Sports-Related Concussion in Adolescent Gaelic Games Players

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Background: Gaelic games are some of the most popular sports played by Irish adolescents, and the Gaelic Athletic Association has undertaken educational initiatives to improve awareness of a sports-related concussion (SRC). However, SRC underreporting is common among adolescent athletes internationally, potentially due to poor knowledge or attitudes toward SRC. This study aimed to examine previous experiences with, knowledge of, and attitudes toward reporting SRCs, as well as views on future education in adolescent Gaelic games players and their parents.

Hypotheses: The hypotheses were as follows: (1) A significant number of adolescent Gaelic games players will have experienced an SRC, (2) nondisclosure of SRCs will be common, and (3) adolescents will display poorer attitudes toward reporting than parents.

Study Design: Cross-sectional study.

Level of Evidence: Level 3.

Methods: Adolescent male and female Gaelic games players (n = 113) and parents (n = 151) completed an anonymous questionnaire examining previous experiences with, knowledge of, and attitudes toward reporting SRCs, as well as views on future SRC education initiatives.

Results: Overall, 57.5% of adolescent Gaelic games players suspected they had suffered an SRC previously, and a greater number of suspected SRCs were reported than were medically diagnosed. Adolescent players (mean score, 11.4/14) and their parents (mean score, 11.8) displayed good knowledge of SRC signs and symptoms. However, adolescents were less likely to report an SRC during an important game or if an important game was coming up. Both adolescents and their parents would like more SRC education, particularly in the format of online videos or medical professional–led workshops.

Conclusion: Underreporting of SRC occurs in adolescent players, despite good knowledge of SRC signs and symptoms. Education is required to highlight the importance of completing a return-to-play program after an SRC regardless of match importance.

Clinical Relevance: A multifaceted educational strategy that targets the wider Gaelic games community in the preferred formats identified by key stakeholders is required.

Keywords: Gaelic football; hurling; camogie; nondisclosure; sports-related concussion

Gaelic games, governed by the Gaelic Athletic Association (GAA), Ladies Gaelic Football Association and Camogie Association, are the national sports of Ireland and are some of the most frequently played sports by Irish adolescents.[8] Gaelic games (Gaelic football and hurling/camogie) are contact, high-velocity, multidirectional amateur field sports[20] and are played at nursery level (4-7 years) right through to adulthood (Figure 1). Two teams of 15 players compete in Gaelic football and hurling/camogie, and the aim is to outscore the opposing team by hitting the ball over the bar (1 point) or scoring a goal (3 points). Adolescent players are stratified according to their chronological age to play at under 14-, 16-, and 18-year age levels. Gaelic football is similar to Australian rules football; however, players use a round ball comparable to a soccer ball.[20] Hurling and camogie (the female equivalent of hurling) is played with a stick called a "hurley" that players use to strike a small leather ball both from the air and the ground.[20] The only mandatory equipment in hurling and camogie is a helmet and faceguard,[19] and in Gaelic football, a mouthguard.[20]

Sports-related concussions (SRCs) can negatively affect not only adolescents' sporting performance but also their activities of daily living and schooling.[16,24] While no prospective

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Figure 1. Typical action during camogie, hurling, and Gaelic football. (a) Swing (left player) and blocking action in camogie/hurling. (b) Tackling action in hurling/camogie. (c) Tackling action in Gaelic football. (d) Handpassing action in Gaelic football. Images courtesy of Dublin City University Gaelic Athletic Association Academy and the Camogie Association.

