

NARRATIVE REVIEW

ANESTHESIA PRACTICE

"Resilience unveiled: empowering Pakistani anesthetists in challenging low-resource environment"

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ABSTRACT

This review paper explores the difficulties that the Pakistani anesthetists experience while working in settings with limited resources and emphasizes the need of offering them support, help, and encouragement. Similar to many other poor nations, Pakistan has substantial shortages of the healthcare resources, which can have a negative influence on anesthetists' working conditions. The paper emphasizes the need for efforts to improve Pakistani anesthetist's well-being and professional growth, while also inviting attention to the special challenges they have to confront during discharge of their professional duties. This narrative review suggests that encouraging, assisting, and supporting anesthetists who operate under such demanding circumstances can improve their motivation, job satisfaction, and generally, their ability to offer high level of patient care.

Key words: Low Resource Settings; Limited Resources; Encouragement; Professional Growth; Challenges; Motivation; Job Satisfaction; Workload; Continuing Education; Training; Psychological Stress; Emotional Support

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1. INTRODUCTION

Pakistani anesthetists play a vital role in the healthcare of the country, ensuring that anesthesia is administered safely despite the difficult circumstances, including resource constraints, budget limitations, and infrastructural challenges.

Anesthesia services are frequently offered in low-income countries by unqualified and/or poorly trained professionals who are treated as a low priority and they lack the maneuverability to forcefully request for the availability of the needed resource.¹ To ensure safety, effectiveness, and improve delivery of healthcare in

poor nations, it is essential to recognize fundamental issues and needs in anesthesia.² International Standards for Safe Practice of Anesthesia (ISSPA) have been developed by World Federation of Societies of Anesthesiologists (WFSA) and the World Health Organization (WHO) for anesthesia quality improvement.³

Low-income countries are those with a per capita Gross National Income (GNI) of \$995 or less, and lower-middle income countries are those with a GNI of \$996 - \$3945.⁴

Due to experienced professionals migrating to high-income countries in search of better prospects,

shortages in the anesthetic workforce have disproportionately impacted low- and middle-income nations including Pakistan.⁵ According to WHO, six out of seven South Asian nations lack anesthesiologists as a result of emigration, national imbalance, a lack of specialized training, and rising demand.⁶ Numerous experts are migrating as a result of the low regard for this specialty, dependence on the surgeons, lower earnings, and ultimately poor job satisfaction. The result is burnout and in turn in a national level brain drain. A major factor in the anesthetists dissatisfaction is the general public's lack of understanding about anesthetic practices and the job of the anesthesia specialists in these resource-poor countries.⁷ Almost half of the population in Pakistan (49%) and India (58%) is unaware of the hazards or the abilities of the person who would anesthetize them.⁸

2. CHALLENGES FACED

2.1. Lack of Infrastructure and Equipment

Anesthetists may face challenges in low resource settings due to inadequate infrastructure, outdated facilities and essential equipment; all these hindering safe and effective anesthesia care. Inadequate infrastructure, including poorly equipped operating rooms and recovery areas increases the risk of complications during anesthesia administration and recovery.⁹

Limited access to essential equipment and supplies, compromises care quality and treatment delays. Outdated machines and vaporizers increase the risk of equipment failure, jeopardizing patient safety. Inadequate infection control measures, such as sterilization and disinfection equipment and personal protective gear, increase healthcare-associated infections and unnecessary accidents.¹⁰

Investment in infrastructure development, procurement, and maintenance of essential equipment can improve working conditions and patient safety for the anesthetists. Collaborating with local and international organizations, securing funding, and offering training programs can enhance anesthetist's skills in managing limited resources effectively.¹¹ Advocating for policy changes that prioritize infrastructure improvement and essential equipment provision in low resource settings can be beneficial.

2.2. Shortage of Staff and increased Workload

Most of the healthcare institutions in low resource settings have to deal with a high patient load and a

relative lack of healthcare personnel, bearing a negative impact on both the anesthetist's general health and the standard of services offered by them.

