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ORIGINAL ARTICLE

A preliminary audit of medical and aid provision in English Rugby union clubs: compliance with Regulation 9

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Abstract

Background Governing bodies are largely responsible for the monitoring and management of risks associated with a safe playing environment, yet adherence to regulations is currently unknown. The aim of this study was to investigate and evaluate the current status of medical personnel, facilities, and equipment in Rugby Union clubs at regional level in England.

Methods A nationwide cross-sectional survey of 242 registered clubs was undertaken, where clubs were surveyed online on their current medical personnel, facilities, and equipment provision, according to regulation 9 of the Rugby Football Union (RFU).

Results Overall, 91 (45. 04%) surveys were returned from the successfully contacted recipients. Of the completed responses, only 23.61% ($n = 17$) were found to be compliant with regulations. Furthermore, 30.56% ($n = 22$) of clubs were unsure if their medical personnel had required qualifications; thus, compliance could not be determined. There was a significant correlation ($p = -0.029$, $r = 0.295$) between club level and numbers of practitioners. There was no significant correlation indicated between the number of practitioners/number of teams and number of practitioners/number of players. There were significant correlations found between club level and equipment score ($p = 0.003$, $r = -0.410$), club level and automated external defibrillator (AED) access ($p = 0.002$, $r = -0.352$) and practitioner level and AED access ($p = 0.0001$, $r = 0.404$). Follow-up, thematic analysis highlighted widespread club concern around funding/cost, awareness, availability of practitioners and AED training.

Conclusion The proportion of clubs not adhering overall compliance with Regulation 9 of the RFU is concerning for player welfare, and an overhaul, nationally, is required.

Keywords AED · Concussion · First aid · Injury prevention · Medical provision · Rugby union · Safety

Introduction

The social, commercial and cultural impact of sport is far reaching and in recent years has become a catalyst for community regeneration and development [1]. The most important factor in community sport is said to be the people involved [2] ranging from the players, volunteers, coaches, medical support and spectators to full-time employees. The success of a sport in a community, promoting health and exercise [3, 4], developing existing talent [5] and socially bringing people together relies on putting people, their safety and long-term welfare [6] at the centre of the game.

Within the collective umbrella of sport, Rugby Union is one of the most popular traditional field-based sports across the world, with World Rugby, also known as the International Rugby Board, recording 121 unions in its membership, with 103 full members and 18 associate member countries in late 2016. According to World Rugby, Rugby Union is played in over 100 countries with approximately 8.5 million players worldwide [7]. In Ireland alone, there are 90,000 club and 70,000 school players registered with the governing body [8]. According to the World Rugby, England accounts for 2,139,604 players of the estimated 3,881,801 current players of the game in Europe.

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England Rugby reported recent growth as 'sustainable' in their recent National Rugby Survey completed by 28,000 participants in the later part of 2016 [9]. This growth is sustained over approximately 1800 clubs nationwide. Similar to other full-contact sports like Boxing and American Football, Rugby Union has been characterised by its physicality, as players engage in numerous, frequent physical confrontations at various speeds [10, 11]. As a result, Rugby Union has a relatively high risk of injury common to team contact sports including American Football, Rugby League and Australian Rules Football [12–14].

Recently, there has been a shift towards prioritising player welfare and safety globally across sporting disciplines. Governing bodies have implemented various strategies and regulations to promote the safety of its athletes, practitioners and supporters. Concussion is one of the most prevalent areas of investment with programs like HEADCASE, Mayday, Heads Up, HCAMP emerging in recent years [15–17].