surveillance on SRCs has yet been examined in male or female Gaelic games, head and neck injuries account for between 3.6% and 5.4% of injuries in elite male Gaelic players.[2,18] The GAA first published a management strategy on SRC in 2007, and since then has undertaken educational initiatives available to all players, members, referees, and coaches.[10] However, this is not mandatory, unlike in the United States, where high school coaches must complete SRC education training[11] and athletes and/or parents are required to review SRC education material annually.[1] The most recent GAA SRC guidelines[10] (January 2018) state that all adolescent players must not return to play within 48 hours after a suspected SRC and must be medically cleared prior to returning to full-contact training. If a diagnosis of an SRC is made, the adolescent player should not return to full contact play for at least 2 weeks from injury diagnosis after a graded return-to-play SRC protocol.[10] Early SRC identification and appropriate management are essential to minimize the effects of an SRC.[12] Previous research in male US high school athletes noted that those with an athletic trainer reported significantly more diagnosed SRCs than those without[15] and possessed greater SRC knowledge.[28] In the absence of such professionals, the role of adolescent players and parents in SRC identification and appropriate management is key in community sports, including Gaelic games.

Underreporting of SRCs is frequent among adolescent athletes[17,23] and has been attributed to poor knowledge of the seriousness of SRCs or SRC signs and symptoms,[17] lack of awareness that the athlete was in fact concussed,[23] fear of being held out of games or not being allowed to return to sport when felt ready,[26] and not wanting to let down fellow teammates or coaches[17] or cause anyone to think less of them.[26] Previous research in adolescent Gaelic games players reported that 60% took part in practice or games while experiencing symptoms of a suspected SRC.[26] Parents may also negatively influence SRC reporting, as perceived pressure from parents, in combination with other pressures in the sporting environment, has been found to be a risk factor for poor concussion reporting.[14] As this has not been previously examined in parents of adolescent Gaelic games players, clarifying parents' underlying knowledge and attitudes toward SRC is critical in order to establish their ability to aid in SRC identification and management and identify areas where future SRC education strategies should focus.

This study's primary aims were to (1) examine SRC history, previous reporting behaviors, and attitudes toward reporting in adolescent male and female Gaelic games players; (2) examine and compare adolescents and their parents' knowledge of and views on SRC education; and (3) evaluate parents' actions after SRC and their attitudes toward SRC management. Its secondary

aims were to compare adolescents' knowledge of SRCs and attitudes toward reporting between sexes, those with or without a previous history of suspected SRC, and age levels.

METHODS

Participants

A cross-sectional study design was implemented, and ethical approval was granted from Dublin City University Research Ethics Committee. A convenience sample of underage adolescent Gaelic footballers, hurlers, and camogie players (n = 113) who played at the age levels of under 14, 16, and 18 years were recruited. Parents of underage adolescent Gaelic games players (n = 151) from the same Gaelic games teams were also recruited. No attempt was made to match the underage player and parent surveys as the survey was anonymous.

Instrumentation

Two separate, but similar, anonymous questionnaires were developed for use with adolescent Gaelic games players and parents of these players (Appendix 1, available in the online version of this article) to identify SRC history, reporting behaviors, knowledge, and attitudes. A suspected SRC was defined as when an adolescent player thought they themselves or the parent thought their son/daughter was concussed. A medically diagnosed SRC was when a medical or health care professional diagnosed an athlete with an SRC. Both questionnaires were divided into 6 sections and piloted on adolescent Gaelic games players (n = 10) and their parents (n = 10).

Questionnaires

Section 1 of the adolescent questionnaire garnered background information regarding age, sex, sporting level, and the presence of a medical professional during training and matches. Section 2 investigated the history of suspected and medically diagnosed SRC and reporting behaviors after the most recent suspected SRC. SRC knowledge was evaluated in section 3 by assessing the understanding of SRC presentation and the ability to recognize SRC signs and symptoms. Section 4 examined the attitudes toward SRC reporting by assessing the responses to different scenarios, reasons adolescents would not report a suspected SRC, and the importance they placed on different stakeholders in reporting a suspected SRC. This section also explored adolescents' attitudes toward a teammate sustaining a suspected SRC. Knowledge and attitudes toward recovery from a suspected SRC were assessed in section 5. Finally, section 6 evaluated any previous SRC education and the athlete's views on future education content and methods of delivery.