Workload unquestionably influences how much time a healthcare worker can devote to different duties. A healthcare professional may not have enough time under a heavy workload to complete duties that might directly affect patient's safety. The decision of the care provider to carry out different procedures might be adversely affected by a heavy workload.¹²

Although a high patient load can cause longer waiting times for surgeries, compromising patient outcomes, staff limitations can lead to insufficient monitoring, increased risk of adverse events, and inadequate pre- as well as postoperative care. Overburdened staff may struggle with personalized care and time allocation.¹³

Studies have shown that the healthcare provider's high workload and job dissatisfaction negatively impact their performance, patient care quality, and organizational effectiveness. Additionally, adequate time for preoperative assessments and postoperative follow-up is crucial which results in positive associations between job satisfaction, patient satisfaction, and quality of care.¹⁴⁻¹⁷

Heavy workloads and the need to manage complex cases, cause physical and mental exhaustion. Limited staffing and long working hours can negatively impact work-life balance and personal well-being. High-pressure situations can lead to burnout, decreased job satisfaction, and increased medical errors.^{18,19,20}

2.3. Limited Access to Continuing Education and Training

The capacity to keep updated with the most recent developments in anesthesia practice may be hampered by the lack of a chance for professional development and continual learning. Anesthetists may struggle with evolving medical knowledge, guidelines, and best practices without continuing education and training. Limited exposure to new techniques, technologies, and evidence-based approaches can hinder high-quality care. Inadequate training may restrict proficiency in critical procedures, patient safety protocols, and complex case management. Insufficient knowledge and skills can cause medical errors, adverse events, and compromised patient safety, along with its failure to adopt emerging anesthesia practices leading to suboptimal outcomes.²¹

Utilization of digital platforms and online resources for accessible continuing education for anesthetists in remote areas will have a very healthy impact on anesthesia practices. The development of mobile healthcare applications for self-paced learning can

provide the anesthetists with advanced training and skills, and advocate for increased funding for local anesthetists training programs.²² Utilization of virtual conferences and webinars to share knowledge and experiences with anesthetists of low-resource settings will be very fruitful. In this context, the current development of the use of artificial intelligence (AI) in anesthesiology and intensive care is expected to make the coaching and training of the postgraduates easier and more practical. It may be used even in remote settings.²³⁻²⁵

2.4. Psychological and Emotional Stress

Anesthetists may face stress, anxiety, and emotional exhaustion due to critical situations and limited resources. Adverse patient outcomes and complications can cause guilt, self-pity, and psychological distress. *An unsupportive work environment and inadequate coping mechanisms may worsen mental health issues.*²⁶

Stress can negatively impact concentration, decision-making, and situational awareness thus compromising patient safety and anesthesia care quality. High stress levels may lead to errors, decreased job satisfaction, and burnout.²⁷

2.5. Ethical Dilemmas

Due to scarce resources, cultural, socioeconomic considerations and the highly demanding nature of their profession, Pakistani anesthetists encounter ethical conundrums in low resource situations. Resource allocation is a problem that arises frequently because it might result in prioritizing some patients over others, creating questions of justice, equity, and the beneficence principle. It can be difficult to balance the requirements of individual patients with the resources at hand, particularly in critically ill or high-risk situations.²⁸

At times it can be difficult to gain informed consent for anesthesia procedures because of the linguistic obstacles, inadequate health literacy, and cultural misunderstanding. Obtaining informed consent is crucial in safeguarding patient autonomy and reducing the risk of potential legal repercussions. Ethical considerations for vulnerable populations, such as pediatric patients, pregnant women, and those with mental impairments, demand even greater attention.²⁹

Creating ethical rules, multidisciplinary teamwork, and ongoing ethical training are strategies to deal with these conundrums.

3. REMEDIAL MEASURES

3.1. Importance of Encouragement, Support, and Help

Pakistani anesthetists are unsung heroes in the world of medicine, slogging it out in low-resource environments to give patients the vital support and care they need. These committed professionals exhibit steadfast devotion, resiliency, and a sense of compassion under highly challenging and unfavorable circumstances. Their lives may be significantly changed by encouragement, support, and help. These crucial factors will strengthen their will to overcome challenges and carry on their life-saving job. In order to secure their wellbeing and productivity in these demanding conditions, anesthetists may urgently require extensive support systems.

For anesthetists working in limited resource environments, improving motivation and job satisfaction is essential. Their motivation and general contentment may be impacted by the hard nature of their employment, resource limitations, and difficult circumstances.

3.2. Enhancing Motivation and Job Satisfaction

To promote a *pleasant work atmosphere, acknowledge and respect the anesthetist's efforts and accomplishments, thank them for their commitment to patient care, offer feedback and constructive criticism, and celebrate milestones and victories.*³⁰

Provide chances for anesthetists to further excel in their careers, assist them in attending training workshops and conferences, and motivate them to get involved in research and quality-control programs.³¹ Encourage healthcare workers to collaborate, communicate honestly, and work together in a positive work environment.