Rugby Union is one of the most popular professional team sports globally, but it also has one of the highest reported incidences of injury [18]. Since the professionalisation of the game in 1995, precautions and protocols have been put in place by National Governing Bodies to attempt to manage the injury risk of the players [11]. World Rugby oversees and regulates portions of these protocols and laws within their own legislation titled The World Rugby Hand Book. Specifically, regulations 10 and 12 of the World Rugby Hand Book address and outline protocols, safety regulations and detailed areas of current injury concern, for example concussion (section 10.1), in player welfare [7]. It is stated in Regulation 2, subsection 2.1.1 that A Union or Association is deemed to have full knowledge of the content of these regulations as outlined in the hand book England Rugby, a constituent of World Rugby, launched their National RugbySafe Campaign in 2017 placing the spotlight, worldwide, on player welfare. This is reinforced by their legalisation, in particular, Regulation 9, which outlines responsibilities of the club/organiser so that participants receive appropriate immediate attention between the time of injury and arrival of emergency services. Regulation 9 highlights three key areas: immediate care and/or first aid cover/equipment provided for that rugby activity and clear vehicular access for an ambulance or other emergency vehicle. The RFU Adult Competition Review Report categorises this as an area for improvement particularly in relation to level 7 and below, stating the coverage of issues below level 7 is a key area for development for the next review [8]. Furthermore, a secondary observation of Regulation 9 is that there is a lack of clarity around practitioner presence, e.g. it does not state that if there is no health care practitioner/first aider depending on the level that training/playing is not permitted only 'not recommended'. It has been questioned if this level of compliance is acceptable in twenty-first century sport, whilst responsibility, legality and morality regarding regulation governance are unclear [2, 15, 16, 19].

Sport-related concussions are an area of concern that has become increasingly prevalent in athletes competing in sports that are particularly physical or strenuous in nature, thus are a growing concern in rugby, globally. Owing to the serious nature of the injury, England RFC along with many other organisations, such as the Football Association, Fédération Equestre Internationale Insurance Institute for Highway Safety, International Rugby Board and The Olympic Committee, have placed importance on immediate medical/first aid care with England Rugby alone the qualifying 1250 first aiders between 2011 and 2016 through their associated courses. In order to determine if Rugby Union, at club, county and national level, is complying with the safety regulations stipulated by the relevant unions, a baseline of practitioner involvement needs to be determined to allow for a safe playing environment for an ever-increasing number of players.

It is estimated that in the UK alone, there are approximately 29 million sports injuries per year [20]. Literature to date has focused primarily on international [12] professional Rugby Union [21]. However, the vast majority of rugby players participate at community/grassroots/amateur level. Injuries that have gained exposure and awareness in particular include Head Injuries and Cardiovascular Incidences [12]. Concussion was, for the fifth consecutive season, the most commonly reported Premiership match injury [9]. Sudden Cardiac Arrest is still one of the leading causes of death in sport [19, 22] which to a large extent can be prepared for with the efficient use of cardio-pulmonary resuscitation (CPR) and an automated external defibrillator (AED). Injuries sustained generally require the expertise of one or multiple practitioners throughout the rehabilitation period, which can include doctors/medics, physiotherapists, sports therapists, rehabilitation experts, massage therapists, strength and conditioning coaches, coaches/managers, psychologists and potentially safeguarding officers depending on the level and availability [23]. Audited information on the prevalence and attainment if suitable qualifications and access to vital equipment is, hitherto, unreported. However, studies in community football have shown that 61% of coaches reported that they did not possess a current first aid qualification [24].

With more people playing and coaching the sport, it remains relatively unknown if the growth in player involvement is proportionally reflected in the growth in the number of qualified medical support staff [25] actively working in English Rugby as an audit has not yet been completed by the governing body. Fuller et al. [26] found that both Football (Premiership and Championship) and Rugby Union (Premiership)/Rugby League (Super League) clubs had at least one or more full-time physiotherapist; however, only 9% of Division 1 Rugby Union clubs surveyed had a full-

time physiotherapist. There is a dearth of empirical data reported on the medical expertise available in amateur rugby in the UK, which has been published.

Therefore, the key aim of the study is to establish the current status of medical provision in community-level rugby so that club compliancy can be determined. The audit will be a preliminary indication if Regulation 9 of the RFU guidelines detailing medical provision is being adhered to.

