

Organisational factors: Impacting on health for ambulance personnel

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ABSTRACT

Purpose: This systematic review aims to establish if organisational factors are leading to a negative effect on ambulance personnel's health. In recent years frontline ambulance personnel have displayed a consistent high rate of sickness amongst healthcare workers within the National Health Service (NHS) in the United Kingdom. Post traumatic stress disorder has previously been cited, but organisational factors may be stressors to health.

Methodology: A search of electronic databases MEDLINE EBSCO, MEDLINE OVID; MEDLINE PUBMED, AMED, CINAHL, Web of Science, Zetoc within the time period of 2000 to 2017, resulted in six mixed-methods studies. Hand searching elicited one further study. The literature provided data on organisational and occupational stressors (excluding post traumatic stress disorder) relating to the health of 2840 frontline ambulance workers in the United Kingdom, Australia, Norway, the Netherlands and Canada. The robust quantitative data was obtained from validated questionnaires using statistical analysis, whilst the mixed quality qualitative data elicited similar themes. Narrative synthesis was used to draw theories from the data.

Findings: Organisational factors such as low job autonomy, a lack of supervisor support and poor leadership are impacting on the health and wellbeing of frontline ambulance

workers. This is intertwined with the occupational factors of daily operational demands, fatigue and enforced overtime, so organisational changes may have a wider impact on daily occupational issues.

Value: The findings have possible implications for re-structuring organisational policies within the ambulance service to reduce staff sickness.

Introduction

Ambulance service personnel in the United Kingdom (UK) traditionally provide emergency healthcare, but in recent years this has widened into urgent and primary care. A paramedic's scope of practice has thus altered in order to continue working safely (CoP 2015). Alongside this change, calls to ambulance services have steadily risen from an average of 22,000 per day in April 2015 (NHS England 2016) to 27,300 per day by November 2016 (NHS England 2017). Pressure from the demand increase and role change has been unfortunately accompanied by a 10% vacancy rate for paramedics nationally in 2015 (National Audit Office, 2017) and a high level of absence in frontline ambulance workers (NHS Digital 2015, 2016 & 2017). This level is in comparison with other workers in the National Health Service (see figure 1) (NHS Digital 2015, 2016 & 2017) and probing the causes of this absence is the rationale for this review.

Health problems are likely to be of a multi-factorial origin, and there is evidence to demonstrate a higher rate of mental health issues (such as depression, anxiety, stress) in

emergency workers after the support group Mind undertook scoping research in 2014 – 2015 (Mind 2016). Emphasis has previously been placed on the increased level of post traumatic stress disorder (PTSD) in ambulance personnel due to traumatic incidences, and literature reviews like Simpson (2013) demonstrate sources of evidence to support this. PTSD has also been linked to ambulance working conditions, with fatigue and shift work cited as causes (Petrie et al, 2018). Occupational factors are thus influencing long term psychological health, but perhaps insufficient emphasis is being placed on organisational factors that might lead to health issues. Anecdotal stories from UK ambulance staff to the author (a registered paramedic) are of issues over autonomy such as lack of shift pattern flexibility, limited break availability, the infrequency of support or feedback and the pressure to undertake unwanted overtime (enforced late finishes). This is thus the focus for this systematic review – to explore if organisational factors are related to health issues and are impacting negatively on staff sickness.

Methodology

The search strategy involved seven electronic databases: MEDLINE EBSCO, MEDLINE OVID; MEDLINE PUBMED, AMED, CINAHL, Web of Science, Zetoc undertaken in January 2017, and repeated in July 2017. Key terminology was established by using the population, intervention, control and outcome (PICO) tool combined for mixed methods literature (Higgins & Green 2011; Fineout-Overholt & Johnston 2005). The resulting search terms were applied with Boolean operators. This included *ambulance* OR *paramedic* OR *emergency medical technician* combined with terms such as *stress** OR *occupation** OR *organi#ation** OR *shift** OR *absen**. A scoping search previously indicated wide research around post traumatic stress disorder (PTSD) in emergency workers, after attending extreme

traumatic incidents. NOT *post traumatic stress disorder* OR *PTSD* was used to exclude this type of literature as multi-casualty incidents, acts of terrorism, and natural disasters would provide confounding evidence not specifically related to daily issues over autonomy, shifts and support. The inclusion criteria included mixed primary research literature (including grey literature) relating to frontline operational ambulance workers, which were published in English. The year range was set between 2000 and 2017 since paramedics in the United Kingdom obtained professional registration in 2000 (CoP 2017), and rates of absence are continuing (NHS Digital 2015, 2016 & 2017).

