

Attrition amongst Emergency Medicine Registrars in the Western Cape: an exploration of contributing factors

By

Candice Anne Van Koningsbruggen

MBChB (UKZN)

VKNCAN001



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Supervisor(s): Dr Heike Geduld

Dr Clint Hendrikse

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Abbreviations

ACEP	American College of Emergency Physicians
ACGME	Accreditation Council for Graduate Medical Education
CBI	Copenhagen Burnout Inventory
CEMSA	College of Emergency Medicine of South Africa
EC	Emergency Centre
ED	Emergency Department
EM	Emergency medicine
EMD	Emergency Medicine Department
EP	Emergency physician
DipPEC	Diploma in Primary Emergency Care
HIC	High Income Countries
MBI	Maslach Burnout Inventory
MMED	Master of Medicine
MNH	Muhimbili National Hospital
RSA	Republic of South Africa
SA	South Africa
SSA	Sub Saharan Africa
SU	Stellenbosch University
UCT	University of Cape Town
UK	United Kingdom
USA	United States of America

PART A: LITERATURE REVIEW

Objectives of literature review

In order to comprehensively understand attrition within Emergency Medicine (EM) and its complexities, the literature review sought to achieve the following objectives to best underpin the approach of this research.

The primary objectives are listed below:

- To gain an understanding of the current state of emergency medicine as an established specialty as well as the current state of the emergency medicine training programs in South Africa and Africa.
- To investigate and compare attrition rates between other medical communities
- To develop an understanding of the extent of attrition within emergency medicine as a discipline, and particularly of trainees in emergency medicine globally.
- To appreciate influences on attrition in emergency medicine within the African context.
- To integrate and summarise contributing factors to attrition, as suggested by literature from different contexts.
- To assess the usefulness of an exit interview as a tool to decrease attrition by improving retention.
- To identify areas and gaps in current evidence that require further studies.

Literature search strategy, including inclusion, exclusion and quality criteria

Advanced searches of online databases were done systematically using PubMed, EBSCOhost, Scopus and Google Scholar.

The MeSH terms used were “attrition”, “registrars”, “emergency medicine” and “exit interviews”. “Attrition” was alternated and substituted with the terms “attrition rate”, “drop out” and “drop-out”. The word “registrars” was substituted and alternated with the terms “residents”, “residency”, “postgraduate” and “internship”. The MeSH terms were used in a variety of combinations with the following other terms – “burnout”, “medical residencies”, “compassion fatigue”, “career choice”, “retention”, “Africa”, “stress”, “academic”.

Abstracts and titles of studies that were identified from the search results were reviewed individually. Full text articles were obtained for those that were considered relevant. The initial inclusion criteria used were studies published in English in peer reviewed journals, however this was updated to include non-English publications as well as grey literature

given the context of the study. Full text articles that could not be obtained via the university library portals, or that required paid subscriptions, or needed to be purchased, were excluded. Further studies for possible inclusion were identified by searching through the references of the studies already identified as relevant for inclusion in a snowballing fashion.

Background and Summary of literature

Overview of Emergency Medicine

The American College of Emergency Physicians (ACEP) has defined EM as ‘the medical specialty dedicated to the diagnosis and treatment of unforeseen illness or injury. It encompasses a unique body of knowledge as set forth in the “Model of the Clinical Practice of Emergency Medicine.” The practice of emergency medicine includes the initial evaluation, diagnosis, treatment, coordination of care among multiple providers, and disposition of any patient requiring expeditious medical, surgical, or psychiatric care.’(1)

Emergency Medicine as a specialty was first established over 40 years ago, and continues to be developed internationally. The discipline encounters major workforce shortages while there is an increasing demand for emergency care worldwide.(2) Emergency medical care has been acknowledged as a basic necessity which should be available to all communities at all times, therefore a workforce shortage poses a potential safety risk for patients.(2)

Despite the earlier establishment of emergency medicine as a specialty in the United States of America (USA), concern regarding an insufficient emergency medicine workforce exists. An insufficient workforce in the future will pose a challenge to provide a good standard of emergency care for the public, while at the same time training future emergency physicians.(2)

While it has been acknowledged that ideally all emergency centres should be staffed by emergency physicians (EPs), given the discrepancy between supply and demand of EPs, this is likely not going to be possible in the near future.(3) This situation lends itself to doctors who are not trained in emergency medicine providing emergency care, which can potentially lead to serious consequences.(3, 4)

Africa’s populations face health challenges that are unique to the rest of the world’s health challenges: with an increasing burden of communicable and non-communicable diseases, as well as restricted resources available in the existing health care systems, the development and provision of emergency care is both difficult and vitally important.(5, 6) EM development in Africa has been identified as an essential tactic in achieving health systems strengthening.(7)

The World Health Assembly Resolution 60.22 highlighted the fact that ‘emergency care systems for secondary prevention of acute illnesses and injury remain inadequately developed in many low- and middle-income countries, despite evidence that basic strategies for improving emergency care systems can reduce preventable mortality and morbidity and can in many cases also be cost effective.’(8)

It is recognised that there is a great need for more experts in EM, not only for provision of medical expertise, but also for further development of the EM systems in these countries. (7, 8)

EM specialist training programs have been started in a handful of countries in Africa, and the majority of these programs are still in their infancy. The first registrar training program in Africa was started in the Western Cape in 2004, lead by a collaboration between the University of Cape Town (UCT) and Stellenbosch University (SU).(9) EM had existed in the Republic of South Africa (RSA) for many years prior to that, however it was only recognised as a specialty in the country in 2003.(10) The founding of the new specialty in SA was exciting and significant, and offered the prospect of better access to a safe, affordable standard of emergency care for the people.

The registrar training program at UCT/SU entails a 4-year MMED degree. The curriculum follows requirements stipulated by the College of Emergency Medicine South Africa (CEMSA), and to become a member of the fellowship of the college of emergency medicine, a primary examination, final examination, and dissertation need to be successfully completed. To date there are 3 other South African EM training programs running at the University of Pretoria, University of Witwatersrand, and the University of KwaZulu-Natal. (9-11)

Apart from the specialist training programs offered by these universities, there is also a national diploma in Primary Emergency Care (DipPEC) which is offered by the College of Emergency Medicine South Africa (CEMSA) as well as a higher diploma in Emergency Medicine (H Dip Emerg Med).(12)

On review of EM training in other African countries, public-private partnerships allowed for the foundation of Tanzania’s first dedicated emergency department at Muhimbili National Hospital (MNH).(13) In conjunction with MUHAS (Muhimbili University of Health and Allied Sciences), Tanzania’s first resident training program was started at MNH in 2010.(13) As there were no emergency physicians in Tanzania at the time the EC opened, Abbott Fund Tanzania established an ongoing academic partnership between institutions in the United States, Canada and South Africa to afford clinical training for staff. This international

academic collaboration allows for further dissemination and maintenance of emergency care in Tanzania.

The resident program at Muhimbili comprises of an MMED and ongoing evaluations and exams every semester which are proctored by local faculty and international examiners. The residents rotate through the emergency department and other specialty departments during their resident time.(13)

In an attempt to promote and improve access to high-quality emergency care, EM training programs have been developed in a number of other countries throughout Africa, as well as other low- to middle-income areas globally, in recent years.(14)

Dissemination and sustainability of accessible high-quality emergency care has shown to be beneficial over the entire socio-economic spectrum.(7,8) With well established, robust EM training programs in place, the opportunity for increased throughput of specialists would exist, allowing for increased advocacy for the specialty and better provision of emergency health care.

As mentioned before, the effects of good emergency care are far reaching, having positive effects on secondary prevention and health systems strengthening.(7) Attrition from these EM training programs threatens the expansion of the EM specialist community, and makes delivery of these goals more difficult.

Overview of Attrition

The Oxford dictionary defines attrition as ‘The gradual reduction of a workforce by employees leaving and not being replaced, rather than by redundancy’.(15) There are many methodological concerns related to studying and measuring attrition (16, 17), however, an important and relevant concern is that within different fields, there is often no common definition of attrition.(16-18) For the purpose of this study, the definition of attrition will include doctors previously registered in the Emergency Medicine registrar training programme in the Western Cape, who voluntarily resigned before completing the mandatory four years of training.

Student attrition is a worry, and affects many higher education institutions and programs.(18) It contributes to fewer students graduating and entering the workforce (19), which, in the context of Emergency Medicine locally, translates into fewer specialists being rolled out into the country to improve access to care and patient management.

The factors contributing towards attrition in Emergency Medicine registrars, specifically in the Western Cape need to be identified and explored, so they may be addressed to decrease future attrition.

Concerns regarding attrition have been voiced by many specialties in the past, and attrition presents itself as a complicated problem in the medical, as well as in the educational field.

Many studies investigated the extent of attrition within certain specialties, in order to mitigate against it. The attrition rates and contributing factors seem to vary with each specialty, study and timeframe. In a study done by Kennedy et al.(20), it was found that the annual attrition rate of residents enrolled in Obstetrics and Gynaecology between 2000 and 2009 was 4.2%, which they found to be a similar rate to attrition in other specialties.(20)

As noted by Dodson et al., the overall attrition rate of surgical residents was 17% and the attrition rate for females in the surgery program was 27%, with 78% of females who left this surgical program doing so for lifestyle reasons.(21) Another study on general surgery residents found that the most commonly cited factors for desiring to leave training were “sleep deprivation”, “undesirable future lifestyle” and “excessive work hours”.(22)

Attrition rates have even been reported to be as low as 0.96%, as was found by the Accreditation Council for Graduate Medical Education (ACGME) when looking at attrition from the US orthopaedic surgery residencies.(23) Bauer et al. found that females, single people, and those without children were at higher risk of leaving the orthopaedic training program.(23)

Attrition has been a concern in Emergency Medicine specialties internationally for many years.(24-26) In an attempt to understand the concerns of United Kingdom (UK) Emergency Medicine trainees to work towards career sustainability, the College’s Trainee Sustainability Survey was conducted.(27) Work/life balance as a future consultant was identified as a major concern to the trainees, as well as workload and alarmingly, 10.3% of participants expected that they would not be practicing EM after completion of their training time.(27)

Whilst there is a paucity of data relating specifically to attrition during the registrar/resident training programs, much can be found on attrition from the specialty as a whole. Attrition rates range from 1-2% annually to 50% every 5 – 10 years, and this gives rise to the worry of lack of career longevity for emergency physicians.(26) In a retrospective cohort study, Hall et al. established that the attrition from emergency medicine was less than 1% annually, and that 86.8% of respondents were still working in emergency medicine 15 years after successfully completing their training.(26) This study identified reasons for attrition from emergency medicine practice – the most important being shift work, emotional and physical stress, and family considerations. (26)

Doan-Wiggins et al., predicted relatively high rates of attrition (approximately 23%) for emergency physicians, which was previously noted in other studies.(24) Predicted attrition in this study was found to accompany burnout and poor practice satisfaction. Specific factors that were identified which contributed towards attrition were ‘stress, burnout, working nights and weekends, and malpractice fears.’(24)

More recently, Ginde et al. also found that approximately 87% of emergency medicine-trained or emergency medicine board-certified physicians were still actively practicing emergency medicine.(25) Taken as a whole, attrition remained low and was comparable with other specialties, which is reassuring.