Material and methods

Study design and procedures

The investigation comprised of a cross-sectional analytical survey of affiliated 279 clubs in England (levels 6–12 of the RFU 12-tier structure, where level 1 represents the (male) English Premiership; filtering down to regional-standard leagues (Midlands, North, London, South West; semi-professional to amateur), where level 6 consists of eight leagues, level 7 consists of 16 leagues, level 8 consists of 20 leagues, level 9 consists of 21 leagues, level 10 consists of 19 leagues, level 11 consists of 7 leagues, and level 12 consists of one league) questioning club representatives and practitioners on the two following areas: (i) Medical Personnel and (ii) Medical Facilities and Equipment, was conducted in agreement with the guidelines and policies of the institutional ethics committee and in accordance with the Declaration of Helsinki.

The survey and cover letter were e-mailed directly to the selected clubs through a secure e-mail address. The supplied e-mail addresses were obtained individually on the RFU online club database through the search tool or through the club's website or Pitchero page. The medical lead/safeguarding offers details were selected. If not available or not supplied, two other addresses were selected from clubs' secretaries, general/clubhouse or coaching e-mails as the point of contact.

Procedure

A mixed and randomised sample was used as a representation of the larger population [27] to indicate initial status of the compliance audit. Within the six selected levels (6–12) of the existing RFU structure, three clubs will be randomly selected from each division with one team within the top three placing (2016/17), one team from the mid table (medium) and one from the bottom three placing; therefore, target sample size was 279 without e-mail delivery failures/complications. This gives a valid representation accounting for varying size of the divisions and the larger overall population size [28]. A random number generator (Microsoft Excel**)** was used to randomly select the teams with these criteria for each division. Of the 202 successfully contacted clubs, 91 responded (45.27%) and attempted the survey with 14 (6.9%) respondents not completing an entire section. This is in line with previous literature as a similar study completed by Coughlan et al. [25] whom surveyed 220 Irish Rugby Football Union clubs of which 105 responded to the study (47.7%).

Inclusion and exclusion outlines

If the division had three clubs or less registered for the 2017/18 season, then all clubs in that division were selected for sampling. Each division was represented for the sample to reflect the population. If two or more teams were randomly selected from the same club in differing levels, the club was only contacted once and another club was not selected in its place to maintain the random sampling structure.

Pilot surveying

The survey was completed, timed and amended by four different practitioners who have met the following criteria:

1. Worked/working at a local club providing medical support OR
2. Worked/working at a local club providing coaching
3. Graduated/obtained a degree/qualification/certificate in a related health support role
4. Not consulted on the study previously

The study was completed by four individuals ($n = 4$). The mean time to completion was 10:18 min (SD ± 1.22). Phrasing on three questions was amended post feedback.

Survey

The study comprised of 23 multiple-choice questions split into two sections: medical provision (13) and equipment and facilities (9) concluding in one open-ended question per section for further commentary or concerns to be highlighted around each section. All questions following initial profiling of club level, position of respondent, number of teams and players had the option to abstain from answering. Each question within the two sections addressed a particular area: personnel accessibility, numbers, attendance games vs. training and qualifications while section 2 identified facilities available such as Easy AA pitches (defined as pitches that have direct access to an emergency route or can be directly accessed by a vehicle, if required, without hindrance or obstruction), grounds (defined as: an area of land and/or infrastructure designated for a particular purpose, in this instance, RFU) and medical rooms (defined as: access to dedicated infrastructure specifically for the purpose of medical treatment and/or assessment) followed by availability of key equipment outlined in regulation 9 such as stretchers, spinal boards, medical aid bags, AED's along with updates/refurbishments/replacement and services within

the last three seasons. Each question of section 1 investigating personnel numbers, qualification and attendance also gave the option to answer 'other' if the personnel category was not listed allowing inclusivity of peripheral professionals. Two further research indicator equations were incorporated into study 1 in each section: the accessibility of practitioners to teams across the club, e.g. women's IV and interest in an AED awareness and installation company supported by the RFU. This aimed to gage initial engagement with club management in improving current provision.