The search produced 3326 hits, which was reduced to seven mixed method papers (see figure II) using the preferred reported items for systematic reviews and meta-analyses (PRISMA 2015) flow diagram. Excluded text articles involved those obtaining data from combined emergency workers, for example ambulance personnel who are also fire fighters. This would have provided a work perspective not specific to frontline ambulance service workers alone. Studies investigating measurable health changes such as raised heart rate were also excluded. The final seven included papers were quality assessed using Critical Appraisal Skills Programme tools (CASP 2018) and none were excluded for methodological quality. The studies were valid, with recruitment strategies described and the results applicable to ambulance personnel.

Results

The resulting seven studies (see figure III) included a mix of quantitative and qualitative data. The five quantitative studies generally demonstrated an internal reliability using validated questionnaires to obtain data from a cross section of frontline ambulance staff in the United Kingdom, Norway, Australia, the Netherlands and Canada. This included Sterud et al. (2008) who used a quantitative cross-sectional methodology from Norway's nineteen ambulance services (n=1005.) The results found organisational stressors influenced job stressor frequency, with a lack of support from co-workers and working overtime identified as increasing stressor severity. A one year follow up longitudinal study (time 1, n=1180 and time 2, n=298) by Sterud et al. (2011) then examined ambulance and job stressors predicting health concerns. Emotional exhaustion and psychological health were found to be worsened by a lack of supervisor and co-worker support, time pressures and the severity of operational demands.

A longitudinal quantitative study in the Netherlands by van der Ploeg and Kleber (2003) investigated how acute and chronic ambulance work stressors related to health symptoms. Two sets of data (n =123) were obtained from ten randomly selected ambulance services using two questionnaires submitted with one year's gap. The results showed that chronic stressors such as a lack of supervisor support and insufficient communication (relating to poor job autonomy) predicted health symptoms, such as burnout, PTSD and fatigue.

Pisarski et al. (2002) investigated ambulance shiftwork stress, and how it might be influenced by organisational and psychosocial factors to predict health symptoms. The

quantitative cross-sectional study in Australia (n=60) resulted in a path analysis model demonstrating direct and indirect relationships on health. Psychological symptoms were directly lowered by support from co-workers, but increased by work/non work conflict. Poor supervisor support, shift control and family support were indirect pathways influencing this conflict to worsen symptoms.

Regehr and Millar (2007) explored high levels of occupational stress in ambulance workers (n=86) in Canada using a mixed methods approach. The results found job demands were high, with low autonomy for workers and poor employer support.

Finally, the two qualitative ethnographic studies by Mahony (2001 and 2005) both involved gaining frontline ambulance personnel perspectives (n=60 and n=28 respectively) around a perceived lack of job autonomy, high job demands, and a lack of supervisor or managerial support.

Data Synthesis

The selected methodology was narrative synthesis (Aveyard, Payne & Preston 2016) as the seven studies were a complex mix of statistical quantitative data and qualitative findings. Given this mix, and that this is a story arising from ambulance culture and organisational factors, a narrative style allowed the wide exploration of the developing themes. The key stressors found were poor leadership, a lack of supervisor support, a lack of staff involvement in organisational decisions and low levels of job autonomy. Some of these outcomes were also found within the theme of operational and physical demands, so there was an overlap effect which only re-iterated the depths of the issues and their downward spiral on staff health. Overall, the emerging narrative was one of overstretched ambulance personnel who feel overwhelmed with operational demand, are chronically fatigued, and feel frustrated with working conditions, the perceived lack of supervisor support and poor leadership. These issues are predominantly due to a combination of organisational and occupational factors, and link directly back into psychological and physical health. The costs ripple into home life and a perceived low self-efficacy for the vital work these employees undertake.