As most of the established EM training programs in Africa are still in their infancy, there is no current published data regarding attrition from these programs. In a survey of recent graduates from EM training programs throughout Africa (SA, Ethiopia, Tanzania and Ghana), graduates felt least prepared for their roles as scholars (especially regarding research) and managers. It was felt that these areas were generally neglected during training, and could be improved through the development of leadership and mentorship programmes.(6)

Compassion fatigue is a well-recognised factor contributing towards attrition.(28) Although little is documented on attrition in EM in African training programs, Sawe et al. has suggested that the unique challenges in the EM working environment in Sub Saharan Africa contribute towards strain on EM providers, and that the factors adding to compassion fatigue are likely different to those in higher income countries. (28)

There is little published literature regarding attrition from Emergency Medicine in South Africa. While the current attrition rate of 33% at the UCT/SU division of EM has improved from a rate of nearly 50% a few years ago, it is still far from ideal.(9)

In interviews that were done with graduates of the UCT/SU EM program, limitations that were recognised included lack of bedside teaching, shortage of career options after graduation, and lack of preparation for academic careers.(11) This study was published in 2012, and the participants included 27 graduates from 2007 – 2010.

While much has changed since the establishment of EM in SA, there is still a far way to go. As Reid et al. noted, it is unlikely that it will be possible to deliver the services that are considered compulsory in ECs without an adequate number of properly trained EPs.(29)

Reasons for attrition

Registrars are not only medical doctors and workers, but full-time students too. The academic requirements of registrar training programs are demanding and need to be considered when looking into possible causes for attrition in this group of people.

Tinto's Model of Student Integration describes attrition as 'a longitudinal process of interactions between the individual and the academic and social systems of a college during which a person's experiences in those systems... continually modify his goals and institutional commitments in ways which lead to persistence and/or to varying forms of dropout'.(30) Tinto's theory placed emphasis on the fact that in order to successfully complete studies, students needed to integrate both academically and socially.(30) It is worth considering that this theory of Tinto's from 1975, may still play a part in students' success today.

It is acknowledged that student's integration (socially and intellectually) plays a role in attrition in tertiary studies. (31) Tinto observed that students who were given more time by faculty were more likely to finish their studies. This interaction between faculty and students leads to better student engagement, and betters the social and intellectual development of the students.(31) The interaction also leads to improved student perception of faculty support.

Other factors to consider in student attrition from tertiary studies, as with any other level of studies, are student motivation, and intellectual capability.(31) Not all students who begin an academic course will possess the intellectual ability to successfully complete it. Similarly, not all students who have the intellectual capacity to complete a given academic course, will have the commitment or motivation to complete it.(31)

Tinto also recognised other possible reasons for student disengagement (including the roles of finances, gender, age, race and social backgrounds), and he noted that dropout was underestimated specifically in students who came from disadvantaged backgrounds.(31)

Brunsdan et al. (2000) argued the suggestion by Adams (1996) that specific factors that affect individuals' decisions to dropout may be addressed more easily, and that by targeting these specific factors, it would be possible to lower attrition rates and provide help to the individual students affected.(32, 33)

In an academic program such as the Emergency Medicine registrar program in the Western Cape, it is important to consider the individual academic demands. To successfully complete the registrar component of training and become registered as an Emergency Medicine Specialist in South Africa, two sets of examinations (Primaries and Finals) as well

as a research component need to be completed and passed. It is important to consider that success in these examinations as well as the research component may play a role in attrition.

As mentioned above, Tinto recognised that not all students entering a specific academic program necessarily had the intellectual ability to successfully complete it.(31) Local research conducted on postgraduate students suggests that the research component of postgraduate studies is the most challenging, while institutional support, support from supervisors, and personal attributes were found to positively impact on success.(34)

Stress has been defined as the inability to cope, or the fear of not coping.(35, 36) The natural environment for a doctor practicing emergency medicine can be a stressful one. Acutely unwell patients, fatigued colleagues, long hours, shift work, unpredictable workload and difficult family members of patients can all add to an already stressful job.(36) There are many previous studies that have shown the relationship between fatigue, sleep deprivation, and long working hours, and stress, accidents, conflict, an unhealthy lifestyle, and medical errors.(37-39)

Although emergency medicine has been recognised in the past as a highly stressful specialty, it is interesting to note that in some studies, levels of stress were comparable to stress levels reported by other groups of doctors, and this was felt to be due to the development of coping mechanisms.(40)

In another study, anticipated overtime and adverse events were the only factors that were found to be linked to stress in emergency medicine residents working in an emergency department.(36)

The term burnout was first used in 1974 by Herbert Freudenberger, and is a term used to describe the syndrome of emotional exhaustion, depersonalisation, and decreased personal accomplishment.(41, 42)

There are many validated tools used to measure and assess burnout (e.g. the Maslach Burnout Inventory (MBI) and the Copenhagen Burnout Inventory (CBI)), the most commonly used one being the Maslach Burnout Inventory. (43, 44). The MBI uses three subscales to measure emotional exhaustion, depersonalisation and personal achievement, and then classifies the individual into low, medium and high categories of burnout according to the individual's total score. Burnout has often been implicated as a contributing factor to attrition, and as such is an important consideration in our setting.(43)

There are many conflicting opinions regarding burnout rates in different medical specialties. In a qualitative review, Bragard et al. found that despite ED physicians reporting decent job satisfaction, they often demonstrated excessive levels of burnout, with 51.5% reporting

burnout when measured by the Copenhagen Burnout Inventory, and 35% reporting burnout when measured by the Maslach Burnout Inventory.(45) These reports of burnout were associated with challenging working conditions, specifically substantial psychological loads, poor resources and lack of support.(45)

In another review, Arora et al. found doctors in Emergency medicine to have levels of burnout exceeding 60% while physicians only demonstrated burnout levels of 38%.(43) Work-related factors as well as non-work-related factors were found to be linked with burnout. The most significant work-related factors included hours of work, number of years of practice, professional development activities and non-clinical duties, while non-work-related factors included age, sex, lifestyle and family factors.(43)

When looking for possible factors related to burnout in Emergency Medicine residents, Takayesu et al. found that 65% of EM residents fulfilled criteria for burnout.(41) Factors that were found to be associated with burnout included intolerance for uncertainty, low job satisfaction, as well as lack of clinical and administrative autonomy.(41)

Shanafelt et al. observed that when compared to the general population in the United States, physicians experience burnout more commonly.(46) Specifically emergency medicine, family medicine and internal medicine physicians experienced higher rates of burnout compared with their colleagues in other specialties.(46) Other studies found that Compassion Fatigue scores in residents in Emergency Medicine and in other medical and surgical specialties were similar, just pointing out that night shifts and increased hours put all residents at higher risk of compassion fatigue, irrespective of specialty.(47)

As burnout is so common in the medical profession, and particularly in Emergency Medicine, it is beneficial to recognise that it may not just influence attrition, but may also impact on patient care. Lu et al. found that the burnout rate amongst Emergency Physicians was high (57.1%), and while this on its own is alarming, it is also important to note that Emergency Physician burnout was closely associated with increased frequencies of self-reported suboptimal care for patients.(48)

It is interesting to note that whilst a wealth of literature regarding burnout exists in high-income countries (HIC), there is relatively little research on this subject in Sub Saharan Africa. Sawe et al. noted that while there may be some overlap with regards to the factors at play, it is important to recognise that Emergency Medicine in Sub Saharan Africa is very unique, and because of significant socio-economic, cultural and political factors, a better understanding of causative factors is required to address the problem.(28) Excessive work related stressors leading to burnout was identified in a recent international survey comparing the South African EM registrars with their Canadian counterparts.(49)

It is also interesting to consider the relationship between psychological health and coping styles, and burnout. Jenkins and Maslach's study revealed that it was more probable for those with better psychological health to persist in taxing service-oriented jobs.(50) Howlett et al. established that certain coping styles are linked to different risks of burnout in EM staff, and found that task oriented coping was related to a reduced risk of burnout.(51) Decreased emotional exhaustion, less depersonalisation, and better sense of personal accomplishment were found in those who demonstrated task or problem-focused coping, while those who demonstrated emotion-oriented coping responses were at higher risk of burnout. (51)

Shift work has been recognised for quite some time as one of the main reasons for people leaving emergency medicine, and as such threatens the viability of a career in emergency medicine.(52) Research around shift work has demonstrated not only its effects on the individual's physical, psychological and social wellbeing, but also its effects on organisations and communities.(52)

The primary cause for its effects on physical wellbeing stem from the effects of shift work on the circadian rhythm.(53) The suprachiasmatic nucleus of the hypothalamus regulates physiologic variations in vital signs, digestion, hormones, feelings, behaviours, and sleep. These cycles are affected by internal stimuli and external stimuli (Zeitgebers). When one works at different times, the circadian rhythms are disrupted and desynchronosis occurs.(52, 53)

The effects of circadian dysynchrony can manifest as impaired cognitive performance, which makes shift workers more prone to errors and accidents at work. Medical residents have been found to be twice as likely to sustain a percutaneous injury during a night shift, than a day shift.(54)

Many of the most disastrous accidents of history (most notably the Chernobyl reactor meltdown) occurred in the early hours of the morning and implicated night shift workers.(52)

Not only are shift workers more prone to accidents at work, but they are also more prone to accidents outside of work. Steele et al. demonstrated that residents driving home after a night shift were involved in a higher number of motor vehicle accidents and near-crashes when compared with other shifts.(55)

The effects on physical health are also clear, with shift workers having higher rates of drug abuse, smoking, caffeine consumption and alcoholism.(52) While some studies demonstrate higher rates of coronary artery disease and increased cardiac mortality, others argue that although shift work increases the risk of vascular events, it is not associated with increased

mortality.(52, 56) Multiple other diseases have been shown to either be associated with, or exacerbated by shift work (for example peptic ulcer disease, hypertension, infertility, immune dysfunction, diabetes and epilepsy).(52) Higher rates of certain types of cancer (colorectal, breast, prostate) have also been demonstrated in occupations with night shift work. (54)

While the physical effects are well recognised, it is important not to ignore the psychosocial impact shift work can have on the individual as this can often lead to even more morbidity. Circadian dysynchrony can cause irritability, fatigue and mood changes.(52, 54) Shift workers are recognised as having higher rates of substance abuse, divorce, depression and suicide.(52) It is difficult for shift workers to maintain relationships and attend family gatherings or friends' events, and it can be socially isolating for these reasons.

Shift work disorder is distinct from fatigue and from the sleepiness often linked to shift work, and it is diagnosed by the presence of insomnia and/or excessive sleepiness for one month or more while the patient is working shift work.(54) While shift work disorder causes many of the same physical, cognitive and psychosocial manifestations as above, the manifestations can be more severe, and diagnosis, intervention and treatment are necessary.(54)

25% of the population of North America are shift workers, and it has been estimated that 20% of people cannot tolerate shift work and it's far reaching effects.(52) The negative effects are not acceptable to many shift workers and doctors that work shift work, and for these reasons shift work is a great contributor to attrition in emergency medicine and threatens the viability of a sustainable career in emergency medicine.(52, 54)

Due to some of the unique demands that can be part of professional women's lives (for example, motherhood, family, and spouses), unique reasons for attrition amongst women must be considered.(57)

Limited research exists that focuses specifically on attrition of female emergency physicians or residents, however, studies have been done to determine factors which are associated with career satisfaction in this unique population.(57,58) Clem et al. observed that schedule flexibility, amount of recognition in the workplace, career advancement, and equal financial compensation to their male counterparts, played the biggest roles in female emergency physician's career satisfaction.(58)

The use of Exit Interviews

In an effort to understand reasons for attrition of registrars from the division of emergency medicine in Cape Town, and further address these possible issues, it is suggested that exit interviews form part of a formal exiting registrar protocol.

