blame and shame culture' to an open and transparent healthcare delivery system, it is timely to examine the nature of human errors and their impact on the quality of surgical health care" (1).

Medical errors in surgery is responsible for the majority of preventable in-hospital adverse events (2-4). The factors causing human errors can be classified as excessive workload, inadequate knowledge, ability or experience, inadequate supervision or instruction, stressful environment and mental fatigue or boredom (5). There is growing evidence to suggest that non-technical skills are required to overcome these human errors in a surgical team (6-10). Non-technical skills can be divided mainly into two categories; interpersonal skills and cognitive skills (7). Out of the interpersonal skills, communication plays a key role in bridging the gap in human error and continuum of patient care during surgical interventions (5, 7, 11, 12).

Inter-professional integration is essential in the field of surgery. Therefore, communication does not necessarily mean an exchange of vital patient information among consultants such as anaesthetists, radiologists and surgeons, but also sharing basic information with theatre staff, ward nurses and other relevant parties to work as a team. Mishaps in communication occur at different points in the surgical care. This is broadly divided into inaccuracies that occur in preoperative assessment and optimization phase, pre procedure/procedural phase, post-operative phase and daily ward care (13). These miscommunications among team members could lead to devastating outcomes resulting in high morbidity and mortality (14). In 2009, the World Health Organization (WHO) emphasized the importance of effective communication and exchange of critical information for the safe conduct of the surgeries (5).

Several systematic reviews and studies conducted in intra-hospital patient handover (15-19), information transfer among healthcare workers (13, 20, 21) and effectiveness of surgical checklists (22, 23) concluded that communication errors are a shared the issue throughout the world. However, presently there are no reviews evaluating communication

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failures in the surgical field in the Asia-Pacific region as a whole. The present systematic review summarizes the communication failures in the Asia-Pacific region addressing the cultural and custom differences and perception variations in roles in the surgical team. Identifying the regional issues in communication will help plan active interventions through regional collaborations.

Methods

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for reporting systematic reviews and meta-analyses.

Search strategy

The electronic databases MEDLINE, EMBASE, Google Scholar and Cochrane Database of Systematic Reviews were used to search literature. MeSH (Medical Subject Heading) subheadings and MeSH terms were identified using available literature and related systematic reviews. A literature review was conducted by searching the online MEDLINE database (Medical Literature Analysis and Retrieval System) using MeSH term 'Surgery' as a MeSH subheading. The following MeSH terms* (indicated in asterisk) and general terms were combined using the Boolean operation "AND" in our search. The search comprised studies until 30th July 2018.

1. Surgery (MeSH subheading), Anaesthesia*, General surgery*, Critical care*, Operating room*, Surgical procedure, operative*, Intensive care*
2. Interdisciplinary communication*, Communication*, Communication barriers*, teamwork, information transfer, information flow
3. Safety*, medical errors, quality, failure, errors, adverse

The search limits were; language ('English') and species ('human'). The results were filtered by the names of the individual Asia-Pacific countries as defined by the World Health Organization (Afghanistan, American Samoa, Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cook Islands, Democratic People's Republic of Korea, Fiji, French Polynesia, Guam, Hong Kong, India, Indonesia, Japan, Kiribati, Laos, Macao, Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Pakistan, Palau, Papua New Guinea, Philippines, Pitcairn Islands, Republic of Korea, Samoa, Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Timor-Leste, Tokelau, Tonga, Tuvalu, Vanuatu, Vietnam and, Wallis and Futuna)(24).

In the second stage, the articles were screened by 'title' and

'abstract'. In the next stage, full articles were read to see if they were eligible for the qualitative synthesis. Additional data were obtained using a manual search. Two independent reviewers (JS and YM) conducted this process. The selected articles which were to be included in the review was determined after an iterative consensus process among the reviewers.