*By using fair scheduling procedures, making sure enough time off, and resolving problems with an excessive workload, you may promote work-life balance. To deal with psychological and emotional stress, seek out mental health resources, counseling, and support networks.*³²

3.3. Improving Quality of Patient Care

Working in settings with limited resources, the anesthetists must prioritize raising the standard of patient care. Based on evidence-based medicine, standardized protocols and standards for anesthesia practice should be created and implemented, considering particular difficulties and resources in low-resource settings.³³

Review and update of guidelines often reflect new developments in anesthesia practice. To find and close patient care gaps, it is important to build ongoing quality improvement systems. These systems should use metrics and quality indicators to gauge and track

the caliber of anesthesia services. To find areas for improvement, regular audits, case reviews, and morbidity and mortality meetings should be held.³⁴ Checklists, preoperative assessment protocols, and infection control practices should all be put into place as part of patient safety initiatives.

To improve patient safety, it is important to develop a culture of safety and use standardized monitoring tools and procedures. Effective communication, teamwork, and mutual respect are all necessary components of interdisciplinary collaboration among healthcare professionals to provide coordinated and thorough patient care.³⁵

Workshops, seminars, and conferences should offer chances for continuous professional development (CPD), assisting anesthetists in keeping abreast of developments in anesthesia management and evidence-based practices.³⁶ Knowledge and abilities can be improved by taking part in research projects or quality improvement programs. AI can play an increasing part to enhance the knowledge base of the clinicians.²³⁻²⁵

Patient education and empowerment should be encouraged, with patients and their families informed about anesthesia procedures, risks, and post-operative care.³⁷ Accurate documentation of procedures, medications, and patient information should be prioritized, with electronic medical record systems or standardized paper-based records being implemented to facilitate efficient retrieval and auditing practices.³⁸

3.4. Role of Anesthesia Societies

Anesthesia societies have a great responsibility in addressing the difficulties faced by the anesthetists in settings with limited resources and in advancing the quality of anesthesia services. *They act as forums for interprofessional dialogue, instruction, support, and advocacy.*³⁹ The development of policies and standards, the promotion of research and data gathering, the advocacy for improved financial allocation, the development of guidelines and support systems are all important tasks.

Anesthesia societies and organizations can facilitate information exchange, skill enhancement, and practice updates. They can also encourage anesthetist cooperation and produce data to support targeted treatments and advancements. Anesthesia societies can improve the professional wellbeing and work satisfaction of anesthetists in these demanding situations by establishing a feeling of community and offering chances for cooperation.

3.5. Role of social media

Social media platforms can significantly support anesthetists working in low resource settings and

promote improvements in anesthesia care. These platforms offer opportunities for knowledge sharing, professional development, networking, collaboration, advocacy, patient education, mental health support, and well-being.⁴⁰

Anesthetists can join professional groups, follow relevant accounts, and participate in online discussions, webinars, and live streams to stay updated on the latest developments in anesthesia care. Online communities and groups facilitate discussions on challenging cases, resource management, and sharing experiences, providing support and insights for anesthetists in similar settings.

Social media platforms also offer a powerful medium for raising awareness about the challenges faced by anesthetists in low resource settings and advocating for improvements in anesthesia care and translate them in action.⁴¹ By engaging with policymakers, healthcare organizations, and the public, anesthetists can amplify their voices and advocate for changes that positively impact patient care.

Patient education and empowerment can be achieved through social media platforms, where anesthetists share informative videos, infographics, podcasts and articles to help patients understand anesthesia procedures, perioperative care, regional anesthesia and pain management.^{42,43} Addressing patient concerns and questions through social media platforms can contribute to improved patient satisfaction and engagement in their care.

4. CASE STUDIES

In this section, we present informative case studies and success stories that demonstrate the tremendous effects of providing encouragement, support, and assistance to Pakistani anesthetists working in highly challenging and adverse situations in low resource settings. These real-world examples show how these programs have enhanced anesthetists' well-being and professional growth, which has ultimately improved patient care and results. We are refraining from mentioning the names of the individuals or institutions to uphold confidentiality.

In a remote region of Punjab and resource constrained hospital that faced numerous challenges in its anesthesia department.

After taking charge as newly appointed head of the department, my objective was clear—to address these issues and uplift the standards of anesthesia care. I was determined to make a difference and improve patient outcomes. and uplift the department's standards. To achieve this, two key areas were prioritized. First, we

focused on *the education and training* of the anesthesia team. We introduced *supervisor workshops; streamlined class schedules, and initiated quarterly assessments* to encourage higher qualifications.

Additionally, we implemented training programs for the entire staff, including doctors, to improve critical care services. Evening and night rounds were established to ensure 24/7 qualified anesthetist coverage. The second area of focus was acquiring essential life-saving equipment. Despite financial limitations, we persistently advocated for and secured donations, which allowed us to establish a dry skill lab with a USG machine and manikins for hands-on training in basic life support and airway management. We also set up a departmental library and provided access to anesthesia and critical care books, medical journals, and the internet.