Data analysis

The completed surveys were coded, entered into statistical and analytical software (IBM SPSS 24, PASW, Version 18.0.) and, subsequently, cleaned. Descriptive statistics were calculated, and Spearman's rank correlation coefficients were calculated to explore relationships outlined by the regulation documentation, including club level, practitioner level, number of practitioners, number of players, number of teams, equipment score, facility score and AED access. All inferential data analyses were reported with statistical significance level (P) and correlation coefficient (r), with an a priori alpha (α) of 0.05. Club compliance with Regulation 9 was reported based on clubs meeting criteria stipulated in Regulation 9. Thematic analysis was used to analyse the two open response questions left at the end of the two sections surveyed.

Results

Overall, 91 (45.27%) surveys were returned from the successfully contacted recipients ($n = 201$) with 81 (40.29%) responding to both sections: level 6 ($n = 17$), level 7 ($n = 17$), level 8 ($n = 16$), level 9 ($n = 12$), level 10 ($n = 10$), level 11 ($n = 3$), level 12 (6) (Table 1).

The majority of participating clubs were registered in levels 6, 7 and 8 (61.7%, $n = 50$, mean = 8.17, SD = 1.79). Clubs on average ran between 2 (33.3%, $n = 27$) and 3 (18.5%, $n = 15$) senior teams (mean = 2.6, SD = 1.79). Clubs averaged 4 practitioners per club (mean = 4.40, SD = 3.38) of which only 20.987% ($n = 17$) could confirm a Health Care Professional was present while 27.16% ($n = 22$) were unsure/unable to confirm qualifications. Majority of clubs were within a 10-km radius of a hospital facility (mean = 8.26, SD = 7.71). Large percentage of clubs (65.4%, $n = 54$) reportedly did not have access to an AED (private or public). However, 67.9% ($n = 55$) of clubs expressed an interest in community heartbeat/AED organisation.

Table 1 Variable details and pairings for correlation testing

Variable 1 Mean ± SD	Variable 2 Mean ± SD	Number
Club level 8.08 ± 1.73	Practitioner level 2.40 ± 1.12	72
Number of practitioners 4.40 ± 3.38	Number of teams 2.62 ± 1.11	55
Number of players 141.96 ± 138.79	Number of practitioners 4.45 ± 3.25	46
Practitioner level 2.87 ± 0.89	Equipment score 3.43 ± 1.53	46
Practitioner level 2.87 ± 0.89	Facility score 1.67 ± 1.09	54
Club level 7.82 ± 1.43	Equipment score 3.660 7 ± 1.31	51
Club level 7.82 ± 1.43	Facility score 1.780 ± 1.05	52
Club level 8.08 ± 1.73	AED access 0.53 ± 0.58	72
Practitioner level 2.40 ± 1.12	AED access 0.53 ± 0.58	72

Practitioner level (1—incomplete, 2—qualification unknown, 3—other practitioner, 4—HCP present), AED access (1 yes, 0 no).

Compliance

Of the 72 (79.12%) completed responses, only 23.61% ($n = 17$) reported having adequate provision and personnel for their level as outlined in the regulations, whilst 76.39% were either definitely non-compliant or did not know if they were compliant with Regulation 9 and their level.

Medical personnel

The medical personnel listed included doctors, physiotherapists, sports therapists, massage therapists, nutritionists and first aiders. There was a weak, negative significant correlation ($p = 0.02$, $r = -0.295$) between club level and numbers of practitioners There was no significant correlation indicated between the number of practitioners/number of teams ($p = 0.094$, $r = 0.22$), number of practitioners/number of players ($p = 0.45$, $r = 0.11$) and club level/level of practitioners ($p = 0.95$, $r = -0.19$).