Exit interviews and exit questionnaires are valuable tools to investigate reasons for attrition, and have been relied on for quite some time in attrition research.(59-61)

The interviews are only useful if the respondents answer questions honestly and accurately, however they are still viewed in a favourable light.(61) Giacalone et al. suggested that to achieve more accurate and unbiased responses, the interviews would be best conducted by a neutral party.(62) Campion et al. also noted that it was beneficial and that the exit tool allowed for the recording of numerous possible reasons for attrition.(63)

The exit interview is an extremely useful tool not only to gather information about why employees have decided to leave, but also about the organisation's strengths, weaknesses, and possible opportunities for improvement.(59) If the identified issues arising from the exit interviews are addressed, employee turnover decreases, resulting in increased retention.(59)

Exit interviews can be conducted in various ways – in person, online or telephonically, and can be designed to incorporate questions relating to variables believed to be linked to employee turnover.(64) Online surveys can be included in the departure process of exiting employees to ensure high participation and up to date data on attrition.(64)

While there is not a lot of literature that exists on the use of exit interviews in medical education and specifically registrar training programs, it should be noted that literature that does exist views exit interviews positively. The Indiana University School of Public Health faculty recognises that continuous evaluation of students' experiences is beneficial to maintain and improve quality of academic programs.(65) Data from exit interviews is used to enable prioritisation of academic goals, appropriate allocation of resources, increased student satisfaction and improved student retention. It is beneficial for continuous quality improvement efforts for academic programs.(65)

These factors should be considered when developing the exit tool.

Conclusion

By exploring reasons for attrition of registrars from the EM training program in the Western Cape through the use of a formal exit interview, it is hoped that some of these factors are

addressed in order to increase registrar retention within the division, and improve throughput of specialists into the country.

With more specialist emergency physicians in the country, the goal of providing high quality emergency care in a strengthened health system is more attainable. Not only will emergency physicians need to be clinical experts in their fields, but they will also need to advocate for improved healthcare access, and be leaders in establishing emergency systems in areas where there are none.

South Africa and Africa are in dire need of improved access to care. Providing more EP's through improved retention of registrars will not solve this problem in its entirety, however it forms a fundamental component of the platform off which to start.

Identification of gaps in the literature, or needs for further research

While there is an abundance of literature available on attrition in general, and attrition from most medical specialties, it was found that there was much less available literature relating specifically to attrition from emergency medicine registrar programs. There is a particular sparsity of literature regarding attrition from emergency medicine in Africa and South Africa, as well as regarding emergency medicine training programs in Africa and South Africa. The more data that can be made available regarding the existing registrar programs and attrition, the more improvements that can potentially be made to increase retention. Further data needs to be collected on existing registrar and specialist numbers, statistics on current attrition, and factors that contribute to possible attrition at each training program.

References

- (1) American College of Emergency Physicians. Definition of Emergency medicine. Available at: <https://www.acep.org/Clinical---Practice-Management/Definition-of-Emergency-Medicine/>. Accessed 09 / 20, 2016.
- (2) Schneider SM, Gardner AF, Weiss LD, Wood JP, Ybarra M, Beck DM, et al. The future of emergency medicine. *Acad Emerg Med* 2010;17(9):998-1003.
- (3) Camargo Jr. CA, Ginde AA, Singer AH, Espinola JA, Sullivan AF, Pearson JF, et al. Assessment of emergency physician workforce needs in the United States, 2005. *Acad Emerg Med* 2008;15(12):1317-1320.
- (4) Institute of Medicine Committee on the Future of Emergency Care in the US Health System. *Hospital-based emergency care: at the breaking point*. 2006.
- (5) Boutayeb A. The double burden of communicable and non-communicable diseases in developing countries. *Trans R Soc Trop Med Hyg* 2006;100(3):191-199.
- (6) Bae C, Geduld H, Wallis LA, Reynolds T. Professional needs of young Emergency Medicine specialists in Africa: Results of a South Africa, Ethiopia, Tanzania, and Ghana survey. *African Journal of Emergency Medicine* 2016.
- (7) Mulligan T. The development of emergency medicine systems in Africa. *African Journal of Emergency Medicine* 2011;1(1):5-7.
- (8) Anderson PD, Suter RE, Mulligan T, Bodiwala G, Razzak JA, Mock C, et al. World Health Assembly Resolution 60.22 and its importance as a health care policy tool for improving emergency care access and availability globally. *Ann Emerg Med* 2012;60(1):35-44. e3.
- (9) Wen LS, Geduld HI, Tobias Nagurney J, Wallis LA. Africa's first emergency medicine training program at the University of Cape Town/Stellenbosch University: history, progress, and lessons learned. *Acad Emerg Med* 2011;18(8):868-871.
- (10) Balfour C. *Emergency medicine: a new era in South African medicine*. 2006.
- (11) Wen LS, Geduld HI, Nagurney JT, Wallis LA. Perceptions of graduates from Africa's first emergency medicine training program at the University of Cape Town/Stellenbosch University. *CJEM* 2012;14(02):97-105.
- (12) Wallis LA, Garach SR, Kropman A. State of emergency medicine in South Africa. *International journal of emergency medicine* 2008;1(2):69-71.
- (13) Reynolds TA, Mfinanga JA, Sawe HR, Runyon MS, Mwafongo V. Emergency care capacity in Africa: A clinical and educational initiative in Tanzania. *J Public Health Policy* 2012:S126-S137.
- (14) Nowacki AK, Landes M, Azazh A, Ritchie LMP. A review of published literature on emergency medicine training programs in low-and middle-income countries. *International journal of emergency medicine* 2013;6(1):1.

- (15) Oxford University Press. attrition. Oxford Dictionaries. 2016; Available at: <http://www.oxforddictionaries.com/definition/e>. Accessed august 05, 2016.
- (16) Glossop C. Student nurse attrition from pre-registration courses: investigating methodological issues. *Nurse Educ Today* 2001;21(3):170-180.
- (17) Deary IJ, Watson R, Hogston R. A longitudinal cohort study of burnout and attrition in nursing students. *J Adv Nurs* 2003;43(1):71-81.
- (18) Ascend Learning L. Student attrition: Consequences, contributing factors, and remedies. 2012.
- (19) Gillis C. Leaving seats empty: Exploring student attrition in an undergraduate health sciences program 2007.
- (20) Kennedy KA, Brennan MC, Rayburn WF, Brotherton SE. Attrition rates between residents in obstetrics and gynecology and other clinical specialties, 2000-2009. *Journal of graduate medical education* 2013;5(2):267-271.
- (21) Dodson TF, Webb ALB. Why do residents leave general surgery? The hidden problem in today's programs. *Curr Surg* 2005;62(1):128-131.
- (22) Gifford E, Galante J, Kaji AH, Nguyen V, Nelson MT, Sidwell RA, et al. Factors associated with general surgery residents' desire to leave residency programs: a multi-institutional study. *JAMA surgery* 2014;149(9):948-953.
- (23) Bauer JM, Holt GE. National Orthopedic Residency Attrition: Who Is At Risk? *J Surg Educ* 2016.
- (24) Doan-Wiggins L, Zun L, Cooper MA, Meyers DL, Chen EH. Practice satisfaction, occupational stress, and attrition of emergency physicians. Wellness Task Force, Illinois College of Emergency Physicians. *Acad Emerg Med* 1995;2(6):556-563.
- (25) Ginde AA, Sullivan AF, Camargo C, Jr. Attrition from emergency medicine clinical practice in the United States. *Ann Emerg Med* 2010 08;56(2):166-171 6p.
- (26) Hall KN, Wakeman MA. Residency-trained emergency physicians: Their demographics, practice evolution, and attrition from emergency medicine. *J Emerg Med* 1999;17(1):7-15.
- (27) Joy T, Moran J, Hassan T, Walker B. The attractiveness of a career in Emergency Medicine: A survey of UK trainees. 2014.
- (28) Sawe HR, Murray B, Jamieson J. Compassion fatigue in emergency providers: Experiences from Sub-Saharan Africa. *EMERG MED AUSTRALAS* 2016 02;28(1):109-111 3p.
- (29) Reid C, Habig K, Hsu R, Coombes S. Emergency medicine in South Africa: Time to catch up. *S Afr Med J* 2012;102(10):836.
- (30) Tinto V. Dropout from higher education: A theoretical synthesis of recent research. *Review of educational research* 1975;45(1):89-125.

- (31) Tinto V. Limits of theory and practice in student attrition. *The journal of higher education* 1982;687-700.
- (32) Brunnsden V, Davies M, Shevlin M, Bracken M. Why do HE students drop out? A test of Tinto's model. *Journal of further and higher education* 2000;24(3):301-310.
- (33) Adams S. *Helping Students Stay: Student Withdrawal Research* 1992. 1996.
- (34) Albertyn R, Kapp C, Bitzer E. Profiling exiting postgraduate students' performance and experiences. *South African Journal of Higher Education* 2008;22(4):749-772.
- (35) Baldwin P, Dodd M, Wrate R. Young doctors' health—I. How do working conditions affect attitudes, health and performance? *Soc Sci Med* 1997;45(1):35-40.
- (36) Wrenn K, Lorenzen B, Jones I, Zhou C, Aronsky D. Factors affecting stress in emergency medicine residents while working in the ED. *Am J Emerg Med* 2010 10;28(8):897-902 6p.
- (37) Baldwin Jr DC, Daugherty SR, Tsai R, Scotti Jr MJ. A national survey of residents' self-reported work hours: thinking beyond specialty. *Academic Medicine* 2003;78(11):1154-1163.
- (38) Michael SY, Mrus JM, Mueller CV, Luckhaupt SE, Peterman AH, Puchalski CM, et al. Self-rated health of primary care house officers and its relationship to psychological and spiritual well-being. *BMC medical education* 2007;7(1):1.
- (39) Vidyarthi AR, Auerbach AD, Wachter RM, Katz PP. The impact of duty hours on resident self reports of errors. *Journal of general internal medicine* 2007;22(2):205-209.
- (40) Heyworth J, Whitley TW, Allison EJ, Revick DA. Correlates of work-related stress among consultants and senior registrars in accident and emergency medicine. *Arch Emerg Med* 1993;10(4):271-278.
- (41) Kimo Takayesu J, Ramoska EA, Clark TR, Hansoti B, Dougherty J, Freeman W, et al. Factors Associated With Burnout During Emergency Medicine Residency Factores Asociados con el Síndrome de Desgaste Profesional durante la Residencia de Medicina de Urgencias y Emergencias. *Acad Emerg Med* 2014 09;21(9):1031-1035 5p.
- (42) Freudenberger HJ. Burnout. *Loss, Grief & Care* 1989 02/15;3(1-2):1-10.
- (43) Arora M, Asha S, Chinnappa J, Diwan AD. Review article: burnout in emergency medicine physicians. *Emergency Medicine Australasia* 2013;25(6):491-495.
- (44) Maslach C, Jackson SE, Leiter MP. *Maslach Burnout Inventory*. Palo Alto. 1986.
- (45) Bragard I, Dupuis G, Fleet R. Quality of work life, burnout, and stress in emergency department physicians: a qualitative review. *European Journal of Emergency Medicine* 2015;22(4):227-234.
- (46) Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med* 2012 10/08;172(18):1377-1385.