Autonomy, Leadership & Support

Job autonomy could be easily misunderstood as being at a high level, because paramedics do work autonomously in their clinical decision making for patients. Unfortunately, these studies demonstrate little autonomy over daily organisational factors, such as the pace of the daily assigned workload, when (and if) breaks can be taken, the shift patterns, the shift

length and the allocation of unwanted overtime (e.g. deployment of a crew to attend a call in the last minutes of their shift, leading to a finish time which could be hours late.) The lack of control over an employee's daily decisions was found to worsen psychological and physical health (Mahony 2001 & 2005; van der Ploeg & Kleber 2003; Pisarski et al. 2002; Regehr & Millar 2007) and that feeling of the lack of control threads as a common narrative, with qualitative quotes portraying a reduced job satisfaction and frustration. For example '*...You're told basically how to think....they don't like people questioning them...and that can be very frustrating...*' (Regehr & Millar 2007) or '*...You think to yourself I've had enough of this.... the pressure gets higher, higher, higher...*' (Mahony 2005). Every minute of work on an ambulance shift is monitored remotely by the use of personal radios and vehicle tracking, making every move observed by ambulance control. This suggests staff could feel minutely scrutinised and could link to the development of suspicious attitudes as found by Regehr and Millar (2007.) These indicate a feeling from staff that supervisors do not trust the frontline workforce, and supervision is in place to uncover staff errors. Mahony (2001) quotes that staff feel they are '*...presumed to be guilty until proven innocent...*' and a blame culture is cited. The developing narrative from these studies feels watchful and distrustful, with an 'us and them' feeling towards management from staff. Regrettably, these findings relate to comments of a '*management style by edict*' (Mahony 2001) and whilst poor management style is not generally cited as a widespread issue in the other studies, poor leadership is. Mahony (2001 & 2005) and Regehr & Millar (2007) found a leadership style that is 'authoritarian,' with military language, uniforms and epaulettes to indicate rank. This combined with qualitative comments about close supervision and not inviting staff questions, all create impressions of a dictatorial approach, with this culture perfusing through management. This feeling is further supported by the themes from six studies

(Sterud et al. 2008 & 2011; Mahony 2001; van der Ploeg & Kleber 2003; Pisarski et al. 2002; Regehr & Millar 2007) who suggest that supervisor support was either negative, or non-existent. Crucially, a lack of supervisor support was also found to link to emotional health issues, depression and unsurprisingly, feelings of low job satisfaction. It also means that the low levels of self-efficacy also found by Sterud et al. (2008) and Regehr and Millar (2007) should hardly be an unexpected additional finding. The presence of low self-efficacy was found to worsen the effects of organisational and operational stressors, and so the impact on staff health was shown to deepen by the continual draining cycle of organisational factors. Van der Ploeg and Kleber (2003) concisely comment in their discussion that *'dissatisfaction with organisational factors has a price: a price to be measured in...psychopathology... burnout..'* and this view is supported through the wider findings in this review.

Occupational Stressors

Occupational stressors and their detrimental effects on staff health were a common theme found in Sterud et al. (2008 & 2011) Mahony (2001 & 2005) and Pisarski et al. (2002) with operational demands creating emotional exhaustion and significant fatigue. Occupational stressors include the psychological effects of managing unwell children, the shift length and frequency, the increased workload due to higher call volume, the lack of supervisor support, and the lack of job autonomy. These were all found to play a part in chronic stress (van der Ploeg & Kleber, 2003; Mahony 2005; Regehr & Millar 2007). These areas overlap with the themes of organisational stressors demonstrating the repetitive interplay of the

relationships. Sterud et al. (2008) found the most severe occupational stressor to be *'dealing with seriously injured children'* with a lack of supervisor and co-worker support the most important general stressor. Sterud et al. (2011) then went on to link emotional exhaustion to the frequency of the lack of support from supervisors. The feeling that staff are treated as a mechanical resource rather than humans with emotions, resonates from the qualitative comments and quantitative findings in all the studies. The de-humanising pressures to get to the next patient were well illustrated by Regehr and Millar (2007) *'...we got a transfer straight afterwards....(but) we still smelled of smoke (after attending an orphaned surviving six year old at a fire)... and they sort of imply we are wasting time by changing uniforms ...'* The theme of an authoritarian approach was unfortunately demonstrated again.