Inclusion/Exclusion criteria and Definitions

The following inclusion criteria were applied: a) institutions based studies related to pre-operative, operative and post-operative communication in surgical care b) communication failure among health care professionals (doctors, nurses and attending staff) c) geographically and temporally defined population from any of the Asia-Pacific region countries mentioned above, d) studies published in English e) studies published till 30th July 2018. Studies were excluded based on the following exclusion criteria: a) studies reporting the results of sex reassigning surgeries, b) critical care settings not involving surgery, c) delivery rooms in obstetrics, d) consent taking, e) pre-hospital care and f) if the study participants were from multiple disciplines (eg: critical care, emergency departments) and the majority was not related to surgery.

Data extraction and analysis

Data were extracted from the included studies by one reviewer using a standardized form and checked for accuracy by a second reviewer. The data extracted from each study were: a) study details (country and study setting), b) methods (type of study, sample size, sampling method, age of subjects in years, the gender of subjects and definitions used), and c) data on communication errors. Incongruities in the selected data were discussed with a third reviewer. Corresponding authors were contacted for additional information which was not available on the published manuscripts.

Results

A total of 447 articles were obtained from the search. Five additional articles were obtained by screening references. After removing duplicates, 426 articles remained. Full texts were obtained for 41 papers deemed to be potentially relevant. From this, 12 studies were eligible for the final analysis. The summary of the search strategy is presented in Figure 1. Of 49 Asia Pacific countries we were able to find data only for 5 countries (Australia, Japan, New Zealand, Singapore, and Sri Lanka).

The causes for communication failure in the respective countries and the sample population characteristics are summarized in Table 1. The causes for failure were divided mainly into four categories in this review. Those were a failure in communication in teamwork, individual, work environment and technical factors.