- (47) Bellolio MF, Cabrera D, Sadosty AT, Hess EP, Campbell RL, Lohse CM, et al. Compassion fatigue is similar in emergency medicine residents compared to other medical and surgical specialties. *West J Emerg Med* 2014 09;15(6):629-635.
- (48) Lu DW, Dresden S, McCloskey C, Branzetti J, Gisondi MA. Impact of Burnout on Self-Reported Patient Care Among Emergency Physicians. *West J Emerg Med* 2015 12;16(7):996-1001.
- (49) De Haan S, Lamprecht H, Atkinson P, Howlett M, Adisesh A, Sohi D. Work stressors affecting emergency physicians and trainee emergency physicians: an international survey. unpublished .
- (50) Jenkins SR, Maslach C. Psychological health and involvement in interpersonally demanding occupations: A longitudinal perspective. *J Organ Behav* 1994;15(2):101-127.
- (51) Howlett M, Doody K, Murray J, LeBlanc-Duchin D, Fraser J, Atkinson PR. Burnout in emergency department healthcare professionals is associated with coping style: a cross-sectional survey. *Emerg Med J* 2015 Sep;32(9):722-727.
- (52) Frank JR, Ovens H. Shiftwork and emergency medical practice. *Cjem* 2002;4(06):421-428.
- (53) Kuhn G. Circadian rhythm, shift work, and emergency medicine. *Ann Emerg Med* 2001;37(1):88-98.
- (54) Culpepper L. The social and economic burden of shift-work disorder. *J Fam Pract* 2010;59(1):S3-S3.
- (55) Steele MT, Ma OJ, Watson WA, Thomas HA, Muelleman RL. The occupational risk of motor vehicle collisions for emergency medicine residents. *Acad Emerg Med* 1999;6(10):1050-1053.
- (56) Vyas MV, Garg AX, Iansavichus AV, Costella J, Donner A, Laugsand LE, et al. Shift work and vascular events: systematic review and meta-analysis. *BMJ* 2012 Jul 26;345:e4800.
- (57) Schueller-Weidekamm C, Kautzky-Willer A. Challenges of work-life balance for women physicians/mothers working in leadership positions. *Gender medicine* 2012;9(4):244-250.
- (58) Clem KJ, Promes SB, Glickman SW, Shah A, Finkel MA, Pietrobon R, et al. Factors Enhancing Career Satisfaction Among Female Emergency Physicians. *Ann Emerg Med* 2008;51(6):723-728.e8.
- (59) Carvin BN. New strategies for making exit interviews count. *Employ Relat Today* 2011;38(2):1-6.
- (60) Glossop C. Student nurse attrition: use of an exit-interview procedure to determine students' leaving reasons. *Nurse Educ Today* 2002;22(5):375-386.
- (61) Feldman DC, Klaas BS. The impact of exit questionnaire procedures on departing employees' self-disclosure. *J Manage Issues* 1999:13-25.

(62) Giacalone RA, Knouse SB, Montagliani A. Motivation for and prevention of honest responding in exit interviews and surveys. *J Psychol* 1997;131(4):438-448.

(63) Campion MA. Meaning and measurement of turnover: Comparison of alternative measures and recommendations for research. *J Appl Psychol* 1991;76(2):199.

(64) Brooks BA. Evidence-based human resources: the case for exit interview surveys. *J Nurs Adm* 2007;37(10):421-424.

(65) Kacius C, Stone CL, Bigatti S. Exit Interviews: A Decade of Data to Improve Student Learning Experiences. *Assessment Update* 2015;27(5):8-12.

PART B: MANUSCRIPT IN ARTICLE FORMAT FOR AJHPE

(African Journal of Health Professions Education)

Attrition amongst Emergency Medicine Registrars in the Western Cape: an exploration of contributing factors.

Author list: Candice van Koningsbruggen¹, Clint Hendrikse², Heike Geduld³

1. Candice van Koningsbruggen MBChB DipPEC
Division of Emergency Medicine
University of Cape Town, Cape Town, South Africa
drcvankoningsbruggen@yahoo.com
2. Clint Hendrikse MBChB MMed FCEM
Division of Emergency Medicine
University of Cape Town, Cape Town, South Africa
clint.hendrikse@uct.ac.za
3. Heike Geduld MBChB MMed FCEM
Division of Emergency Medicine
University of Cape Town, Cape Town, South Africa
heike.geduld@uct.ac.za

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All correspondence should be directed to Heike Geduld

Postal address: Division of Emergency Medicine, University of Cape Town,
F-51 Old Main Building, Groote Schuur Hospital, Anzio road, Cape Town,
7935

Email: heike.geduld@uct.ac.za

Telephone: +27 21 650 1829

Fax: +27 21 650 1829

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Abstract

Attrition amongst Emergency Medicine Registrars in the Western Cape: an exploration of contributing factors.

Background. Attrition of registrars impedes the development of Emergency Medicine (EM) in South Africa and Africa, which negatively affects health systems strengthening. Factors relating to attrition of registrars in the EM training program in the Western Cape had not previously been explored. Understanding these factors will enable the development of a framework to be used to conduct formal exit interviews. This exit interview will allow the Division to continually document and address factors related to attrition.

Objectives. To explore the factors contributing towards attrition amongst EM Registrars in the Western Cape, to enable a framework for a formal exit interview to be developed.

Methods. An explorative qualitative study was conducted using semi-structured interviews. Data was analysed using NVivo software and thematic qualitative analysis.

Results. Seven participants were interviewed (5 female and 2 male; ages 28-33). They joined the EM training program at different times (2005-2013) and their time spent in the program varied (8 months to 20 months). Despite their diverse histories, they voiced similar concerns regarding the training program (i.e. lack of support, unsociable hours), regarding relationships (i.e. motherhood, family time), and also with regards to self (i.e. burnout, work-life balance).

Conclusion. This study highlights the need for a formal exit interview to address attrition in the Division of EM. The framework for the exit interview should encompass factors related to self, relationships and the training program.

Main text of article

Introduction

Internationally, attrition from specialist training programs is a longstanding problem, specifically emergency medicine training programs.^[1-3] Attrition within the division of Emergency Medicine in Cape Town negatively affects throughput of specialists in to the field, and thereby hinders the development of Emergency Medicine as a speciality, both in South Africa, and the rest of Africa. While there is much literature on attrition from developed countries, there is no existing literature focusing on the factors which contribute toward attrition amongst emergency medicine registrars in the Western Cape.

Burnout and compassion fatigue are very well recognised in the literature as factors that contribute to attrition.^[1,4-6] Work-life balance and workload as a future consultant were suggested as major concerns by the College's Trainee Sustainability Survey^[3], while shift work, stress, and family considerations were identified as contributors towards attrition by Hall and Wakeman.^[7] Family and motherhood have been highlighted as concerns in professional women's lives.^[8] In the setting of postgraduate education, it is also important to consider the roles played by institutional support, supervisor support, personal attributes, and student engagement.^[9,10]

It is acknowledged that attrition may be more easily addressed if individual's specific reasons for leaving are known and understood.^[11] An exit interview is an excellent tool to be used to gather information regarding individuals' reasons for leaving^[12] so it is beneficial that the framework for this interview be developed to improve attrition within the Division of EM.

Aim

This study aimed to explore the self-identified factors contributing towards attrition of previous Emergency Medicine Registrars in the Western Cape.

Objectives

To explore the self-identified factors relating to attrition of previous Emergency Medicine registrars in the Western Cape, to enable the framework for a formal exit interview to be developed to assist with future registrar retention.

Methods

This was an explorative qualitative study using semi-structured interviews. Ethical approval was granted by UCT Human Research Ethics Committee. An email requesting participation in single-staged one-on-one semi-structured interviews was sent to all previous registrars of the Division of Emergency Medicine who had voluntarily left the program. Registrars that had resigned and then had either returned to complete their training, or completed it elsewhere were excluded. Participants were enrolled and interviewed until thematic saturation was reached. Figure 1 below demonstrates the enrolment process.

Three open-ended questions formed the basis for the semi-structured interviews for all participants, ‘What made you leave the emergency medicine registrar program?’, ‘What happened the day that you decided to leave?’, and ‘What would have made you stay?’ The interviews were all conducted by the same researcher, allowing the questions to be asked in the same fashion in each interview. The length of interviews varied according to participants’ responses. All the interviews were recorded and later transcribed for data analysis.

Thematic analysis was done manually by all researchers separately and together, following the stages of thematic analysis as described by Braun and Clarke.^[13] QSR International's NVivo 11 qualitative data analysis Software^[14] was used to support coding. Recurrent themes highlighted by the participants allowed for thematic saturation to be reached early, and also enabled clear themes to be identified for analysis. Iterative cycles of inductive analysis (using interview data from the study) and deductive analysis (using concepts from existing literature) were used to categorise the data into themes.

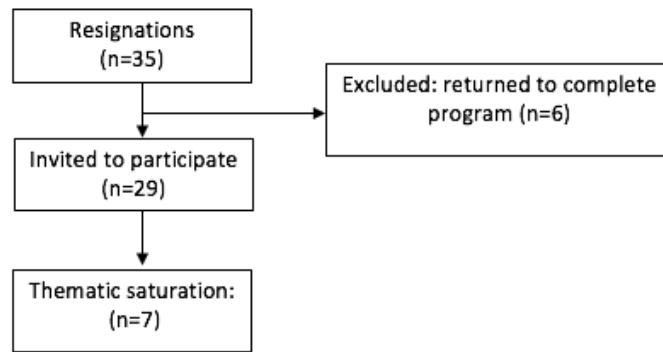


Figure 1: Enrolment of participants

Results

Of the 35 resignations from 2004 to 2014, 29 were invited to participate. A total of 7 participants were enrolled over a 3 month period (June 2016 – August 2016). Enrolment stopped after data saturation. 5 of the 7 participants were under 30 years of age at the time of joining the program, and 5 were female. 4 of the participants were married at the time of joining the program, while one participant was single, one was engaged, and one was divorced.

The participants' time of joining the program ranged between 2005 and 2013, however 4 participants joined the program between 2012 and 2013. Most participants (5 out of 7) spent a year or less in the program before leaving. Figure 2 below reflects the time of entry of each registrar in to the training program and the duration of time spent by each registrar in the program on the background of the attrition rate calculated per year.

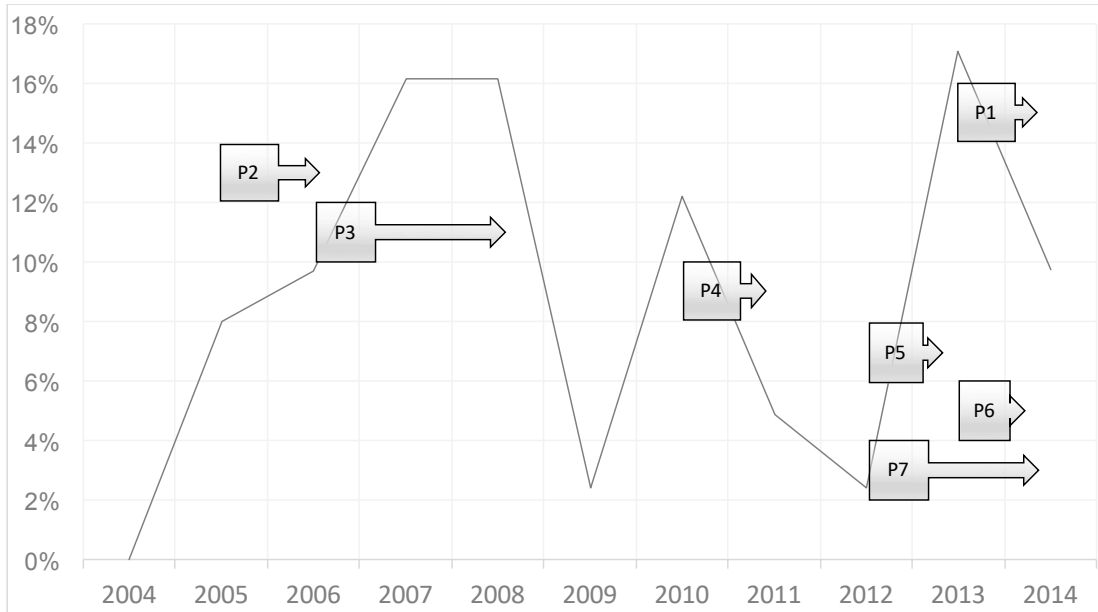


Figure 2: Attrition rate and timeline of participants

The majority of participants (5 out of 7) are no longer in jobs related to emergency medicine, and none of the participants had gone on to pursue registrar posts in other specialties.

Thematic analysis identified three key themes from the data: issues related to self, issues related to relationships, and issues related to the training program. These key themes are reflected in figure 3 below.