Fatigue

Predictors of fatigue were linked to poor co-worker and supervisor support; and ambulance staff were found to be more fatigued than the wider workforce (a control group of around 4000 healthcare workers) (van der Ploeg & Kleber, 2003). As such, they were at increased risk of absence and burnout (van der Ploeg & Kleber, 2003; Sterud et al. 2011). Qualitative comments from Regehr and Millar (2007) *'...they wouldn't form an opinion or trash you...'* suggest some intuitive support from co-workers in place, but without it there is an impact on predicting health issues. Significant fatigue was found to create a cost, not just to staff health, but potentially to family conflict as work/life balance alters (Mahony 2005). Further findings suggest emotion avoidance and disengagement from family *'...you almost treat your spouse like another call...'* (Regehr & Millar 2007) with psychological health symptoms

worsened further by this withdrawal, as the support from family may then dwindle (Pisarski et al. 2002). The cycle of emotional avoidance due to fatigue may relate to the constancy of time pressures as they were a common theme in Sterud et al. (2008 & 2011) Mahony (2001) Regehr and Millar (2007.) The feeling of a relentless pace chimes throughout these studies.

Overall themes

The overall narrative drawn from the themes of organisational and occupational stressors relate to the seemingly relentless grind of operational demands, some of which is down to the unchangeable nature of the work itself. Job autonomy, supervisor support and leadership issues are reiterated throughout, compounding the negative effects on staff health and wellbeing. It is these three areas that are not only crucial, but changeable.

Discussion

The findings from this literature review indicate that organisational factors are a stressor which impacts on health in ambulance personnel. To categorise the overarching areas, figure IV was developed showing how the key themes of poor leadership, lack of autonomy and low supervisor support fall under the heading of organisational factors. It also shows how this interrelates to occupational factors and human factors.

Autonomy

The lack of job autonomy was a strong theme in this review. As frontline ambulance crew, even private comfort breaks in the bathroom can be interrupted by a radio requiring an immediate response, and yet nearly forty years ago an oppressive way of working was identified as causing low wellbeing in staff (Karasek 1979). Karasek's Job Demands- Control (JDC) model of 1979 demonstrates that a highly demanding job combined with low control will predict poor wellbeing for workers. This is furthered by the 'buffer hypothesis' of JDC (Karasek 1979) which illustrated how a lack of support (for example supervisor support) leads to the most negative wellbeing outcomes for staff overall. The answer lies in changing organisational factors so that staff can *'increase decision latitude....(to) reduce mental strain..'* and by providing additional support (Karasek 1979). A recent review (Crescenzo 2016) stated this model is still applicable today, and indeed the need for autonomy has also been identified by the World Health Organisation (WHO 2000). They categorise five psychological areas that help promote positive mental health at work, one of which includes *'organising one's daily life.'* In the context of the ambulance service, allowing each crew to personally organise their day's workload would prevent a cohesive deployment of resources, yet providing some flexibility may not only improve wellbeing but will reduce the risk of human error (HSE 1999). Human failures such as unintentional errors can be due to the wider implications of a combination of human factors, which includes organisational factors (shift length), individual factors (tired staff) and job factors (high workload). Thus, evaluating the risk of error needs to include the job itself (the environment and workload), the individual (personality and skills) and the organisation (the culture and leadership). Unfortunately errors can also occur due to intentional rule breaking (situational violations)

caused by intense working demands (HSE 2006). An example might be to untruthfully claim ambulance equipment is contaminated to obtain crew downtime during a hectic shift. This strategy would add to the wider workload and consequently risk patient safety due to the reduced ambulance availability. An organisation needs to educate their employees in understanding how behavioural changes will impact on health and safety, and why adherence will create efficiency (HSE 1999). Unfortunately this is a simplistic statement and actual tangible changes may be required first to alter the motivation of tired, stressed frontline staff. For example, allowing an additional break in a shift, or by instigating productive methods of ensuring staff avoid enforced overtime. Preventing the practice of sending a tired crew to a patient five minutes prior to their shift end (precluding enforced overtime) would have implications not only for increasing job autonomy, but may reduce the impact of chronic fatigue. Error is increased by using clinicians who are already exhausted from a long shift (HSE 2006) so change will impact positively on patient safety.