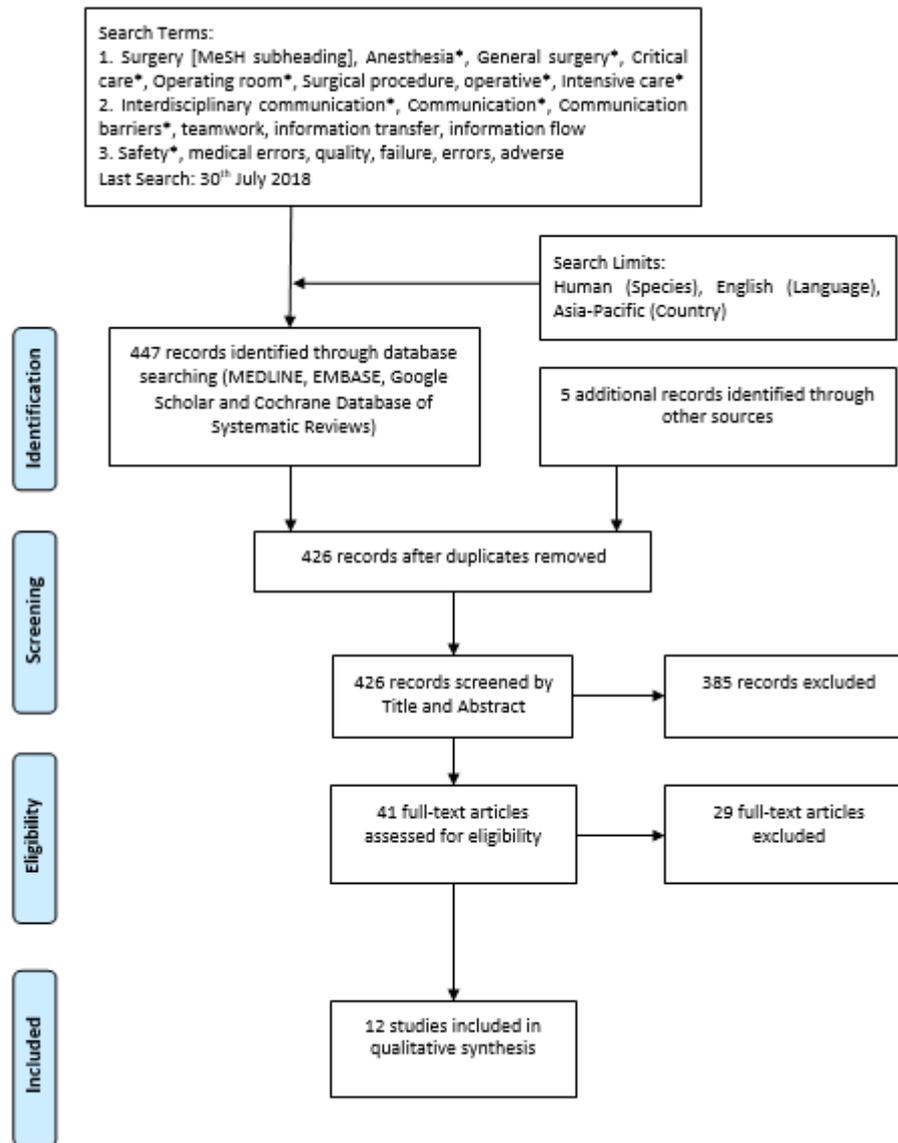


Figure 1. Summary of the search strategy

Failure in communication due to team factors

Gillespie et al. pointed out that in surgery, up to 30% of vital procedure related details may be lost by miscommunications (25). These were related to either content, audience, purpose or occasion (25). Programmes focussed on behaviour, organization and more predictability in work were identified as elements for the way out of miscommunications (25, 26).

'Professional misidentification' gave a high degree of independence to specific professions resulting in lack of collaborative function as a team (25). For a long time, it has been in the nature of surgeons to act as self-governing bodies or so called 'lone wolves' (27, 28). Gillespie et al. indicated that a shared understanding of only 12.5% happened among team members during surgical procedures (28).

This poor understanding was secondary to the hierarchical establishment, absence of professional respectful acknowledgement and basic communication among the surgical team members (28). A Sri Lankan study showed that involvement by the surgeons was significantly higher than the other professionals who were part of the surgical team (29). The main reasons were the surgeon's roles being entertained as 'a leader', while other professionals were considered 'assistants' (29). Not only among team members but also among the same profession itself the hierarchical obstruction was evident (29). Team leaders thought that the junior staff was overstepping by giving their input in surgical management (29). The chain of concise and accurate information flow with others in a team helps build a common situation assessment (28). Because the majority of the nurses were females while the majority of surgeons were male; surgeons tended to disregard the nurses' opinion and merely expected them to follow orders (29). The same study suggested that the WHO surgical safety checklist could be used to link the communication gap (29).

Failure in communication due to individual factors

The main individual dynamics responsible for communication failure were stress and overwork, limitations in knowledge and experience, poor decision making capacity, failure to seek advice and reluctance to accept communication failure (13, 29-31).

Cumin identified that there was inequality of information transfer among different professionals (30). While 45% of the surgeons communicated information related to surgical procedures, only 18% of surgical registrars, 17% anaesthetists, 0% anaesthesia assistants, 44% scrub nurses and 25% circulating nurses shared the same information with the others (30). Jayasuriya et al acknowledged that lack of motivation and lack of time were amongst the main determinants for lack of communication among the junior

surgeons (29). Senior surgeons believe that non-technical skills were achieved by solely being the team leader rather than learnt by paying attention and communicating with other members of the surgical team (29). Moreover, according to some junior surgeons, the senior nurses attempting to demonstrate their own knowledge and skills in surgery was considered stepping outside their required limit (29).

Failure in communication due to work environmental factors

Work environment communication failures occurred secondary to theatre room disturbances, lack of ward/theatre/intensive care unit facilities, overwork and inability to cater for heavy patient turnover (13, 25, 32). Majority of the studies in this review focussed on interruptions in the operating room. These disturbances were divided into conversational and procedural interruptions which accounted for 69.1% and 66.3% respectively (25). The main reason for this theatre disturbances was identified as lack of organization leading to excessive communication disturbances (32).