Facilities and equipment

The facilities audited included medical rooms, easy AA grounds and pitches. Equipment audited included stretchers, scoop boards, split boards, general First aid kits, pitch side First aid kits and AEDs. There were weak to moderate, negative significant correlations between club level and equipment score ($p = 0.003$, $r = -0.41$), club level and AED access ($p = 0.002$, $r = -0.35$) and a moderate, positive correlation between practitioner level and AED access ($p < 0.001$, $r = 0.4$). There was no significant correlation between practitioner

level: equipment score ($p = 0.14$, $r = 0.92$) and practitioner level and facility score ($p = 0.818$, $r = 0.32$).

Thematic analysis

The most recurrent and prominent theme across both sections was cost/funding (Table 2). In section (i), Medical Personnel themes included Availability, Liability, Concussion, Awareness and Cost/Funding while in (ii) Medical Facilities and Equipment Training, AED, Guidelines and Cost/Funding were highlighted. Participants reported lack of availability of adequately trained personnel as the key area where governance could make an impact. The cost of trained personnel reportedly hindered teams from providing the same provision to all teams at the club (ladies, colts, veterans) for both training and game days.

Discussion

The key aim of the study was to establish the current status of medical provision (personal, equipment, facility) in community-level rugby so that club compliancy can be determined. In accord with the aforementioned aim, the principal findings of this investigation were that the majority of clubs surveyed were found to be either non-compliant or unaware of current medical qualifications/provision, in direct contravention, or ignorance, of Regulation 9. Furthermore, compliance, club level and provision, practitioner and provision, practitioners and players/team, thematic analysis and limitations, respectively, are discussed accordingly.

Compliance

Concerningly, only 23.61% of clubs were confirmed to have adequate provision and personnel for their level as outlined in the regulations before practitioner attendance was questioned. Furthermore, 30.56% of clubs were unsure if their medical personnel had required qualifications. Coughlan and colleagues [25] correspondingly concluded that, although the majority of the clubs surveyed in their investigation reported adequate involvement of personnel and provision, a large proportion, although exact figures were not reported, of the clubs were without acceptable provision for the number of players and level of competition. It has been questioned if merely meeting minimum standards of compliance in aid provision is acceptable in twenty-first century sport [2, 15, 16, 19], let alone not meeting the minimum requirements.

Club level and provision

This study highlighted that the higher the level of the club, the greater number of support personnel was available to players. This reflects the findings of Fuller et al. [26] who found the number and status (paid/volunteer) of support staff was directly linked to the club's level where organisations requiring medical staff at a higher level were found to be better funded with more support thus attracting the increase in numbers of permanent staff.

Table 2 Coded thematic analysis visual representation

Data extract (*n*)	Organising themes	Global theme/keys
Widespread awareness of concussion (2) Training refs/coaches on concussion (2) S&S of unusual concussions (1)	*Awareness of concussion* *Concussion training*	Concussion and Awareness
Lack of practitioner numbers (2) Lack of provision for lower teams (3)	*Lack of available numbers*	Availability
Lack of provision for ladies team (1)		
Multi-role practitioners (2)	*No designated medical role*	
Cost of securing practitioners (6) Increasing costs to cover practitioners expenses (4)	*cost*	Cost/funding
Capital to invest in equipment/facility (6)		
Priority given for senior teams in budget (3)		
Limited income for amateur clubs (4)	*Inability to generate funding*	
Qualified personnel in high ranking private profession (1)	*Unwillingness to risk professional occupation*	Liability
Demand for AED/stretcher training (3) Equipment available with no qualified personnel (2)	*Emergency care/supporting training*	Training
Revised, sensible list of content and equipment per level (2)	*Support guide*	Guidelines
No support for AED maintenance (4) Lack of awareness for AED and EAP (3)	*AED support*	AED
Demand for AED/stretcher training (3)	*AED training*	

