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Experience of physician and nurse specialists in Sweden undertaking long distance aeromedical transportation of critically ill patients: A qualitative study

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ABSTRACT

Introduction: Transportation of critically ill patients, intra- or inter-hospital, always involves risks when resources are limited. With aeromedical transports, additional risk factors are incurred. The physiological effects of altitude, when both pressure and density decline, can lead to hypobaric hypoxia and gases trapped in body cavities will expand and cause stress on biological tissue.
Aim: The aim of this study was to explore the experiences of nurse and physician specialists in Sweden undertaking long distance aeromedical transport of critically ill patients, with a flight time of more than two hours.
Method: A qualitative approach with a descriptive design. Thirteen recorded semi-structured interviews with physician and nurse specialists were analyzed using inductive qualitative content analysis.
Results: One overall theme emerged, *To be one step ahead to ensure patient safety in the air;* with three categories 1) *With the patient in focus*, 2) *To be part of a team and concerned about patient safety* and 3) *To be in need of recovery*.
Conclusion: This study demonstrates the challenges with long distance aeromedical transport of critically ill patients. The healthcare personnel make decisions and actions to be one step ahead to ensure patient safety. This isolated work is improved with experience, education, training and good communication skills.

1. Introduction

The transportation of critically ill patients, intra- or inter-hospital, involves risks. The primary aim is to protect the patient from further harm and to maintain the same level of medical care provided at the referring medical facility during the transport [1]. This requires a multidisciplinary team who can provide the medical attention needed [1,2]. Regardless of transport type, adverse events are classified as patient or system based and are further grouped as equipment or human based [1,3,4]. Patient based adverse events reported in the literature are e.g., desaturation, hypothermia [1], accidental extubation [3], and agitation [1,3].

With aeromedical transports additional critical phases can occur, such as a difference in altitude and its impact on the human body. A reduction in the partial pressure of oxygen affects e.g., patient FiO_2 delivery levels, and expanding gas affects e.g., the cuff of an endotracheal tube or trapped gas in body cavities; complications that require attention and adjustments [5,6]. A Canadian study found that one critical event occurred in approximately every 20 aeromedical transports of adult patients. In this study the flight time was between 36 and 85 min. The most frequent critical events during transport concerned hemodynamically unstable patients and extensive resuscitation procedures and airway management [7].

There is research that presents guidelines or protocols on how to minimize risks for patients, the various equipment requirements during the transport and the appropriate composition of the medical team [1,8,9].

It is recommended that personnel involved in the transports receive appropriate training and in a supernumerary capacity gain experience [10]. Furthermore, that there are at least two staff members and it is preferable that the physician or nurse team leader has education in transport medicine [9]. Research has shown no significant differences in the clinical outcomes of patients transported by a physician and nurse or two nurses [8]. There is however, a knowledge gap in how the staff experience their work transporting patients in critical condition in fixed wing aircraft.

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2. Aim

The aim of this study was to explore the experiences of nurse and physician specialists in Sweden undertaking long distance aeromedical transport of critically ill patients, with a flight time of more than two hours.

3. Method

This qualitative interview study with a descriptive design was analyzed using inductive qualitative content analysis [11].

3.1. Ethical approval

As the study did not collect or handle any sensitive personal data, ethical approval was not required according to the Swedish Act concerning the Ethical Review of Research Involving Humans [12]. Nevertheless, the study followed standard research ethical principles and the head manager at each organization approved the study. Furthermore, each participant gave informed written consent.

3.2. Study context

The study was conducted in cooperation with three Swedish organizations that provide domestic and international airborne intensive care. Two of the organizations performed both emergency and planned transportation using both helicopter and fixed wing aircraft. The composition of the medical team depended on the patient's medical condition, i.e., always an experienced nurse specialized in intensive care and/or anesthesia, and sometimes an anesthetist/intensivist. If needed additional staff with specialized competence in e.g., neonatology, pediatrics, extra membrane oxygenation (ECMO) or obstetrics were added. The patients transported could be in need of intensive care due to e.g. traumatic amputations, fractures, respiratory problems, multi trauma, aortic aneurysm, myocardial infarction, brain injury. The transports could be either from a hospital with a lower level of care to one with a higher level or repatriation to the patient's home country or hospital. In this study long distance aeromedical transports were defined as a transport of more than two hours flight time.