Failure in communication due to technical factors

Technical factors leading to communication failure included improper management protocol and use of documentation as the main means of communication (13, 33-35). An Australian study concluded that vital information was not communicated to the rest of the surgical team due to the burying of important facts in documents (33). Meanwhile, some of this documented information not being readily available for nurses lead to surgical disasters (33). For example, unavailability of allergic history to the anaesthetist and post-operative care staff resulted in preventable surgical morbidity and mortality. Fabila et al pointed out that "Pre-handover, equipment handover, timeout and sign-out protocol" (PETS) and "Situation, Background, Assessment and Recommendation form" (SBAR) can be used to reduce failure in information transfer (34).

In another study, 'shared mental model' in a team was the fundamental concept in successful tackling of a surgical task (27). Unavailability of the already trained nursing staff in specific specialities created difficulties for the new staff in instrument identification, unfamiliarity with the procedure and the surgeon or anaesthetist's personal requirements (27). Poor division of tasks among team members created a stressful atmosphere (35, 36). These studies suggested that education should be made central to overcoming the said issues (35, 36). Revised protocols and surgical safety checklists can be used to create a better understanding among team members (37). In addition, computer based card systems such as 'Momento' could be helpful to differentiate tasks between the members in the operation theatres (34).

Discussion

Non-operative technical skills are critical, cognitive and interpersonal skills (7). Out of interpersonal skills, communication plays a major role. Asia-Pacific region is comprised of countries with a wide range of income and in a varied state in development (38, 39). It is, however well known that the countries of this region share common cultural and ethnic values (40). Communication is a trivial part of a country's cultural norms. Thus, we intended to assess shared risks in miscommunications in surgical care in Asia-Pacific region.

There were common features in surgical miscommunications that the Asia Pacific region shared with the rest of the world. Communication errors were responsible for 43% of the surgical errors occurred in three hospitals in the USA (2). An interview based study conducted in the United Kingdom exploring the communication and information transfer failures exhibited that, poor preoperative communication between anaesthetists and surgeons and incomplete handover from the ward to theatre and theatre to recovery were the commonest causes for information transfer failures (13). A review on surgeons' poor non-technical skills in the operating theatre summarized the following pitfalls; surgeons' failure to inform the anaesthetists, failure to anticipate events during complex procedures, failure to monitor other team activities, the consultant being distracted by problems informed of by another operating theatre, failure to brief and debrief one's own team, failure to discuss alternative procedures, hostility, frustration, failure to establish leadership in the operating theatre and conflicts with the anaesthetists(7).

Sutton et al. described a Crew Resource Management model which could significantly reduce miscommunications in multi disciplinary ward teams (41). It emphasized the importance of individual contribution in decision making process as opposed to the traditional hierarchical method (41). Verbal communication errors were responsible for 92% of surgical errors in a review of 444 surgical malpractices concluding the importance of written protocols and instructions in surgery (42). Inadequate verbal communication of health care professionals also contributed to a significant burden on the patients and their families (43). WHO published a surgical safety checklist in 2008(44).

This checklist gained much attention worldwide as well as in the South Asian region rapidly, as it readily demonstrated the evidence to minimize surgical hazards (44-52). It not only reduced the risk of miscommunications but also improved self-awareness among the team members (52). Distractions and interruptions in operating theatres were also associated with poor patient outcomes in both regional and global studies

(53-57). Thus, it is anticipated that structured, well-planned and more predictable work conditions would bring down the number of interruptions.

Although similarities identified between the Western world and the Asia-Pacific region in surgical communication failure, professional power, hierarchical approach, gender-based discriminations and not being open for constructive criticism were a few issues that were not readily seen in the other regions of the world. Emphasized below are some of the areas where communication in a team became a barrier due to cultural and custom norms. A study done in Sri Lanka portrayed that patriarchy and gender norms contributed negatively towards inter-professional collaboration (29). A research done in nine urban teaching hospitals in Korea disclosed a propensity towards technical skills and competencies of leadership roles to be more important than human factors. Additionally, an unbending culture prevents open discussion, giving feedback and sharing different opinions with colleagues (31). A high dependency on senior staff member's decisions, low recognition of the negative effects of fatigue, stress and personal problems also contribute to this issue (31). Thus, it is evident that these cultural beliefs in the Asia-pacific region should be spoken about in order to overcome the obstacles of failure in communication.