The Model of Work Stress (Palmer *et al.*, 2001) demonstrates how certain work demands leads to an increase in staff sickness and absence in relation to stress. It cites organisational and occupational factors such as workload, shift patterns, poor control, lack of support and organisational communication as causes. The Health and Safety Executive (HSE) (2017) uses this model to identify work based primary stressors to link to staff sickness, and some of the same stressors have been found in this review. The HSE (2006) also produce guidelines on shift work and suggest the successfulness of an organisation's shift patterns can be assessed through staff turnover, absenteeism and fatigue levels. These outcomes will no doubt vary depending on the ambulance trust, but the data around ongoing absenteeism (NHS Digital 2015, 2016, 2017) does not suggest success. In addition, the GMB trade union used

Freedom of Information requests in 2016-2017, to investigate absences across the ten ambulance trusts in England. Their calculations suggest 1 in 8 (12%) of frontline ambulance staff were absent due to stress (GMB 2017). Unfortunately no full report into this data could be found and possible bias may exist, but it suggests absence specifically relating to stress remains high. Viewed altogether, this information suggests that perhaps combining employer allocated shifts and employee self-selected shifts might benefit the organisation as a whole. The wide range of 24/7 shift scheduling software now available (e.g. www.clarityroster.com) could allow a few shifts to be self-designated within certain parameters, so that the employee benefits despite the majority of shifts remaining scheduled by the employer.

Leadership

The need to educate employees around the consequences of behavioural (situational) violations fits within a transformational model of leadership (Burns 1978) which has been instigated within the ten ambulance Trusts in England (NHS ACEG 2009). Poor leadership is a finding in this review, but this same point has already been cited elsewhere. The NHS Ambulance Chief Executive Group has already acknowledged the need and the many issues to implementation of a transformational approach. One problem includes an actual lack of managerial staff to deliver leadership as they are frequently required to 'fire-fight' by covering the shortage of available frontline staff (NHS ACEG 2009). Unfortunately there is a chicken and egg cyclic irony to this situation, where absence levels in frontline staff rises, creating a lack of leadership implementation by managers due to their own pressurised working, which leads to more frontline staff absences....and so on. Issues around culture

and management were also highlighted in a report commissioned by the South East Ambulance Service (UK) in July 2017 (Lewis, 2017). One of the findings included *'unreasonable management'* behaviours, with staff being disproportionately monitored, organisational procedures not adhered to, and staff opinions ignored. This report chimes with the outcomes of this review, and only provides evidence that the cited issues are unfortunately ongoing.

Figures around patient safety incidences within the ambulance NHS trusts in England from 1st April 2015 to the 30th September 2015, sit at 5597 incidences in total (NRLS 2016). This compares to 4,776 incidences for ambulance trusts in the same period in 2014, and 3,386 in 2013 (NRLS 2015 and 2014). This increasing trend of patient safety incidences could be attributable to the increased call volume to ambulance services (NHS England 2016 & 2017) and increased staff reporting (NHS England 2015). It is probable that the high levels of staff absence (NHS Digital 2015, 2016 & 2017) play a part too though, by reducing the availability of resources. Organisational factors around patient safety are considered within the 'Seven Steps to Patient Safety' published by the NHS' National Reporting and Learning Service (NRLS 2004). The good practice guide promotes leadership that involves prioritising patient safety as a culture, good communication between staff and management, and addressing specific factors such as worker fatigue. This is suggestive that improving patient safety figures ultimately need to begin from enhancing this perspective and it ties into addressing the findings in this review.

Clinical Supervision

A lack of support from supervisors and colleagues was found to be related to health issues in this review. The qualitative comments suggested staff may be blurring the term 'support' with improved managerial and clinical supervision. Staff wished for feedback on individual performance plus discussions on clinical practice reflections, which is identifiable with clinical supervision. In England, the Care Quality Commission (2013) sets out the aims of clinical supervision as being '*...regular... to ensure safe and competent care...*' but it is unclear what actually results in practice. Freedom of information requests made by this author in 2017 asked about the existence of clinical supervision policies to support trained clinical staff. The results demonstrated that not all UK based ambulance trusts have such a policy. As a commitment to clinical governance, if ambulance trust policy included a cited clinical supervision model for use at stated regular intervals it would evidence what the current level of supervision is, and robustly address staff perceptions around a lack of support. Since clinical supervision includes assisting the supervisee to self-reflect whilst evaluating their progression, (Watkins & Milne 2014) this may also incidentally improve staff self-efficacy. Clinical supervision could feed into building a sense of inclusive professional identity around the shared skills, values and knowledge held within a professional group of workers, which in turn may reduce burnout in staff (Sabanciogullari & Dogan 2015).