3.3. Sample and recruitment

A purposive sampling [13] of certified nurse and physician specialists experienced in the field was used. Additionally, their most recent air transport must have occurred within the last six months. The head managers of each organization provided the authors with contact information of their staff that fulfilled the inclusion criteria. E-mails were sent to all qualifying air medical staff, (n = 90), in the three organizations with information about the study. A selection of participants was made to achieve a maximum variation in sex, age and years of experience. From the three organizations, 15 persons consented to participate in the study. Two had time issues and were unable to participate, which resulted in 13 total participants. Included in the study were seven women and six men aged 37–59. The work experience in long distance aeromedical transport of the eight nurse specialists varied between 8 and 22 years. The work experience of the five physicians included varied between 1 and 16 years. All of the participants had undergone previous basic training in aeromedical transportation and additional training at their respective workplaces. Several of the nurse and physician specialists had also undergone in-depth training in aeromedical medicine.

3.4. Interviews

During the interviews, the participants received information regarding the author's background and information about the study again. The first author who conducted the interviews has a background as a nurse specialist in anesthesia and intensive care. The interviewer has no experience in long distance aeromedical transports, but has some experience in international helicopter patient transports. The interviewer has never worked with any of the participants.

A semi structured interview guide was used starting with the question "*Can you describe your experiences of working with long distance aeromedical transports of critically ill or injured patients?* The following questions concerned areas such as work environment, patient safety and the need of education. Follow up questions such as "*Can you give an example*?" and "*How did you experience that*?" were asked. Nine interviews were conducted at the participant's workplace and four by Skype or FaceTime due to long distances. The 13 interviews were conducted over a 15-week period during the spring of 2016. The recorded interviews that lasted 22 to 69 min were transcribed verbatim, compared with the tape recording, and corrected if needed to ensure accuracy [14].

3.5. Data analysis

The first and last authors read the interviews several times to create an overall picture. Domains were identified and the text was divided into meaning units that were condensed and abstracted during the analysis process. Codes were then found and categories were created. The categories were combined into one overall theme [11]. An independent assessment of the text was then made by the second author to increase the credibility of the analysis. Finally, five randomly selected interviews were read with the first purpose of approving or rejecting the proposed theme; and second to see whether the theme was adequately and appropriately described, and that the level of concordance was high.

4. Results

One theme, three categories and seven subcategories emerged from the data. The theme; *To be one step ahead to ensure patient safety in the air* had the categories; *With the patient in focus*, *To be part of a team and concerned about patient safety* and *To be in need of recovery*.

4.1. With the patient in focus

4.1.1. Prepare oneself and equipment

Overall planning; planning for what possibly could happen and having a backup plan for different scenarios, was considered vital in long distance aeromedical transports among all of the healthcare personnel. In addition, all the links in the transport chain needed to function well to ensure and maintain patient stability. This was exemplified when the healthcare personnel informed the airplane's captain of special patient care requirements, such as flying at ground pressure.

> *"…prepare for everything possible that can happen if it is a long transport, if there is a plan B for the different scenarios … because once you are sitting there, and things are happening, it is really hard to press reverse" (Participant 6)*

The healthcare personnel described that when increased monitoring possibilities were desirable problems could arise if the medical equipment was not approved for usage in airplanes. When this occurs, the captain decides if it can be included and is responsible for ensuring it is safe from an air safety perspective. The healthcare personnel stated that they are then challenged to either rely on equipment not approved for use on the airplane or transport at a lower monitoring level.

> *"You realize how vulnerable you are in long transports where there is a limit to what you can bring along, there are no more supplies, and there is nothing more to grab, there is no one who can deliver more things… that*

patient would have died if we hadn't gotten to the hospital … this sort of thing can change quickly, I thought I had a lot of stuff with me …" (Participant 10)

The healthcare personnel felt that the long distance aeromedical transports required greater personal preparation than shorter transports within Sweden. There were practical issues to prepare such as a passport and possible VISA, personal items and clothes, as well as food for the journey. Personal family considerations such as informing partners and arranging childcare needed to be addressed before the transports. The transports could sometimes take place in countries at war or in disasters areas, which the healthcare personnel felt they needed to consider together with their families.

