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# Sonographers' experiences of work-related musculoskeletal disorder: The everyday consequences of physiological stress and injury in contemporary ultrasound

Gareth C. Bolton\* Dr Lisa A. Booth Dr Paul K. Miller

<b>BACKGROUND</b>	By 2013, the UK government's Migration Advisory Committee had listed sonography as an official 'shortage specialty' (Migration Advisory Committee, 2013; Parker & Harrison, 2015). As a consequence of the working stresses allied to this shortage, British sonographers have increasingly been reducing hours or leaving clinical practice entirely (Society and College of Radiographers, 2014). Moreover, among those who remain, incidences of reported chronic pain and active injury are also on the increase within a profession that was already synonymous with high rates of work-related musculoskeletal disorder (WRMSD) (Harrison & Harris, 2015). While contemporary research has described the rates of WRMSD among ultrasound practitioners (Bolton & Cox, 2015), none has to date extensively explored its personal and professional impacts.																																								
<b>METHODS</b>	Using a model of Interpretative Phenomenological Analysis with proven facility in medical imaging research (Miller <i>et al.</i> , 2017), extended semi-structured interviews with N=9 experienced sonographers were analysed. This study aimed to seek participants' individual experiences and understanding of WRMSD and ways to reduce the incidence. The researcher aimed to recruit a reasonably diverse group of participants with a range of different or contradictory views, rather than a 'representative' sample of sonographers as such. The study aimed to gather sufficient information in order to make sense of WRMSD by 'synthesising, abstracting, contextualising, analogising or illuminating meaning' of the assertions taken from the participant interviews (Loaring <i>et al.</i> , 2015).																																								
<b>FINDINGS</b>	<p>Participants routinely reported a sensation of guilt and depleted self-efficacy that not only permeated any working absence resultant of their own WRMSD, but also to taking legitimate leave when colleagues were suffering from WRMSD. An upshot of this was to recurrently "take one for the team" and work through excessive pain, even when this would likely result in greater prospective physical damage. While the basic shortage of sonographers was the core attribution for such behaviours, participants also cited (1) increasingly obese patients, (2) increasingly unhelpful (i.e. profiteering) equipment manufacturers, and (3) their own paternalism regarding healthcare.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">BROAD ISSUE</th> <th style="background-color: #cccccc;">DEVELOPING EMERGENT THEMES</th> <th style="background-color: #cccccc;">EMERGENT THEMES</th> <th style="background-color: #cccccc;">DEVELOPING SUBORDINATE THEMES</th> </tr> </thead> <tbody> <tr> <td style="background-color: #cccccc;">Staffing (Shortages)</td> <td>Extended Working Days</td> <td>Sonographer Paternalism</td> <td>Perception of 'Self' in relation to the causes of WRMSD</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Weekend Working</td> <td>Emotional Labour</td> <td>Innate Perceptions of Blame</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Recruitment Issues</td> <td>Sonographer 'Culture' to 'Take one for the team'</td> <td>Undesirable Senses</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Increasing Patient Obesity</td> <td>Culture of Pain in General</td> <td>Rejection/Acceptance of Change</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Technical Difficulty of Certain Examinations/Specialisms</td> <td>Cognitive Dissonance</td> <td>Acceptance of Self/Role</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Work Related Stress/Anxiety</td> <td>Dangerous 'Workaround' Strategies</td> <td>Role Conflict</td> </tr> <tr> <td style="background-color: #cccccc;">Sonographer Workload</td> <td>Work Absences (Self/Colleagues)</td> <td>Feelings of Guilt/Resentment</td> <td>Culture of 'They' inferring establishment imposing on "Them" Sonographers</td> </tr> <tr> <td style="background-color: #cccccc;">Equipment Manufacturers</td> <td>Offered Solutions</td> <td>Loss of Self Efficacy</td> <td>Power Struggle</td> </tr> <tr> <td style="background-color: #cccccc;">Equipment Manufacturers</td> <td>'Magic Cure'</td> <td>Scapegoating</td> <td>Behavioural Changes</td> </tr> </tbody> </table>	BROAD ISSUE	DEVELOPING EMERGENT THEMES	EMERGENT THEMES	DEVELOPING SUBORDINATE THEMES	Staffing (Shortages)	Extended Working Days	Sonographer Paternalism	Perception of 'Self' in relation to the causes of WRMSD	Sonographer Workload	Weekend Working	Emotional Labour	Innate Perceptions of Blame	Sonographer Workload	Recruitment Issues	Sonographer 'Culture' to 'Take one for the team'	Undesirable Senses	Sonographer Workload	Increasing Patient Obesity	Culture of Pain in General	Rejection/Acceptance of Change	Sonographer Workload	Technical Difficulty of Certain Examinations/Specialisms	Cognitive Dissonance	Acceptance of Self/Role	Sonographer Workload	Work Related Stress/Anxiety	Dangerous 'Workaround' Strategies	Role Conflict	Sonographer Workload	Work Absences (Self/Colleagues)	Feelings of Guilt/Resentment	Culture of 'They' inferring establishment imposing on "Them" Sonographers	Equipment Manufacturers	Offered Solutions	Loss of Self Efficacy	Power Struggle	Equipment Manufacturers	'Magic Cure'	Scapegoating	Behavioural Changes
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<b>CONCLUSIONS</b>	The present situation in ultrasound mirrors a culture of potentially dangerous pain acceptance that been noted in the psychology of sport for some time (Weinberg <i>et al.</i> , 2013) albeit for altruistic, rather than egotistic, reasons. There is a clear body of evidence to suggest that sonographers are in crisis point both in terms of staffing levels and in terms of inter-related issues of WRMSD. The issue of WRMSD remains complex and under-researched and no studies are able to establish a definitive cause of the condition, because the causes are multifactorial. However, the majority of the literature seems to agree that poor posture, repetitive movements and insufficient strength seem to be the main physical causes, but little has been explored in terms of the philosophical underpinning of sonographer behaviour and culture, which is why this study contributes to a new body of knowledge. It is acknowledged that extensive deeper levels of analysis and interpretation need to take place around the data collected for this study in order to draw more comprehensive conclusions.																																								
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