Equal contribution of all team members is a root factor in successful surgical care. Maintaining adequate communication through pre-operative pre-briefing to post-operative handover is crucial (20). The main challenges for inability to work as a team were miscommunications and professional hierarchy in many studies (58-62). The contribution by the anaesthetists, nurses and surgeons should be in sync and equal in teamwork. Without adequate participation by all the professions, effective surgery becomes unachievable. Hence, it is required that the leader takes major decisions after taking other team members' opinions into consideration rather than employing dictatorship in the surgical setting.

The knowledge and experience in the field among the various professions could have some impact resulting in the variance of information distribution. Similarly, proper and orderly documentation followed by verbal communication is mandatory to minimize operative morbidity and mortality (58-60). Another issue in team communication was the gender-based neglecting, which was in Asia- Pacific region. Olden days were a male dominant society with the concept that men were superior and were supposed to give orders for females to follow (63, 64). Though it is not well documented, it is evident that there are significant gender based differences in surgical careers worldwide (65, 66). This is another psycho social factor that needs addressing.

Strengths

The present systematic review has a comprehensive search strategy which is easily replicable. Well-defined inclusion/exclusion criteria were used in this search. This systematic review gives the reader an overall view of the salient differences in Asia-Pacific region communication failure in surgical practices that is to a certain extent different from the rest of the world.

Limitations

There was no uniformity on the definition and classification of communication errors used in the studies; resulting in limitations in comparability.

Article availability was limited in general in the Asia-Pacific region. Communication errors and the preventable morbidity and mortality were under reported. Therefore, the results might underestimate the communication errors in this region. Available studies only addressed one or a few phases of the communication failure in surgery. There was a marked variability among the study population, study setting, methods used and interventions. The number of studies was also limited, and definitions and classifications of communication errors were not consistent. Thus, a meta-analysis was not performed.

Suggestions for future studies

Even though the data in the Asia Pacific region is sparse, available records were enough to convince the reader of the need to improved information flow from pre-operative to post-operative care. Hence, this highlights the significance of coming up with a better-quality effective multi disciplinary team communication system in Asia Pacific region and bringing down certain cultural norms to upgrade our patient management.

Structured studies with a larger sample size representing the population, would provide the foundation for a better understanding of the magnitude and inferences of communication errors in surgery in this region. Such studies will also contribute to the development of recommendations to these populations. Furthermore, accurate health care charges and economic burden of preventable morbidity and mortality due to communication errors in surgery in the Asia-Pacific region was not studied to date. It is a mandate to conduct future research to identify the direct and indirect costs of communication errors in the regional countries. Future studies also need to centre on the recognition of shared risk factors in communication in the region. Regional organizations such as the WHO could play a pioneering role in introducing such assessment standards for future research. There is a role in medical education starting with the undergraduate, to create awareness in the value of

communication in improving safety and the need to remove barriers. The use of trans-professional education could also help improve communication between professions by improving the respect and regard for each other.

Conclusion

Asia-Pacific region has its own cultural norms and customs, which could cause perplexities and act as a barrier in communication in a surgical set-up. Common communication errors in surgical settings found in this region can be categorized according to team factors, individual factors, environmental factors and technical factors as in this review. Professional power, hierarchical approach, gender-based discriminations and not being open for constructive criticism leading to communication failures were unique to the Asia-Pacific region. Extensive debriefing on areas in communication errors and implementations such as creating awareness through non-technical surgical skills education, protocols, checklists, and introducing other, novel methods to minimize the failure rates need to be done in the Asia-Pacific region. Similarly, the shortage of the data available in this region suggests a need for further studies in the area.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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