"Then there is this with countries at war, which is a risk my children say I'm not to expose myself to, according to their acceptable level of risk taking, that is something I am simply not to do" (Participant 7)

4.1.2. Patient assessment

Personally performing a patient assessment upon arrival was described as important, since the patient's condition could differ significantly from that given in the initial telephone report. The healthcare personnel stated that they are the ones who decide after their assessment if the patient can be transported. When in some cases they considered the patient would be placed at greater risk if they were left behind; the participants told how they took a calculated risk and transported the patient. The overall condition and transportability of the patient is the responsibility of the referring physicians until the patient is delivered to the receiving hospital. The healthcare personnel experienced that they often had to point this out when the patient was poorly prepared and not transportable. A poorly prepared patient gave rise to transport delays when they had to stabilize and prepare the patient before departure, which could involve e.g., the placement of a chest tube, intubation, establishment of an intravenous access, or transfusion. The healthcare personnel told of the importance of accessing for pathological air in e.g., the head- since an increased ICP could potentially impair the patient's clinical condition, pleura- due to the risk of pneumothorax that potentially could lead to a tension pneumothorax, or eyes- since an expanded gas bubble inside the eye could cause serious damage and even blindness. These conditions could cause serious problems during the transport.

If the patient is transported by ambulance to the airport and is met by the healthcare personnel there, the patient is assessed in the ambulance. If the patient is considered non-transportable, the patient is returned to the hospital. When this has occurred, the healthcare personnel experienced poor support from the referring hospital, they felt they were being doubted, and the referring staff were working against them.

"I felt, in that case, that I took a stand there and I had made the right decision and I had a gut feeling that this was not going to be possible, this is not ok … a lot is required of a person, to have the guts to resist, to have the strength to listen to one's intuition." (Participant 4)

4.1.3. Challenging environment

The environmental changes from the safe environment of the intensive care unit, to the external intervening transfer environment, and the noisy, cramped environment inside the aircraft were found to affect the patients as well as the personnel. Patient care could take place in everything from extreme cold and precipitation to extreme heat and sandstorm, and was described as stressful for the often-unprotected patient. This is especially so when the patient is on the runway and being transferred between the ambulance and the aircraft.

Nurse and physician personnel considered the most risk-filled situations regarding the safety of the patient to be when the patient is being moved from the hospital bed to the ambulance stretcher, from the ambulance stretcher to the airplane stretcher, and back again. They saw an increased risk of losing endotracheal tubes, peripheral lines and drainage tubes, as well as loss of monitoring during these transfers. High lifts in and out of the airplanes were physically stressful with heavy patients and incubators.

Additional risks included the patient coming loose from the stretcher or the stretcher being dropped. One aspect of the ambulance transfers to and from the airplane that appeared in all interviews was the problem with all the different types of undercarriages on the stretchers, which many times were incompatible with the airplane's stretcher. Provisional solutions, such as straps, were not accepted in all countries, which led to further transfers from one stretcher to another.

The healthcare personnel experienced the tight airplane environment with low ceilings and a large amount of equipment as demanding, one that complicated patient care. Another problem mentioned was regulating the warmth in the airplane, which is affected by the outside temperature. They found it was difficult to maintain a comfortable temperature, and it was important to pad the patient carefully to avoid the effects of the adjacent cold wall of the airplane. It was felt the mattresses on the stretchers were not adapted for longer flights and the stretchers too small and restricting, which complicated patient care. All healthcare personnel experienced problems with the repositioning of patients, which increases the risk for pressure injuries.

Something all healthcare personnel returned to during the interviews was the importance of previous transport experience, ingenuity, flexibility and problem-solving abilities. It was a very lonely environment to work in, one without anyone extra to come and assist.

"You're very alone when you're up in the air, on the ground if you're in an ambulance you can ask for help from another ambulance to come out, but you can never do that in the air, you're alone there." (Participant 11)

4.1.4. Handing over the patient

Handing over the patient in and outside Sweden generally occurred in an intensive care unit, but medical staff could also come to the airport and it could take place there. Being at the correct airport, on time, and in a new time zone was described as challenging. The healthcare personnel felt it was safer to transport the patient the entire way to the receiving hospitals where they had established contact and received information regarding the patient, which eliminated the risks involved with second hand information. In some acute cases it could be necessary to transport the patient directly to surgery or the x-ray department at the receiving hospital. Sometimes the healthcare personnel experienced the care the patient received from the receiving staff as inadequate and nonchalant, which caused feelings of anger and frustration. The healthcare personnel sometimes had the opinion that the referring staff were irritated and got the sense impression that the referring staff felt they were inadequate. Sometimes with the handover to the receiving team, the healthcare personnel felt that the patient could be "forgotten" when everyone was busy with the many tasks involved and no one seemed to take responsibility.