In accordance with Regulation 9, clubs in levels 5–7 require a minimum of one HCP/alternative present at each venue, in addition to one sports first aider per team, whilst levels 8 and below only require one first aider per venue and one sports first aider per team. Clubs playing in the upper threshold (level 6) of the study with multiple teams (1st XV, 2nd XV etc.) will therefore, mandatorily, require more support staff to meet the regulations and demands of the club structure. As identified in previous studies [24, 29, 30], coaches commonly hold multiple positions, including first aider. However, at a higher level where a Health Care Practitioner (HCP) is required, it is evident that additional personal have been supplemented into the club structure. Concerningly, the current level of provision (4.4 ± 3.38) indicates that the lower portion of clubs surveyed either had no access to medical personnel or only a single member. It has been asserted that this level of provision is not acceptable in twenty-first century sport [2, 15, 16, 19]. The South African Rugby Union (SARFU) recently implemented their 'no first-aider, no game' zero tolerance rule to absence of medical provision at any level of play [31] illustrating that the reinforcement of stricter regulations is a realistic task, and given this precedent, it would be pragmatic to replicate this in English rugby.

There were weak to moderate, negative significant correlations between club level and equipment score ($p = 0.003$, $r = -0.41$) and club level and AED access ($p = 0.02$, $r = -0.35$), indicating that club level influences the provision available at the club. Dvorak et al., [22] and Borjesson et al., [19] assert that sudden cardiac arrest remains one of the leading causes of death in sport, which to a large extent can be prepared for with the efficient use of cardio-pulmonary resuscitation (CPR) kit and an automated external defibrillator (AED). Early defibrillation can increase the chance of survival from < 5% with CPR alone to 55% if the AED was administered between 3 and 5 min [32]. A large percentage of clubs (65.4%, $n = 54$) reported no access to an AED (private or public). There is antecedence for this lack of equipment access, in an audit of 190 European Arenas, 64% of venues did not have an Emergency Action Plan in place for emergencies such as cardiac incidents, in addition to 28% having no access to an AED, privately or publicly at/near (> 5 min critical time) the location [19]. The majority of clubs audited in this investigation were within a 10-km radius of a hospital facility (mean = 8.26, SD = 7.71); however, this would, likely, fall outside the < 5-min critical time for AED application.

Although both studies highlight a provision deficit [19, 22], the lack of provision evident, despite the correlation, is a third greater than the audit of the consensus document [19]. This study highlighted a potentially greater deficit found by Coughlan and colleagues [25] who completed a similar stand-alone preliminary study auditing 105 Registered Rugby Clubs for medical provision (personnel, equipment/facilities and legislation) in the IRU, where on average 33.3% of clubs reported having no access to an AED. Concerningly, the potential status of AED access in England appears, on initial assessment, to be in greater deficit than Ireland and other parts of Europe. The actual status of these AEDs, their maintenance, model and age is unknown.

Practitioner and provision

Interestingly, the magnitude of correlation found between club level and equipment score/AED access was not evident between practitioner level and equipment score ($p = 0.14$, $r = 0.92$) or facility score ($p = 0.81$, $r = 0.32$). There was also no correlation between club level and practitioner level ($p = 0.95$, $r = -0.19$). Verral et al. [33] asserted that the insufficient provision of high-level medical professionals (in particular doctors) was largely owing to inadequate remuneration and inadequate facilities/equipment at venues thus potentially explaining the interaction between practitioner levels and equipment/facility scores affecting all levels of clubs. It is notable that the club level was more strongly related to provision than the practitioner's level at the club, indicating that clubs may have adequate equipment but a lack of the trained personnel to administer it. It is concerning that even if the correct training has been acquired, a lack of frequent and consistent revision leads to trained personnel not retaining the knowledge or the qualification for first aid even at entry level. Both Castro [30] and Cunningham [24] concluded that the majority (73 and 60.5% respectively) of coaches surveyed did not hold a current first aid qualification. Of the percentage that did, only 11.4% re-attained the passing score on their qualification when re-tested. The concern around delivery and retention of knowledge has been identified in surrounding literature. Donaldson and Poulos [5, 34] concluded that the translation of injury prevention policies into community practice can be improved by developing and implementing a theory-based, context-specific strategic plan. However, historically, this has been relatively unsuccessful [34]. In concordance with the present study, Coughlan and colleagues [25] found that the type of practitioner (doctor, physiotherapist, first aider) influenced the facility and equipment score; however, the level of pitch-side emergency care training and expertise was not established in their 2010 audit.