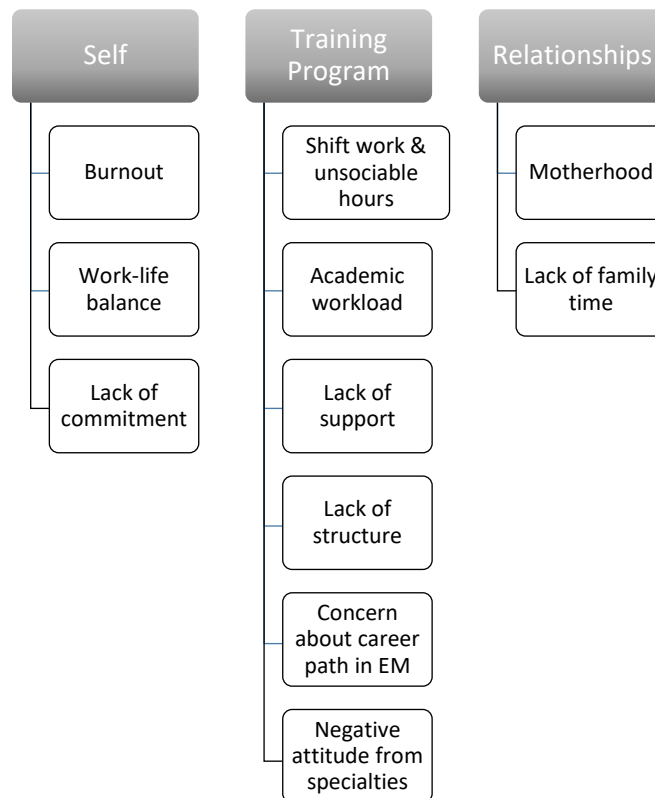


Figure 3: Framework of themes

What made you leave the emergency medicine training program?

Issues relating to self and the training program were found to play more of a role than issues related to relationships.

A cluster of symptoms relating to burnout, perceived issues surrounding work-life balance, and a self-expressed lack of commitment to the specialty were the most important self-identified concerns voiced by participants.

Concerns regarding relationships were found to be related mostly to motherhood and family time.

Issues related to the training program itself seemed to bear the most weight in participants' decisions to leave the registrar training program. Lack of support from seniors, from peers, and the academic setting was a significant concern, as was lack of structure of the academic program.

Work stressors included shift work and unsociable hours, as well as a perceived negative attitude from other specialties. The heavy academic workload was also

mentioned among the factors related to the training program, as was a concern regarding a future career path in emergency medicine.

The key factors described by the participants are summarised in table 1 below.

Table 1: Key factors in attrition identified by participants

<p>Issues relating to self</p> <p>Burnout</p> <p><i>'I was very emotional and not happy.'</i></p> <p><i>'I think a combination of just being burnt out and overworked and tired... and just not being happy to be at work.'</i></p> <p>Work life balance</p> <p><i>'Lack of provision for the fact that you're also a human being and you need to live a life as well as work.'</i></p> <p>Lack of commitment to the specialty</p> <p><i>'I hadn't truly committed to the program in the way I needed to commit to a specialisation program in order to see it to the end...I don't think I was applying myself in the way that I needed to...'</i></p>
<p>Issues relating to relationships</p> <p>Motherhood</p> <p><i>'She needed her mom to be at home a bit more'.</i></p> <p><i>'For me especially, I'm a woman, I want to have kids.'</i></p> <p>Lack of family time</p> <p><i>'One hundred percent family related.'</i></p> <p><i>'I and my husband were living past each other'.</i></p>
<p>Issues relating to the Training Program</p> <p>Lack of support</p> <p><i>'Lack of support from the senior people, like when you told them you were struggling there wasn't much of a give and take kind of thing...'</i></p>

Shift work and unsociable hours

'The physical work was exhausting.'

'Personally I don't deal well with working so many nights, only afterwards I realised how unhappy I was while I was doing it.'

Heavy academic workload

'Too much in too little time basically.'

Negative attitude from other specialties

'The other departments were not treating us as they should... they were just not recognising us...It was always sort of like we were inferior to them.'

Lack of structure

'It was very frustrating... no one knew what you were supposed to be doing there and no one knew what your role was, what your capacity was... they often saw you as a hindrance more than anything else.'

'Pretty unstructured... a lot of chopping and changing...'

Concern about a career path in EM

'There weren't even consultant roles generally, so you didn't even know where you were going to land up, where you could go.'

'I didn't want to be stuck in an EC essentially working as a glorified casualty officer for the rest of my career.'

What happened the day that you made the decision to leave?

The decision to leave emergency medicine was one that was not made lightly by any of the participants and all suggested that the decision was one that they had come to over time.

'I did really enjoy the work, I was just not enjoying the pressures that went with it.'

'No point in carrying on with something that I actually really know I don't want to do.'

Some of the participants were able to recall a particular day or event.

'In fact I think a patient had just broken my hand on the bed... but I don't think it was right then. It was after that, thinking "what the hell am I doing?"'

'I do the rosters in our house (...) I figured out that my child is going to stay at my parents' house for two weeks... that was the breaking point day where we just decided.'

What would have made you stay?

Participants' responses varied according to their reasons for leaving. Four participants acknowledged that they may have remained in the emergency medicine training program under different circumstances.

Many of the participants made reference to academic and senior support.

'I think the biggest thing would have been if they would have said to me take three months... you won't lose any time...you can come back once you've thought about it... I probably would have come back and carried on specialising.'

'When I decided to leave, no one really tried to make me stay...I think if someone had come up and said 'why is it that you want to leave' or 'do you just want to rather take a break?' ...that may well have changed a lot.'

'More time to do my proposal for the MMED...longer time to do my primaries...'

Nothing could have been done to retain others in the Emergency medicine training program.

'To be honest I don't think I am suited for emergency medicine, so I don't think anything actually would have made me stay.'

Discussion

Emergency Medicine (EM) as a specialty is relatively new in South Africa and there is still a scarcity of Emergency Physicians (EPs).^[15] Understanding factors contributing to attrition is essential to improve retention of registrars, to improve the

registrar training program, and to allow for growth of Emergency Medicine locally and in the rest of Africa.

The issues related to self that were identified as being the most important were burnout, work-life balance, and lack of commitment to the specialty.

The role of burnout in attrition is widely recognised in the literature ^[1, 5-6], and played a significant part in decisions to leave the EM program in this study. The role of burnout should not be underestimated in our setting if we want to encourage career longevity in EM and growth of the specialty. Burnout is inherently considered an issue related to self as both work-related and non-work-related factors are at play. ^[5] Excessive work related stressors leading to burnout were identified in a recent study comparing the South African EM registrars with their Canadian counterparts. ^[15]

A concern for work-life balance is also a factor that is not unique to our local setting. Research on attrition clearly shows worry regarding work-life balance and lifestyle factors in EM ^[3], and in other specialties ^[2], so it is unsurprising that our participants acknowledged it as a concern. As there are so few qualified EPs in SA currently, one can see why registrars may not feel reassured regarding long-term work-life balance.

Lack of commitment to EM as a specialty is a factor that was unexpectedly identified in this study. Lack of engagement affects learning and the chances of success. ^[9-10, 16] A more stringent admissions policy, and earlier identification of lack of commitment may help to mitigate against this factor.

Contributing factors related to relationships were not found to be as significant as the factors related to self and to the training program in this study.

In terms of motherhood, concern was expressed about wanting to start a family while in the training program, or already having children at home and having limited time for parenting. Only women reported these concerns in this study, which is in keeping with previous literature regarding the unique demands of professional women's lives. ^[8] It is interesting to note that in the Division of EM in the Western Cape, the ratio of male to female registrars is historically 1:1 despite these concerns.

The factor of family life was also only voiced by female participants, and involved the concepts of feeling responsible for family and spouses, as well as a desire to have enough time for family, spouses and friends.

While motherhood and family related factors could be difficult to address, a better understanding of these factors would enable better support which could improve retention.

With regards to issues related directly to the training program, the results corroborated many of the findings from the existing literature on attrition. [6, 10, 17-19]

Lack of support (from seniors, from peers and in an academic setting) was acknowledged as a major influence on attrition, and many of the participants expressed they may have not left if this support had been better. Increased faculty interaction with students was found by Tinto [10] to positively influence completion of studies, and locally it has also been found that institutional support and support from supervisors shaped student success.^[9] Increased numbers of EP's employed in the province has increased the available faculty in the last 5 years.

Unsocial hours and shift work were also highlighted. Due to the nature of EM and the need for service provision around the clock, the quantity and quality of hours involved play a huge role in attrition. Registrars in the ECs work on average 6 shifts per week (including 2 weekends per month), with the majority of their time on afternoon or night shifts. Shift work impacts on psychological, social and physical health, and is well documented to be a major contributor to attrition. [17-18]

The heavy academic workload in the EM training program was expressed by many to have contributed towards leaving, and was an unanticipated finding. There was a lack of international literature that specifically references excessive academic workload, so this is potentially a factor unique to our setting. EM Registrars are required to complete a number of prescribed courses including research and ultrasound, complete their Primary exam (FCEM Part I), and MMed dissertation as well as the Fellowship exam (FCEM Part II) during the 4 years of training. There have been proposals from Colleges within the CMSA including Emergency Medicine, for the extension of training time, to alleviate some of the time pressures placed on registrars in South Africa.

Participants also acknowledged that a negative perception of the EM speciality from other specialties played a role in attrition. They expressed that colleagues viewed the EM speciality as inferior, and did not have an adequate understanding of the specialty or the role of the EP. This view is understandable in the context of EM still being a relatively new medical specialty. It is expected that with expansion of EM as a specialty in RSA and the rest of Africa, our role will become clear, and this perception will no longer play a role.

Lack of structure within the training program was stated to be a problem very early on, and was not mentioned by participants who resigned in more recent years. Much of this was related to the changing of work rotations and schedules.

Concern about EM as a career path was another problem identified early on in the program. Although it was not mentioned by any of the recently resigned participants, a shortage of career options was identified in a study done with graduates of the EM training program that was published in 2012.^[19] This suggests that this is still a relevant concern and needs to be further explored.

For the purpose of mitigating attrition in our setting it is important to acknowledge the weight of the factors related to the training program itself. Not only did the participants view these issues as the most important, but they are issues that could be most easily addressed by the academic leadership.

It is important to note that the rate of resignations has decreased over the last few years. This may be attributed to recruitment changes (need for Primary exams prior to entering), which speaks to commitment and decreases academic workload later, and program changes (increased faculty and increased research support), which helps with issues concerning lack of support.

The use of exit interviews as a tool to assess and mitigate against attrition has been shown to be useful.^[20] In an effort to understand reasons for attrition of registrars from the division of emergency medicine in Cape Town, and further address these possible issues, it is suggested that exit interviews form part of a formal exiting registrar protocol. These interviews should be mandatory for all registrars leaving the program in order to have up to date information to better allow for continuing improvement. An online survey will enable anonymity which will allow for more informative and honest answers.

The exit interview framework should include factors related to self (work life balance, burnout and commitment); Relationships (motherhood and family) and Program issues (shift-work, workload, lack of support and career pathing).

While it is accepted that not all factors contributing towards attrition can be addressed or changed, it is still important to recognise and explore these factors to enable better support and progress going forward.

Limitations

Only 7 participants were enrolled. Despite thematic saturation, it is uncertain whether other factors would have been identified with a wider sample. The aim was not to identify all factors, but develop a framework so as to explore these in the future. Incorrect contact details prevented us from approaching 5 of the previous registrars, and 6 were excluded as they had returned to the program or completed it elsewhere.

Conclusion

South Africa and Africa are in dire need of improved access to care. With more specialist EPs in the country, the goal of providing high quality emergency care in a strengthened health system is more attainable.