"I think the patient died without anyone being around, with no one holding his hand, and just being humane. It was bitter when we thought we had done everything, then they were just nonchalant when we arrived, that's not how it should be… one should never lose the patient and person behind all the tubes and lines and ringing alarms, and that's really very important." (Participant 7)

4.2. To be part of a team and concerned about patient safety

4.2.1. Well-functioning communication

All the healthcare personnel described the importance of communication between the referring and receiving hospitals, the ambulance staff, and the patient; as well as within the aeromedical team between the nurses, physicians and pilots. Well-functioning communication with

the referring staff was described as a prerequisite to patient safety. When the team members were unaccustomed to each other, they experienced verbal communication to be less effective. This placed higher demands on their ability to be sensitive and listen to each other. Distinctness in communication to eliminate misunderstandings and a planned delegation of the work communicated in advance, eased difficult situations.

Language barriers were often encountered with international aeromedical transports. This occurred during the communication of the initial report regarding the condition of the patient and when receiving or delivering the patient. For example, the healthcare personnel might need to contact the patient's relatives to get a better understanding of what happened and acquire additional information.

"Patient safety is a lot about communication in the team … so I think it is an important factor to be able to communicate" (Participant 8)

4.2.2. A well-functioning team

All of the healthcare personnel highlighted the importance of a well-functioning team. It was important when they were working in small teams in a stressed environment that the members knew and trusted each other and dared to express when they felt unsure of something. They felt vulnerable when they were airborne and they were alone with the pilot or only one other team member. However, they had great trust in the pilots' knowledge and experience. The pilots were seen as an important source of support during the transport, during loading, and in other situations where extra assistance was needed. Their experiences of being part of a close-knit and goal-oriented team were inspiring and rewarding.

"…the team is all you have and you cannot easily bring in another competency, we have to instead rely on the competencies of the team." (Participant 3)

4.2.3. Checklist and inter professional simulation based training

As the equipment varied in the different airplanes, it was the responsibility of the healthcare personnel to procure the appropriate equipment necessary for the patient. Structured working procedures were developed based on their experiences from long distance aeromedical transports. The use of checklists was considered crucial to ensure that all medical assessments are performed and the necessary equipment obtained. The healthcare personnel stated there is a need to develop aeromedical checklists similar to those checklists routinely used by the pilots before each flight. Both new and experienced personnel could use it as a support in their work.

Repeated repetition and inter professional simulations with medical equipment in the form of e-learning were improvement opportunities they requested. They felt that transport medicine, which includes road, water and aeromedical transportation should be considered as its own specialty. It should have its own teams who work regularly with the challenging and complex care given under difficult circumstances.

"It's so easy to forget things and I think it's even more important to use checklists in aeromedicine, because if you've forgotten something or failed to fix something before, it's not that easy and maybe impossible to fix it up there, so checklists I think are really important" (Participant 1)

The healthcare personnel felt that they personally were expected to acquire fresh knowledge from their home hospital. In addition to the aeromedical staff's anesthesia and intensive care skills, the healthcare personnel saw a need for prehospital experience and aeromedical training. It could be part of an improved inter professional simulation based training for new personnel or further training for those already working in the field.

"Professional golfers practice 98% and play in matches 2%; we are in a match 100% of the time and never really practice. This will not work in the long run, people will not be content with it, and they shouldńt be" (Participant 9)

In some cases the pilots assisted in cardiopulmonary resuscitation and other difficult situations, which is why the healthcare personnel felt there was a need to develop inter professional simulation based training sessions that involved the pilots together with the aeromedical staff. CRM-oriented (crew resource management) education that focuses on communication, group dynamics and leadership was considered important and sought after by both nurse and the physician specialists. They felt that such training and education would provide increased team performance, and lead to improved patient safety.

"It's great that we practice together, because we are a team, so we speak the same language" … "I don't think it matters what kind of aircraft we are in, what's important is that we talk to each other over the borders." (Participant 5)

4.3. To be in need of recovery

Noise, vibration and relative hypoxia seemed to tire the healthcare personnel, so it was important to share patient responsibility and relieve each other to rest occasionally during long distance aeromedical transports.

"I got actually tired that transport home, even though we were two who helped each other and the patient was sedated. There were no breaks or anything like that, we ate on the plane and took care of the patient. I was actually quite tired afterwards; I had been going nonstop for twenty-four hours." (Participant 2)

It was difficult to get time for recovery after long flights of more than one day. Some needed to work the next morning only a few hours after returning home. Cognitive abilities deteriorated in the air that could lead to impaired patient care the next day. The fatigue after long flights was considerable.