As a result of our efforts, advancements in anesthesia, e.g., USG-guided nerve blocks and POCUS in critical care and operating rooms, were successfully introduced. Video laryngoscope and fiberoptic bronchoscope were also made available, enhancing patient care and airway management. Moreover, we prioritized academic excellence by establishing additional post-graduation programs, including MS Anesthesia and DA. Various workshops on research methodology, ECG interpretation, ABGs, critical care, BLS, and other relevant topics were introduced to foster continuous learning among the team.

Looking ahead, our future plans include establishing a research wing, a dedicated pain outpatient department, and a pain medicine unit to further improve patient care. Additionally, we aim to enhance the dry skill lab and integrate USG in critical care services for the betterment of patient outcomes.

One of the anesthetists at another resource limited hospital faced difficulties in providing anesthesia with very little equipment. Due to a lack of financing, the institution had obsolete and broken anesthetic equipment, few monitoring tools, and insufficient drug supplies. As a result, the quality of the care was compromised, endangering the safety of both patients and medical professionals. However, the anesthetist made the decision to act with the assistance of the hospital administration and other colleagues. They were able to get essential anesthesia machines and monitoring devices by working with an NGO that specializes in donating medical equipment. In addition, they set up training sessions and seminars for the nursing staff to instruct them on correct equipment upkeep and anesthetic practices.

These initiatives had a surprising effect. Updated technology allowed for more efficient anesthetic

delivery and considerably increased patient safety. The risks to the patients were decreased by the ability to regularly monitor patients thanks to newly acquired monitoring equipment. As a consequence, the hospital saw a decrease in anesthesia-related critical events, which caused surgical teams to become more confident.

In a remote hospital with minimal resources, shortage of operating room personnel and large patient load resulted in a heavy workload and frequent on-call shifts. Despite the difficult conditions, the anesthetists persevered because of their commitment to providing safe anesthesia and their passion to patient care. The hospital management created a rotating system to make sure that each anesthetist obtained enough rest and personal time after realizing the negative effects this setting had on their well-being. They also started a mentoring program where veteran anesthetists helped novices and offered advice. The team was able to strengthen their skills via this program, which also encouraged teamwork. The anesthetists eventually managed their exceptional work ethics and quality work in challenging circumstances.

4. FUTURE ACTION

Allocating sufficient funds, upgrading medical facilities, and facilitating access to necessary drugs and supplies are all necessary to provide safe and efficient anesthesia care. Simulation-based training, CPD programs, and seminars are needed on regular basis to meet the issues faced by anesthetists in low resource settings. Multidisciplinary teams and regular case discussions be established to promote collaboration among healthcare experts and enhance patient outcomes and resource utilization.

For anesthetists working in low resource environments, PSA should provide a comprehensive academic calendar for each year that includes educational events, workshops, conferences, and training programs. The calendar should put an emphasis on skill improvement, resource optimization, and evidence-based practices.

Additionally, a tele-assistance team of senior energetic anesthetists should be developed to offer anesthetists in remote locations a real-time direction, guidance and support. A coordinated National Mentoring Program was suggested a few years back, which describes the mechanics of this program very elaborately.⁴⁴

PSA has a prime responsibility to promote collaboration among anesthetists in low resource settings, increase access to knowledge, and improve professional development opportunities by putting these proposals into practice.

For anesthetists it will be of great help if they promote interprofessional cooperation, create multidisciplinary teams, and promote networking and knowledge exchange through regional anesthesia societies, online communities, and worldwide partnerships. Promote anesthesia care-related research projects, analyze data, and share findings through papers, conferences, and online forums. Collaborate with governmental entities, healthcare organizations, and policymakers; participate in communication with international organizations; and advocate for policy modifications and additional financing to prioritize anesthesia services in low resource contexts.

5. CONCLUSION

By highlighting the difficulties experienced by anesthetists in low resource settings this paper intends to provide a greater awareness of the particular conditions faced by Pakistani anesthetists. The paper highlights how important it is to offer anesthetists encouragement, support, and assistance in order for them to overcome these difficulties and raise the standard of the patient care despite various constraints. Stakeholders may help to improve the working conditions for anesthetists and open the door for sustainable growth in the area of anesthesia in low resource settings by putting the solutions into practice which have been described in this article.

6. Conflict of interest

No potential conflict of interest relevant to this article

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8. Authors' contribution

MAZ: Principle investigator, supervising the project and finalizing it

PAC: Literature search

AK and BKC : Editor of the manuscript

FS: Preparation, creation and writing the initial draft

AR: Final review

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