Practitioners and players/teams

Notably, there was no significant correlation indicated between the number of practitioners and number of teams ($p = 0.09$, $r = 0.22$) or number of practitioners and number of players ($p = 0.45$, $r = 0.112$). This contradicts initial findings where a correlation between club level and number of practitioners is evident as according to Regulation 9. This relationship should, logically, be proportionate to the number of teams fielded by each club requiring one sports first aider per team

and one HCP/other per venue. Coughlan and colleagues [25] reportedly audited a select group of practitioners (doctors, physiotherapists, first aiders), which does not account for the wide range of practitioners working in Rugby including sports therapists, strength and conditioners and massage therapists among others. Therefore, an accurate comparison cannot be made between Coughlan et al. [25] and this investigation for practitioner and team/player ratios. This study highlighted that, on average, clubs fielded between 2 (33.3%, $n = 27$) and 3 (18.5%, $n = 15$) senior teams (mean = 2.6, SD = 1.79) along with averaging 4 practitioners per club (mean = 4.40, SD = 3.386), thereby indicating, if the appropriate qualifications and training were to be in place, the average club could meet the ratio stipulated in regulations. However, the RFU reported sustainable growth in player numbers over the previous season, therefore the demands of, and for, practitioners would increase if their own numbers do not remain proportionate to players. This highlights the need for governance, locally and nationally, to recruit and train a greater number of suitably qualified personnel to remain, or indeed achieve, compliance.

Thematic review

The thematic review (Table 2) used to analyse the two open questions in the survey highlighted the potential contributing factors and concerns behind clubs' responses. The most recurrent and prominent theme across both sections was cost/funding. In section (i) Medical Personnel themes included Availability, Liability, Concussion, Awareness and Cost/Funding while in (ii) Medical Facilities and Equipment Training, AED, Guidelines and Cost/Funding were highlighted. Respondents expressed that these were all contributing factors to the current medical provision status at the club with cost/funding dominating responses with wide-spread effect on equipment/facility provision along with securing appropriate personnel. Many clubs reportedly rely on volunteer members to provide first aid cover/other medical support [25, 29]; however, higher-level practitioners may require remuneration to cover their own costs/consumables/insurance, exacerbating the recruitment and retention of suitably qualified/trained personnel. It remains unknown what capital and overhead clubs have invested in purchasing/maintaining equipment and employing/compensating medical support personnel and should, therefore, be investigated.

Limitations

It is acknowledged that the structure and design of the study may have incurred the following challenges and/or limitations: response rate, falsification of answers, time length and invalid contact details. Whilst the sample may have been considered small, the response rates were comparable to previously reported audits. A further, potential, limitation was the use of electronic auditing; further research should examine the veracity of electronic vs. verbatim modes of assessment.

Conclusion

Prior to this investigation, the medical/aid provision available in English Rugby Union clubs was unknown in published literature. Although positive and encouraging statistical correlations were evident among portions of provision, the proportion of clubs not meeting overall compliance with certainty is unignorably concerning for player welfare. Communities and governing bodies must address this issue, with haste, particularly as the sport continues to grow and that current provision is, apparently, not compliant with governing body regulations.

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Authors' contributions KW and HJB conceived the study; KW carried out the audit; KW and CCTC performed the statistical analyses; KW, HJB and CCTC participated in study design and KW, HJB, PG, RP and CC participated in writing and critically appraising the manuscript. All the authors have read and approved the final version of the manuscript and agree with the order of presentation of the authors.

Compliance with ethical standards

Competing interests The authors declare that they have no conflict of interest.

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