Organisational factors, occupational factors and human factors are three intertwined headings overarching the causes of continued high absence rates in frontline ambulance staff. Prevalent themes within these areas are low job autonomy, a lack of supervisor support and poor leadership, all of which are alterable factors. Change begins with a firm leadership style that intimates to all its employees that their wellbeing and work is of

unquestionable value. This involves making real changes to daily organisational factors. Improving staff health will lower absences and increase retention whilst impacting positively on patient safety and the organisation as a whole. The health of frontline ambulance personnel can be improved if there is an organisational will to focus on the perspectives of these staff as a priority, and act on their importance.

Conclusions

Frontline ambulance workers have a high level of absenteeism due to illness, which can be traced back to daily organisational and occupational factors. Human factors play a significant role in the interchange, and as a whole physical and mental health is negatively affected. Key recurrent themes in this review relate to low job autonomy, a lack of supervisor support and poor leadership, which are areas addressable by individual ambulance trusts. The continued volume of calls to ambulance services makes organisational change a considerable challenge, but implementation of the recommendations could benefit the organisation as a whole with a consequential improvement in patient safety. Simply recruiting more staff may improve the situation short-term, but leaves the underlying issues unresolved with the subsequent retention of staff potentially affected. Changing a cultural way of working in order to place a higher value on leadership and managerial excellence could begin if the cycle of frontline staff pressures were broken at grass roots level by giving staff increased autonomy. This would free up line managers to implement a more collaborative way forward. Improving job autonomy and increasing individual staff support should reduce the strain inherent in a highly pressurised role such as ambulance work, and in turn reduce staff absences. Support,

such as clinical supervision is important for a clinician's health, personal development, self-efficacy and job satisfaction, but also demonstrates overt backing from line managers and opens the lines of communication for staff. The wider benefits include evidencing an organisations commitment to clinical governance and the associated excellence in care.

Recommendations are made with a view to improving the working lives of frontline staff, with the beneficial consequence of increasing patient safety due to a cohesive, open, ambulance trust leadership approach.

Limitations

This is a small review of seven studies with a varied degree of reliability in the methodologies described. Queries around recruitment bias applied to all the included studies, with small sample sizes found in all but Sterud et al. 2008 and 2011. Conversely, robust statistical analysis minimised confounding factors (Bain & Webb 2016) and the quantitative data was elicited from well validated questionnaires.

The most recent included study was dated at 2011, so change may have occurred within the ambulance services rendering some findings out of date. Nevertheless, the figures around frontline staff absence remain high in 2017 suggesting ongoing issues, although they may no longer be the same issues as those identified in this review. The review was undertaken by a solo researcher, who as a paramedic may demonstrate unconscious bias since the emerging themes resonate with personal experience.

Implications for research

There is currently a paucity of contemporary literature relating to the wider possible causes of health issues found in ambulance frontline personnel. This is despite the ongoing high rate of sickness in this staff group and the subsequent impact on patient safety. Further research is urgently needed into today's ambulance services to verify if there are wider themes to the underlying health issues. This would preferably be by recruiting data from all ambulance services across the United Kingdom, using a longitudinal quantitative methodology to assess for improvements in staff health and wellbeing.

Recommendations

Recommendations for future practice were developed using the feasibility, appropriateness, meaningfulness and effectiveness scale (FAME) (JBI 2014). All are strong recommendations:

- 1) Increase frontline staff job autonomy to reduce occupational stressors. For example, increasing shift break frequency, preventing enforced overtime and allowing the self-selection of two shifts per month. This sends a positive message throughout the organisation around staff value.
- 2) Implement overt changes to a collaborative leadership approach by providing training for all managers. This action is meaningful in relation to staff wellbeing. Reducing staff sickness through positive collaborative leadership will have a positive effect on patient safety.

- 3) Formally provide clinical supervision for qualified clinicians, to offer support and feedback. This supervision will impact on staff wellbeing and patient care. It evidences the organisational priority for promoting excellence in clinical care by improving clinical governance.

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