5. Discussion

The results of the study reveal a number of challenges during long distance aeromedical transport of patients in critical condition described from the experiences of nurse and physician specialists. One overall theme emerged "*To be one step ahead to ensure patient safety in the air*". To be able to be one-step ahead there is a need to keep the patient in focus, be part of a team concerned about patient safety and be able to recover between the long distance transports. Having the patient in focus meant to be prepared and make patient assessments within a challenged environment. It was necessary to obtain adequate patient information, have overall planning, check equipment, make preflight calculations, and personal preparations. Previous studies concur that preparation, equipment checks and pre-transport calculations reduce the risk of emergencies occurring and play a vital role in the transport [15,16].

Reiterated in all of the interviews were the challenges in terms of the stressful environment for patients and staff. Previous research has shown that the main cause of transport incidents were equipment or patient care issues, half of which occurred during loading or in transit to the receiving facility [17]. Additionally, simple problems such as kinked or blocked lines and tubes are more difficult to detect and correct during transport in a difficult environment [2].

The healthcare personnel perceived education to be an important, yet a subordinate part of aero- medicine. However, they would like to see extended education opportunities. Also suggested was the development of checklists to facilitate increased patient safety. To achieve more structure in the preflight preparations there are guidelines and recommendations in the literature recommending the use of checklists [10,18,19]. Finally, the use of local and national guidelines when

transporting critically ill patients could aid both dispatching hospitals and the transport team, as well as facilitate increased patient safety [10,20].

The healthcare personnel considered safety and security to be important and therefore stressed the importance of working in a well-functioning team. It is a well-known fact that well-functioning teams with a common goal are more effective, skilled, reliable and safer compared to those whose members act on a more individual basis [21]. Inter professional simulations were seen as important to achieve more structure in the preflight preparations. The majority of healthcare personnel also expressed the need for team training, preferably in the form of CRM-oriented education. The goal of CRM is to organize a group of individuals who think and act as a team that has a common goal of team security. During this training; tools, knowledge, skills and attitudes are provided to handle difficult and demanding situations thereby minimizing the risk for mistakes [22]. Training and further development are an important part of the clinical organization [6].

An important finding in this study is that it was difficult to get time to recover after long flights of more than one day and the fatigue was considerable. Previous research has found that sleep deprivation can affect clinical performance, which can have an impact on patent safety [23]. Therefore, further research is needed in this is area.

6. Limitations

The study involved 13 informants from three different air medical organizations in Sweden where airborne intensive care was conducted, which can be seen as a limitation. However, guided by Malterud et al. [24] and their concept of information power in qualitative studies, we believe the sample size is adequate to explore this phenomenon. In addition, the healthcare personnel varied in age, sex, education and experience, and gave rich descriptions of their experiences. All of the nurse specialists had many years of experience in air medicine, which could have affected the results. To increase credibility, the process from selection, collection, to analysis and results has been clarified in text and quotations have been presented. Two of the authors (EF, MJ) are experienced in intensive care and anesthesia, which can be seen as both a strength and a limitation when interviewing and analyzing the data. Experience in the field gives one insight to ask questions that can give new knowledge or confirm existing knowledge, but it can also cause the authors to make unconscious interpretations [13]. Through a critical, reflective approach during the interviews, the authors have attempted to minimize this risk. The results are transferable to similar organizations in Sweden, but not necessarily to international ones.

7. Conclusion

By highlighting the experiences of aeromedical team working on long distance aeromedical transport of patients in critical condition, relevant knowledge can be obtained. The knowledge can lead to improvement strategies and measures, which in turn can lead to improved working conditions for staff and increased patient safety. The study presents proposals for areas in need of further development, such as checklists for preflight, during and post transport use. Other suggestions that can further develop the team are CRM-oriented education with simulator training, and the development of transport medicine as its own specialty. In addition to the above areas, the authors also believe the development of local and national guidelines are essential for the improvement of patient safety.

Further research in the area is needed from both a staff and patient perspective. Studies that included other countries where there are a greater number of long distance aeromedical transports of patients in critical condition would also be beneficial.

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The authors wish to thank the participants for sharing their experiences regarding this subject.

Ethical approval.