Exploring the reasons for attrition of registrars from the EM training program in the Western Cape will allow for these factors to be addressed and thereby increase registrar retention within the division, improving throughput of EPs. This study highlights the need for the development of a formal exit interview framework to address attrition in the future by the Division of Emergency Medicine. Issues related to burnout, working hours, work-life balance and academic support are important considerations for all post-graduate training programs, and questions around these issues should be used to inform the interview framework for all exiting registrars.

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References

- (1) Doan-Wiggins L, Zun L, Cooper MA, et al. Practice satisfaction, occupational stress, and attrition of emergency physicians. Wellness Task Force, Illinois College of Emergency Physicians. *Acad Emerg Med* 1995;2(6):556-563. <http://dx.doi.org/10.1111/j.1553-2712.1995.tb03261.x>
- (2) Gifford E, Galante J, Kaji AH, et al. Factors associated with general surgery residents' desire to leave residency programs: a multi-institutional study. *JAMA surgery* 2014;149(9):948-953. <http://dx.doi.org/10.1001/jamasurg.2014.935>
- (3) Joy T, Moran J, Hassan T, et al. The attractiveness of a career in Emergency Medicine: A survey of UK trainees. 2014.
- (4) Sawe HR, Murray B, Jamieson J. Compassion fatigue in emergency providers: Experiences from Sub-Saharan Africa. *Emergency Medicine Australasia* [Internet]. Wiley-Blackwell; 2016;28(1):109–11. <http://dx.doi.org/10.1111/1742-6723.12536>
- (5) Arora M, Asha S, Chinnappa J, et al. Review article: burnout in emergency medicine physicians. *Emergency Medicine Australasia* 2013;25(6):491-495. <http://dx.doi.org/10.1111/1742-6723.12135>
- (6) Kimo Takayesu J, Ramoska EA, Clark TR, et al. Factors associated with burnout during emergency medicine residency. *Acad Emerg Med* 2014 09;21(9):1031-1035. <http://dx.doi.org/10.1111/acem.12464>
- (7) Hall KN, Wakeman MA. Residency-trained emergency physicians: Their demographics, practice evolution, and attrition from emergency medicine. *J Emerg Med* 1999;17(1):7-15. [http://dx.doi.org/10.1016/s0736-4679\(98\)00119-x](http://dx.doi.org/10.1016/s0736-4679(98)00119-x)
- (8) Schueller-Weidekamm C, Kautzky-Willer A. Challenges of work–life balance for women physicians/mothers working in leadership positions. *Gender medicine* 2012;9(4):244-250. <http://dx.doi.org/10.1016/j.genm.2012.04.002>
- (9) Albertyn R, Kapp C, Bitzer E. Profiling exiting postgraduate students' performance and experiences. *South African Journal of Higher Education* 2008;22(4):749-772. <http://dx.doi.org/10.4314/sajhe.v22i4.25814>
- (10) Tinto V. Limits of theory and practice in student attrition. *The journal of higher education* 1982:687-700. <http://dx.doi.org/10.2307/1981525>

- (11) Brunsdon V, Davies M, Shevlin M, Bracken M. Why do HE students drop out? A test of Tinto's model. *Journal of further and higher education* 2000;24(3):301-310. <https://doi.org/10.1080/030987700750022244>
- (12) Carvin BN. New strategies for making exit interviews count. *Employ Relat Today* 2011;38(2):1-6. <http://dx.doi.org/10.1002/ert.20338>
- (13) Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative research in psychology* 2006;3(2):77-101. <http://dx.doi.org/10.1191/1478088706qp063oa>
- (14) QSR International Pty Ltd. NVivo qualitative data analysis Software. 2015;11.
- (15) De Haan S, Lamprecht H, Atkinson P, et al. Work stressors affecting emergency physicians and trainee emergency physicians: an international survey. Unpublished.
- (16) Tinto V. Dropout from higher education: A theoretical synthesis of recent research. *Review of educational research* 1975;45(1):89-125. <http://dx.doi.org/10.2307/1170024>
- (17) Frank JR, Ovens H. Shiftwork and emergency medical practice. *Cjem* 2002;4(06):421-428. <http://dx.doi.org/10.1017/s1481803500007934>
- (18) Kuhn G. Circadian rhythm, shift work, and emergency medicine. *Ann Emerg Med* 2001;37(1):88-98. <http://dx.doi.org/10.1067/mem.2001.111571>
- (19) Wen LS, Geduld HI, Nagurney JT, et al. Perceptions of graduates from Africa's first emergency medicine training program at the University of Cape Town/Stellenbosch University. *CJEM* 2012;14(02):97-105. <https://doi.org/10.2310/8000.2012.110639>
- (20) Glossop C. Student nurse attrition: use of an exit-interview procedure to determine students' leaving reasons. *Nurse Educ Today* 2002;22(5):375-386. <https://doi.org/10.1054/nedt.2001.0724>

PART C: ADDENDA

1. Instructions to Authors – AJHPE



“Author Guidelines

Author Guidelines

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To submit a manuscript, please proceed to the AJHPE Editorial Manager website:

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To access and submit an article already in production, please see the guidelines [here](#).

Author Guidelines

Please take the time to familiarise yourself with the policies and processes below. If you still have any questions, please do not hesitate to ask our editorial staff (tel.: +27 (0)21 532 1281, email: submissions@hmpg.co.za).

Authorship

Named authors must consent to publication. Authorship should be based on: (i) substantial contribution to conceptualisation, design, analysis and interpretation of data; (ii) drafting or critical revision of important scientific content; or (iii) approval of the version to be published. These conditions must all be met for an individual to be included as an author (uniform requirements for manuscripts submitted to biomedical journals; refer to www.icmje.org)

If authors' names are added or deleted after submission of an article, or the order of the names is changed, all authors must agree to this in writing.

Please note that co-authors will be requested to verify their contribution upon submission. Non-verification may lead to delays in the processing of submissions.

Author contributions should be listed/described in the manuscript.

Conflicts of interest

Conflicts of interest can derive from any kind of relationship or association that may influence authors' or reviewers' opinions about the subject matter of a paper. The existence of a conflict – whether actual, perceived or potential – does not preclude publication of an article. However, we aim to ensure that, in such cases, readers have all the information they need to enable them to make an informed assessment about a publication's message and conclusions. We require that both authors and reviewers declare all sources of support for their research, any personal or financial relationships (including honoraria, speaking fees, gifts received, etc) with relevant individuals or organisations connected to the topic of the paper, and any association with a product or subject that may constitute a real, perceived or potential conflict of interest. If you are unsure whether a specific relationship constitutes a conflict, please contact the editorial team for advice. If a conflict remains undisclosed and is later brought to the attention of the editorial team, it will be considered a serious issue prompting an investigation with the possibility of retraction.

Research ethics committee approval

Authors must provide evidence of Research Ethics Committee approval of the research where relevant. Ensure the correct, full ethics committee name and reference number is included in the manuscript.

If the study was carried out using data from provincial healthcare facilities, or required active data collection through facility visits or staff interviews, approval should be sought from the relevant provincial authorities. For South African authors, please refer to the guidelines for submission to the [National Health Research Database](#). Research involving human subjects must be conducted according to the principles outlined in the Declaration of Helsinki. Please refer to the National Department of Health's guideline on [Ethics in Health research: principles, processes and structures](#) to ensure that the appropriate requirements for conducting research have been met, and that the HPCSA's [General Ethical Guidelines for Health Researchers](#) have been adhered to.

Protection of rights to privacy

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Information that would enable identification of individual research participants should not be published in written descriptions, photographs, radiographs and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) has given informed written consent for publication and distribution. We further recommend that the published article is disseminated not only to the involved researchers but also to the patients/participants from whom the data was drawn. Refer to [Protection of Research Participants](#). The signed consent form should be submitted with the manuscript to enable verification by the editorial team.

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Preparing an article for anonymous review

To ensure a fair and unbiased review process, all submissions are to include an anonymised version of the manuscript. The exceptions to this requirement are Correspondence, Book reviews and Obituary submissions.

Submitting a manuscript that needs additional blinding can slow down your review process, so please be sure to follow these simple guidelines as much as possible:

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- Please remove title page, acknowledgements, contact details, funding grants to a named person, and any running headers of author names.
- Mask self-citations by referring to your own work in third person.

General article format/layout

Submitted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction prior to being sent for review, which will delay publication.

General:

- Manuscripts must be written in UK English (this includes spelling).
- The manuscript must be in Microsoft Word or RTF document format. Text must be 1.5 line spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes). Pages and lines should be numbered consecutively.
- Please make your article concise, even if it is below the word limit.
- Qualifications, **full** affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.
- Include sections on Acknowledgements, Conflict of Interest, Author Contributions and Funding sources. If none is applicable, please state 'none'.
- Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.
- Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.
- Quotes should be placed in single quotation marks: i.e. 'The respondent stated: ...'
- Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.

If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the *only* exception. Please DO NOT use fill, format lines and so on.

Preparation notes by article type

Research

Guideline word limit: 3 000 words (excluding abstract and bibliography)

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Where appropriate, sample size calculations should be included to demonstrate that the study is not underpowered. Results should

describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

- May include up to 6 illustrations or tables.
- A max of 20 - 25 references

Structured abstract

- This should be no more than 250 words, with the following recommended headings:
 - **Background:** why the study is being done and how it relates to other published work.
 - **Objectives:** what the study intends to find out
 - **Methods:** must include study design, number of participants, description of the research tools/instruments, any specific analyses that were done on the data.
 - **Results:** first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.
 - **Conclusion:** must be supported by the data, include recommendations for further study/actions.
- Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors. It should be able to be intelligible to the reader without referral to the main body of the article.
- Do not include any references in the abstracts.

[Here](#) is an example of a good abstract.

Scientific letters/short reports

These are shorter length, scholarly research articles of no more than 1500 words. Single-institution, and/or studies with sample sizes <100 are better submitted as short reports.

Guideline word limit: 1500 words

- Abstract: Structured, of about 250 words, with the following recommended headings: Background, Objectives, Methods, Results, and Conclusion.
- May include only one illustration or table
- A maximum of 8 references

Forum articles

Are personal opinion pieces that address an area in health professions education that would be of interest to the readership. Forum pieces while reflecting the authors personal views, should be scholarly, and arguments well-supported.

- They should not exceed 1000 words
- Up to 5 references are allowed.

Short communications

Are very brief articles that share work in progress, lessons learnt or innovations in medical education.

- They should be no more than 500 words in length
- A maximum of 3 references, and 1 table or figure.
- Short Communications should be structured under the following headings: Why was the idea necessary (Problem), What was tried (Approach) and What were the lessons learnt (Outcomes).

Correspondence (Letters to the Editor)

Guideline word limit: 400 words

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- May include only one illustration or table
- Must include a correspondence address.

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Should be offered within the first year of the practitioner's death, and may be accompanied by a photograph.

Illustrations/photos/scans

- If illustrations submitted have been published elsewhere, the author(s) should provide evidence of consent to republication obtained from the copyright holder.
- Figures must be numbered in Arabic numerals and referred to in the text e.g. '(Fig. 1)'.
- Each figure must have a caption/legend: Fig. 1. Description (any abbreviations in full).
- All images must be of high enough resolution/quality for print.
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- Ensure all graph axes are labelled appropriately, with a heading/description and units (as necessary) indicated. Do not include decimal places if not necessary e.g. 0; 1.0; 2.0; 3.0; 4.0 etc.
- Each image must be attached individually as a 'supplementary file' upon submission (not solely embedded in the accompanying manuscript) and named Fig. 1, Fig. 2, etc.

Tables

- Tables should be constructed carefully and simply for intelligible data representation. Unnecessarily complicated tables are strongly discouraged.
- Large tables will generally not be accepted for publication in their entirety. Please consider shortening and using the text to highlight specific important sections, or offer a large table as an addendum to the publication, but available in full on request from the author.
- Embed/include each table in the manuscript Word file - do not provide separately as supplementary files.
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Do not: Use [Enter] within a row to make 'new rows':

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Combine into one column, *n* (%):

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NB: Only complete, correctly formatted reference lists in Vancouver style will be accepted. If reference manager software is used, the reference list and citations in text are to be unformatted to plain text before submitting.

- Authors must verify references from original sources.
- Citations should be inserted in the text as superscript numbers between square brackets, e.g. These regulations are endorsed by the World Health Organization,^[2] and others.^[3,4-6]
- All references should be listed at the end of the article in numerical order of appearance in the Vancouver style (not alphabetical order).
- Approved abbreviations of journal titles must be used; see the [List of Journals in Index Medicus](#).
- Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al.
- Volume and issue numbers should be given.
- First and last page, in full, should be given e.g.: 1215-1217 **not** 1215-17.
- Wherever possible, references must be accompanied by a digital object identifier (DOI) link. Authors are encouraged to use the DOI lookup service offered by [CrossRef](#):
 - On the Crossref homepage, paste the article title into the 'Metadata search' box.
 - Look for the correct, matching article in the list of results.
 - Click Actions > Cite
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Some examples:

- *Journal references:* Price NC, Jacobs NN, Roberts DA, et al. Importance of asking about glaucoma. Stat Med 1998;289(1):350-355. <http://dx.doi.org/10.1000/hgjr.182>
- *Book references:* Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101.

- *Chapter/section in a book:* Weinstein L, Swartz MN. Pathogenic Properties of Invading Microorganisms. In: Sodeman WA, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.
- *Internet references:* World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: WHO, 2002. <http://www.who.int/whr/2002> (accessed 16 January 2010).
- Legal references
- Government Gazettes:

National Department of Health, South Africa. National Policy for Health Act, 1990 (Act No. 116 of 1990). Free primary health care services. Government Gazette No. 17507:1514. 1996.

In this example, 17507 is the Gazette Number. This is followed by :1514 - this is the notice number in this Gazette.

- Provincial Gazettes:

Gauteng Province, South Africa; Department of Agriculture, Conservation, Environment and Land Affairs. Publication of the Gauteng health care waste management draft regulations. Gauteng Provincial Gazette No. 373:3003, 2003.

- Acts:

South Africa. National Health Act No. 61 of 2003.

- Regulations to an Act:

South Africa. National Health Act of 2003. Regulations: Rendering of clinical forensic medicine services. Government Gazette No. 35099, 2012. (Published under Government Notice R176).

- Bills:

South Africa. Traditional Health Practitioners Bill, No. B66B-2003, 2006.

- Green/white papers:

South Africa. Department of Health Green Paper: National Health Insurance in South Africa. 2011.

- Case law:

Rex v Jopp and Another 1949 (4) SA 11 (N)

Rex v Jopp and Another: Name of the parties concerned

1949: Date of decision (or when the case was heard)

(4): Volume number

SA: SA Law Reports

11: Page or section number

(N): In this case Natal - where the case was heard. Similarly, (C) would indicate Cape, (G) Gauteng, and so on.

NOTE: no . after the v

- *Other references (e.g. reports) should follow the same format:* Author(s). Title. Publisher place: Publisher name, year; pages.
- Cited manuscripts that have been accepted but not yet published can be included as references followed by '(in press)'.
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From submission to acceptance

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5. The CE will finalise the article and then it will be typeset.
6. Once typeset, the CE will send a PDF of the file to the authors to complete their final check, while simultaneously sending to the 2nd-eye proofreader.
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2. The submission has not been previously published, nor is it before another journal for consideration.
3. The text complies with the stylistic and bibliographic requirements in [Author Guidelines](#).
4. The manuscript is in Microsoft Word document format. The text is 1.5-spaced, in 12-point Times New Roman font, and contains no unnecessary formatting.
5. Illustrations/figures are high resolution/quality (not compressed) and in an acceptable format (preferably JPEG or PDF). These must be submitted as 'supplementary files' (not in the manuscript).
6. For illustrations/figures or tables that have been published elsewhere, the author has obtained written consent to republication from the copyright holder.
7. Where possible, references are accompanied by a digital object identifier (DOI).
8. An abstract has been included where applicable.
9. The research was approved by a Research Ethics Committee (if applicable)
10. Any conflict of interest (or competing interests) is indicated by the author(s).

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2. Consent forms



Appendix A: Consent form

Dear Colleague

You are invited to participate in a research project **which is being conducted for degree purposes.**

Project Title

“Attrition amongst Emergency Medicine Registrars in the Western Cape: an exploration of contributing factors.”

Emergency Medicine is still a relatively new specialty within South Africa and Africa, and its growth is negatively affected by the high attrition rate of trainees. With an attrition rate of 33%, factors relating to the attrition of registrars in the Emergency Medicine training program in the Western Cape need to be explored. This research serves as a basis to identify the factors implicated in registrar attrition in Cape Town to enable a formal framework to be developed which will be used to conduct formal exit interviews. This exit interview framework will allow the Division to continually document and address factors related to attrition.

The purpose of this research is to find out “Why did you leave the Emergency Medicine Registrar Program?” Participants will include previous Emergency Medicine registrars from the division of Emergency Medicine, Western Cape who did not complete their training. **It is hoped that your experience will help in identifying factors associated with registrar attrition so that these issues may be addressed in the future to ensure growth of emergency medicine as a specialty in South Africa and Africa.**

If you choose to participate in the study, you will take part in a **single stage face-to-face** interview, **which will be held at a venue which is convenient for you. The interview is expected to run for approximately 30 minutes. The interview** will centre on reasons for you leaving the registrar program in an effort to identify factors associated with registrar attrition.

Your interview will be recorded, and notes taken for data analysis, however **your privacy will be protected and your opinions will remain confidential. Data from your interview will be password protected and stored on the investigator's laptop, and also backed up to a cloud storage facility under password protection. The audio-recordings and transcriptions will be kept until the study is completed and results are compiled, after which they will be destroyed.** Results of the research will be made available to you if you so wish.

Your participation is entirely voluntary and **you** have the right to withdraw participation at any point. **If you choose not to participate in this study, or decide to withdraw from the study at any time, this will not influence your current or any future employment. You** will not be financially reimbursed for participation in the study, **and there are no direct benefits to you for choosing to take part in this study**

It is not expected that **you** would come to any harm by participating in the study. If **you** experience any negative emotions during the interview process, **you** will be encouraged to voice **your** concerns and experiences, and if required, **you** can make use of ICAS services.

You may contact the Faculty of Health Sciences Human Research Ethics Committee (HREC) if you have any concerns or questions regarding your rights or welfare as a research participant.

Investigators

- Dr C Van Koningsbruggen
- Dr H Geduld
- Dr C Hendrikse

Contact details

Dr C Van Koningsbruggen (MMed Student)

Email: drcvankoningsbruggen@yahoo.com

Cell number: 084 464 5353

Dr H Geduld (PI)

Email: heike.geduld@westerncape.gov.za

Cell number: 084 757 1565

Dr C Hendrikse

Email: clint.hendrikse@westerncape.gov.za

Cell number: 079 084 1253

Faculty of Health Sciences HREC

Email: shuretta.thomas@uct.ac.za

Cell number: 021 406 6338



Consent for interviews

I _____ hereby agree to participate in the above study as explained above. I consent to an interview, which will be transcribed for data analysis purposes. My **privacy will be protected and the data collected will be confidential**. I accept the possible risks and acknowledge that there is no financial reimbursement for participation.

Participant name: _____

Participant signature: _____

Date: _____

Investigator name: _____

Investigator signature: _____

Date: _____



Consent for audio recording

I _____ hereby agree to participate in the above study as explained above. I consent to the audio recording of an interview, which will be transcribed for data analysis purposes. My **privacy will be protected and the data collected will be confidential**. I accept the possible risks and acknowledge that there is no financial reimbursement for participation.

Participant name: _____

Participant signature: _____

Date: _____

Investigator name: _____

Investigator signature: _____

Date: _____

3. Acknowledgements

I would like to acknowledge the time so generously donated by the participants who consented to interviews.

4. Research protocol

Attrition amongst Emergency Medicine Registrars in the Western Cape: an exploration of contributing factors.

Student: Dr CA Van Koningsbruggen
MBChB (UKZN), DipPEC (SA)
Division of Emergency Medicine
University of Cape Town
Student number: VKNCAN001

Supervisors: Dr H Geduld MBChB, MMed, FCEM (SA)
Dr C Hendrikse MBChB, MMed, FCEM (SA)

This study is in partial fulfilment of the MMED: Emergency Medicine degree (UCT)

I, *Candice Van Koningsbruggen*, hereby declare that the work on which this proposal/ dissertation/ thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

I empower the university to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signature:

Date: 25 April 2016

Summary / Abstract

Emergency Medicine is still a relatively new specialty within South Africa and Africa, and its growth is negatively affected by the high attrition rate of trainees. With an estimated attrition rate of 33%, factors relating to the attrition of registrars in the Emergency Medicine training program in the Western Cape need to be explored. This research serves as a basis to identify the factors implicated in registrar attrition in Cape Town to enable a formal framework to be developed which will be used to conduct formal exit interviews. This exit interview framework will allow the Division to continually, document and address factors related to attrition.

Aim: This study aims to explore the factors contributing to attrition amongst Emergency Medicine Registrars in the Western Cape, and use this information to develop a framework for a formal exit interview.

Methods: The study will take the form of an explorative qualitative study using a single stage interview with volunteers. Kvale's model of an interview investigation will be followed. Interview data will be analysed on an ad-hoc basis using Marshall and Rossman's process of descriptive thematic analysis methods.

Discussion: The findings of this study will be used to develop a framework for formal exit interviews. This will enable factors relating to attrition to be further explored, documented and addressed to decrease attrition amongst Emergency Medicine Registrars in the Western Cape and build a sustainable Emergency Medicine workforce.

Background / Literature review

The first formal emergency medicine training programs were established in the 1970s. (1) The specialty of Emergency Medicine was first recognised in South Africa in 2003, and in 2004, the first formal Emergency Medicine training program in South Africa and on the African continent was started in Cape Town by the University of Cape Town and the University of Stellenbosch. (2)

To date, 66 registrars have completed the training program established by the Division of Emergency Medicine (at the University of Cape Town and the University of Stellenbosch). While this in itself is progress for the specialty of Emergency Medicine in South Africa, and Africa, it is concerning to note that 33 registrars have resigned since the program's start in 2004. While the current attrition rate of 33% has improved from an attrition rate of close to 50% which was documented in the first four years of the registrar program (3), the factors influencing this high rate of attrition still need to be addressed.

Historically, attrition within the specialty of Emergency Medicine has been a problem. (4) Countries with longer established EM training programs quote different rates of attrition within Emergency Medicine (5), and no studies have yet been conducted locally to determine factors for the high attrition rate within the division of emergency medicine in the Western Cape.

In a survey amongst Emergency Medicine trainees in the UK in 2014, it was found that the 'work/life balance of the consultant workforce' was a major concern to the participants. (5) The participants also voiced concern over adequate remuneration for the anti-social hours worked. Of particular interest was the number of participants (10.3%) who expected they may work in other disciplines in the future. (5)

Emergency Medicine Registrars are not only full time workers, but also full time trainees, so there are a multitude of possible academic and occupational reasons for attrition. It is postulated that this may include working conditions, long working hours and shift work. Fatigue is a well-known contributor to burnout and stress. (6) Over thirty percent of Emergency Physicians reported that stress and burnout is a significant ongoing issue in their working lives in a 2008 study on career satisfaction in Emergency Medicine. (6) While this percentage is alarming, it is essential to determine whether these issues are at play in our local training program.