As the study did not collect or handle any sensitive personal data, ethical approval was not required according to the Swedish Act concerning the Ethical Review of Research Involving Humans [11]. Nevertheless, the study followed standard research ethical principles and the head manager at each organization approved the study. Furthermore, each participant gave informed written consent.

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DECLARATION OF CONFLICTS OF INTEREST.

None to declare.

References

[1] Day D. Keeping patients safe during intrahospital transport. Crit Care Nurse 2010;30(4). pp. 18–32; quiz 33.
[2] Davies G, Chesters A. Transport of the trauma patient. Br J Anaesth 2015;115(1):33–7.
[3] Ericsson A, Frenckner B, Broman LM. Adverse Events during Inter-Hospital Transports on Extracorporeal Membrane Oxygenation. Prehospital Emergency Care Official J National Assoc EMS Physicians National Association of State EMS Directors 2017;21(4):448–55.
[4] Parmentier-Decrucq E, Poissy J, Favory R, Nseir S, Onimus T, Guerry MJ, et al. Adverse events during intrahospital transport of critically ill patients: incidence and risk factors. Ann Intensive Care 2013;3(1):10.
[5] Martin T. Aeromedical transportation - a clinical guide. Ashgate Publishing Group; 2006.
[6] Milligan JE, Jones CN, Helm DR, Munford BJ. The principles of aeromedical retrieval of the critically ill. Trends Anaesthesia Crit Care 2011;1(1):22–6.
[7] Singh JM, MacDonald RD, Bronskill SE, Schull MJ. Incidence and predictors of critical events during urgent air-medical transport. CMAJ 2009;181(9):579–84.
[8] Burney RE, Hubert D, Passini L, Maio R. Variation in air medical outcomes by crew composition: a two-year follow-up. Ann Emerg Med 1995;25(2):187–92.
[9] Warren J, Fromm Jr. RE, Orr RA, Rotello LC, Horst HM. Guidelines for the inter- and intrahospital transport of critically ill patients. Crit Care Med 2004;32(1):256–62.
[10] Whiteley S, Macartney I, Mark J, Barratt H, Binks R. Guidelines for the transport of the critically ill adult(Third Edition). London: The intensive care society; 2011.
[11] Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: a discussion paper. Nurse Educ Today 2017;56:29–34.
[12] SFS 2003:460. Lag om etikprövning av forskning som avser människor. Stockholm: Utbildningsdepartementet; 2003. URL: http://www.riksdagen.se/sv/Dokument-Lagar/Lagar/Svenskforfattningssamling/Lag-2003460-om-etikprovning_sfs-2003-460/ [accessed 2018-05-17] [WebCite Cache ID 6bB2Y9c09].
[13] Polit DF, Beck CT. Essentials of nursing research: appraising evidence for nursing practice. Philadelphia, USA: Lippincott Williams & Wilkins; 2013.
[14] Kvale S, Den Brinkman S. kvalitativa forskningsintervjun. Lund: Studentlitteratur; 2014.
[15] Rice DH, Kotti G, Beninati W. Clinical review: critical care transport and austere critical care. Crit Care (London, England) 2008;12(2):207.
[16] Senften J, Engstrom A. Critical care nurses' experiences of helicopter transfers. Nurs Crit Care 2015;20(1):25–33.
[17] Flabouris A, Runciman WB, Levings B. Incidents during out-of-hospital patient transportation. Anaesth Intensive Care 2006;34(2):228–36.
[18] Lockwood J, Ackery A. Improving air medical transport of the trauma patient from the ground. Cjem 2014;16(3):243–6.
[19] AAGBI. AAGBI SAFETY GUIDELINE. Interhospital transfer. London: The Association of Anaesthetists of Great Britain and 2009 Ireland.
[20] Minimum standards for intrahospital transport of critically ill patients. Emerg Med (Fremantle) 2003;15(2):202–204.
[21] Hunt EA, Shilkofski NA, Stavroudis TA, Nelson KL. Simulation: translation to improved team performance. Anesthesiol Clin 2007;25(2):301–19.
[22] Salas E, Wilson KA, Murphy CE, King H, Baker D. What Crew Resource Management training will not do for patient safety: unless…. J Patient Safety 2007;3(2):62–4.
[23] Weinger MB, Ancoli-Israel S. Sleep deprivation and clinical performance. JAMA 2002;287(8):955–7.
[24] Malterud K, Siersma VD, Guassora AD. Sample Size in Qualitative Interview Studies: Guided by Information Power. Qual Health Res 2015.