Due to the diversity of the group of registrars in the Western Cape, it is also possible that gender issues, cultural issues and financial issues could play a part in attrition. Predictors of career satisfaction that are most beneficial to women Emergency Physicians are degree of recognition in the workplace, career advancement opportunities, flexibility of work

schedules, and equal financial reimbursement as their male colleagues. (7) These may influence female registrars actualising their future careers.

As registrars are full time students, it is possible that academic demands could play a role in attrition too. Tinto's Model of Student Integration describes student attrition as "a longitudinal process of interactions between the individual and the academic and social systems of the college during which a person's experiences in those systems... continually modify his goals and institutional commitments in ways which lead to persistence and/or to varying forms of dropout". (8) Tinto also further explores other possible reasons for student disengagement, for example, the role of finances, and the roles of gender, race, age and social status backgrounds.(9) Brunson et al (2000) suggests that there is a need for new explanations of dropout, and that these explanations should be driven from the students' perspective,(10) and further emphasizes the suggestion by Adams (1996) that more attention needs to be given to identifying the specific reasons and circumstances that surround an individual student's decision to withdraw from higher education(11) In more local research, Bezuidenhout et al. suggests that looking more carefully into alienation and engagement is useful to explore the learning experiences of postgraduate students.(12) These and other factors will be further explored during the interview process.

Emergency medicine is still a relatively new specialty in South Africa and the rest of Africa. With such high attrition rates within the specialty, and specifically within registrar training, one must raise the question of 'why'. Factors influencing attrition need to be identified and addressed so as to ensure better retention of registrars and Emergency Medicine staff in general. A sustainable Emergency Medicine workforce will allow for the proper growth and establishment of the specialty in South Africa, and the rest of Africa. The more staff and registrars that we are able to retain, the more successful we will be at disseminating Emergency Care in the country and improving access to Emergency Care where it is needed most.

Research question

What are the self-identified factors influencing attrition in a sample of previous registrars in Emergency Medicine at the University of Cape Town and Stellenbosch University?

Aim

This study aims to explore the self-identified factors contributing towards attrition of previous Emergency Medicine registrars in the Western Cape.

Objectives

To explore the self-identified factors relating to attrition of previous Emergency Medicine registrars in the Western Cape.

To use the information gathered to develop an exit interview framework for future Emergency Medicine registrars.

Methodology

Study design

This project will take the form of an explorative qualitative study using a single stage interview with volunteers.

Characteristics of the study population

The study population will consist of doctors that previously registered as Emergency Medicine Registrars with the division of Emergency Medicine (through either the University of Cape Town or Stellenbosch University) from 2004 to 2014, who resigned before fulfilling exit requirements.

Recruitment and enrolment

Although it is hoped to attract a diverse group of participants to give a wide range of insights into the possible reasons for attrition, this may not be possible as participation in this study will be entirely voluntary. A study invitation will be sent by email to all doctors who have previously registered as Emergency Medicine registrars in the Western Cape, which will allow individuals to volunteer to take part in the study. Permission to access UCT student records will be obtained from the executive director of the Department of Student Affairs, UCT. Ethics approval from Stellenbosch University will be obtained if Stellenbosch university records need to be accessed for the study. A list containing the names and contact details of previous registrars who did not complete the program will be obtained with permission from Divisional Records and this list will be used to make contact with possible volunteers by email. If less than three doctors volunteer to participate, a second email request will be sent out two weeks later. As participation is voluntary to protect individual's autonomy, the sample size for the study is not known. Consent forms will be completed prior to the start of the interviews (see appendix A), indicating the volunteers' willingness to take part in the study as well as their willingness to be recorded. The participants' privacy will be protected and the data will remain confidential.

Research procedures and data collection methods

Semi-structured interviews will be conducted consisting of open and closed ended questions and will aim to obtain information regarding the reasons for these doctors leaving the Emergency Medicine registrar program prior to completion. All the participants will be asked the same three open ended questions as a basis for the interview – “What made you leave?”, “What happened the day you made the decision to leave?”, and “What would have made you stay?”. The interview will be conducted in a private setting, and at a time of the participant’s choosing, so as to enable the participant to feel as comfortable as possible. The interviews will be conducted by a member of the research team who has been trained in interview techniques. This interviewer will be a peer and not in a power position or affiliated with the academic or administrative running of the division of Emergency Medicine. Research supervisors will not be present at the interviews.

After the interviews, the data in the form of audio recordings and interview notes, will be transcribed. The transcribed data will then be analysed and coded, thereby generating themes.

The interviews will follow Kvale’s model, ‘The seven stages of an interview investigation’ (13), i.e., thermalizing, designing, interviewing, transcribing, analysing, verifying and reporting. The interviewer will have been trained in interview techniques and a supervised pilot interview will be conducted by the research team prior to the study.

Consent will be taken separately for the interview and for audio recording of all interviews. Participants’ privacy will be protected and will only be referred to as study identifiers in recordings and interviewer notes.

Data safety and monitoring

Data collected (interview notes, audio recordings and transcriptions from interviews) will be stored on the principal investigator’s personal laptop, requiring a password for access. Data will be backed up to cloud storage, also requiring a password for access. Audio data and notes will be anonymised. This data will be stored until the study is completed, after which it will be deleted from the investigator’s personal laptop and cloud storage.

Data analysis

Data from the interviews will be analysed on an ad-hoc basis using thematic content analysis. The process of thematic analysis as described by Marshall and Rossman (14) will be adhered to. Resulting themes will be synthesised in terms of context and literature. Thick descriptions of participants’ experiences and feelings will be used to exemplify the data. Coding of all interview data will be done after the interviews using NVivo software in order

to test validity. (15) Member checking will be done through secondary engagement with selected participants if necessary to clarify the accuracy and validity of specific data.

Ethical considerations

To protect participants' autonomy, potential participants will be contacted by email. The study will be fully explained to them, and it will be explained that participation will be entirely voluntary, that there are no direct benefits to participating in the study, and that participation or declining participation will not influence participants' current or future employment. Once the potential participants have agreed to take part in the study, formal written consent will be taken.

The participants' identities will be protected and their individual views will remain confidential.

There will be no financial reimbursement for participating in the study, and this will be explained to potential participants prior to being enrolled.

Due to the nature of the study, it is expected that some participants may experience some negative emotions during the interviews. This will be explained to the potential participants prior to enrolment. If participants experience any negative emotions, they will be encouraged to make use of the services of ICAS. If the participant requires the services of ICAS and no longer works for the Provincial Government of the Western Cape, or does not have access to ICAS, then the study will provide payment for an ICAS session per participant.

Permission to access UCT Student Records will be obtained from the Executive Director of the Department of Student Affairs, UCT. Ethics approval from Stellenbosch University will be obtained if Stellenbosch University records need to be accessed for the study. In addition, the proposal and UCT ethics approval (once obtained) will be submitted to Stellenbosch University if their records need to be accessed for the study.

Dissemination of findings plan

A copy of the final document including the study's results and discussion will be made available to the division of Emergency Medicine of the Western Cape, as well as the recommendations for the development of the formal exit interview.

Findings of the study will also be submitted to a journal in publishable format for publication.

Copies of the findings will be sent to the participants if requested.

Project timeline

It is estimated that the study will take approximately four months to complete as shown in the table below.

Table 1: Project timeline

	April	May	June	July
Ethics	x			
Data Collection		x	x	
Data Analysis			x	
Compilation of report				x
Submission				x

Resource utilisation and budget

This project will be self-funded and the expected costs are shown below.

Table 2: Resource utilisation and budget

Item	Cost
Stationery	R500
Petrol (Estimated at travelling an average of 10km per interview, three participants – approximately 30km)	R3.75 per km 30km @ R3.75 per km R112.50
Audio Recorder / Dictaphone	R1500
Data transcription (estimated @ one hour of recording per interview, and three participants – approximately 3 hours of audio recording).	R9.00 per audio minute 180 minutes @ R9.00 per minute R1620
Total cost	R3732.50

References

- (1) Arnold JL, Holliman CJ. Lessons learned from international emergency medicine development. *Emerg Med Clin North Am* 2005; 23(1):133-147.
- (2) Wen LS, Geduld HI, Nagurney JT, Wallis LA. Perceptions of graduates from Africa's first emergency medicine training program at the University of Cape Town/Stellenbosch University. *CJEM* 2012; 14(02):97-105.
- (3) Wen LS, Geduld HI, Tobias Nagurney J, Wallis LA. Africa's first emergency medicine training program at the University of Cape Town/Stellenbosch University: history, progress, and lessons learned. *Acad Emerg Med* 2011; 18(8):868-871.
- (4) Doan-Wiggins L, Zun L, Cooper MA, Meyers DL, Chen EH. Practice satisfaction, occupational stress, and attrition of emergency physicians. *Acad Emerg Med* 1995; 2(6):556-563.
- (5) Joy T, Moran J, Hassan T, Walker B. The attractiveness of a career in Emergency Medicine: A survey of UK trainees. 2014.
- (6) Cydulka RK, Korte R. Career satisfaction in emergency medicine: the ABEM Longitudinal Study of Emergency Physicians. *Ann Emerg Med* 2008; 51(6):714-722. e1.
- (7) Clem KJ, Promes SB, Glickman SW, Shah A, Finkel MA, Pietrobon R, et al. Factors enhancing career satisfaction among female emergency physicians. *Ann Emerg Med* 2008; 51(6):723-728. e8.
- (8) Tinto V. Dropout from higher education: A theoretical synthesis of recent research. *Review of educational research* 1975; 45(1):89-125.
- (9) Tinto V. Limits of theory and practice in student attrition. *The journal of higher education* 1982:687-700.
- (10) Brunsdon V, Davies M, Shevlin M, Bracken M. Why do HE students drop out? A test of Tinto's model. *Journal of further and higher education* 2000; 24(3):301-310.
- (11) Adams S. *Helping Students Stay: Student Withdrawal Research* 1992. 1996.
- (12) Bezuidenhout J, Cilliers F, Van Heusden M, Wasserman E, Burch V. Alienation and engagement in postgraduate training at a South African medical school. *Med Teach* 2011.
- (13) Kvale S. *Interviews: an introduction to Qualitative Research Interviewing*. Thousand Oaks, California: Sage; 1996.
- (14) Marshall C, Rossman GB. *Designing qualitative research* Thousand Oakes. 1999.
- (15) QSR International Pty Ltd. NVivo qualitative data analysis software. 2012; 10.

5. HREC approval letter



UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee



Room ES3-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6626
Email: shuretta.thomas@uct.ac.za

Website: www.health.uct.ac.za/fhs/research/humanethics/forms

14 June 2016

HREC REF: 827/2015

Dr H Geduld
Emergency Medicine
J-Floor, OMB

Dear Dr Geduld

PROJECT TITLE: ATTRITION AMONGST EMERGENCY MEDICINE REGISTRARS IN THE WESTERN CAPE: AN EXPLORATION OF CONTRIBUTING FACTORS (MMed-candidate- Dr C van Koningsbruggen)

Thank you for your response to the Faculty of Health Sciences Human Research Ethics Committee received on 27 May 2016.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th June 2017.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

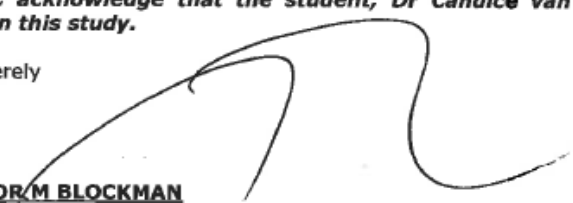
Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval before the research may occur.

The HREC acknowledge that the student, Dr Candice van Koningsbruggen will also be involved in this study.

Yours sincerely


PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

HREC 827/2015

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines.

The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

HREC 827/2015