The parent questionnaire similarly examined knowledge of and attitudes toward SRC, with sections 3, 5, and 6 containing the same questions as the adolescent questionnaire. Section 2 examined parents' past experiences with SRC sustained by their adolescent son/daughter. Then, if appropriate, they answered questions on their management after the most recent suspected SRC event and how confident and knowledgeable they felt. Section 4 also investigated parents' attitudes toward the likelihood of removing their son/daughter from play in varying scenarios, what might influence this, and who is responsible for this decision.

Scales

An SRC attitudes-to-reporting scale was created by adding the scores of 6 statements in section 4 that examined SRC reporting in varying scenarios. An average score was calculated, with the higher the score, the greater positive attitude the adolescents displayed toward SRC reporting. The Cronbach alpha coefficient of this scale was 0.85, demonstrating very good internal consistency.[7] An overall SRC knowledge scale (maximum score, 32) was calculated using the correct answers from 4 statements in section 5, and all correctly identified true signs and symptoms (maximum score, 14), false signs and symptoms (maximum score, 7), and correct answers to SRC knowledge statements (maximum score, 7) from section 4. The Cronbach alpha coefficient of the SRC knowledge scale was 0.72, which demonstrated acceptable internal consistency for this scale.[7]

Data Collection

A convenience sample of 15 GAA clubs was contacted by email or a telephone call. The principal investigator explained the study, its purpose, and the data collection process. Ten clubs from counties Dublin and Mayo agreed to take part in the study. The plain-language statement, questionnaires, and informed consent form for the parent questionnaire and informed consent and participant assent form for the adolescent questionnaire were delivered to the club to be distributed to each team coach. The coach then passed both questionnaires on to the parents of the players, for the player and parent to complete. The questionnaires were then returned to the team coach and onward to the principal investigator, and checked to ensure informed consent or informed consent along with adolescent assent was provided. The parent questionnaire was also available to be administered online via SurveyMonkey, with informed consent required at the beginning of the questionnaire. Data collection was undertaken from February to April 2018 and lasted 8 weeks. Questionnaires that were completed by hand were checked to ensure there were no missing data, and 20 questionnaires were excluded due to less than 95% completion of the questionnaire. Informed consent and assent were provided in returned questionnaires; thus, all were subsequently included in the analysis. An overall response rate of 52.8% was noted.

Data Analysis

All analyses were performed using SPSS version 23.0 (SPSS). Frequencies were calculated for variables in the 6 sections in both questionnaires. Independent-samples *t* tests determined whether there were any significant differences in scores for SRC knowledge and SRC attitudes toward reporting between (1) male and female adolescents and (2) adolescents who had a previous history of a suspected or medically diagnosed SRC and those who did not. Independent-samples *t* tests were completed

Table 1. Adolescent Gaelic games players and their parents' demographic information

	Adolescents, % (n) (n = 113)	Parents, % (n) (n = 151)
Sex		
Male	69.9 (79)	67.5 (102)
Female	30.1 (34)	32.5 (49)
Age group, y		
Under 14	21.2 (24)	56.3 (85)
Under 16	39.8 (45)	19.2 (29)
Under 18	38.9 (44)	24.5 (37)
Sport played		
Gaelic football only	70.8 (80)	58.3 (88)
Hurling/camogie only	0.0 (0)	2.0 (3)
Both	29.2 (33)	39.7 (60)

to compare adolescents and parents scores on (1) overall SRC knowledge, (2) ability to correctly identify true signs and symptoms of SRC, and (3) ability to correctly identify false signs and symptoms. A 1-way analysis of variance examined whether there was a significant difference between under-14, -16, and -18 players in their SRC knowledge score or SRC attitudes to reporting score. The alpha level was set at 0.05. Effect sizes were calculated using eta-square and classified as small (0.01), medium (0.06), or large (0.14).[22]

RESULTS

Adolescent SRC History, Previous Reporting Behaviors, and Attitudes Toward Reporting

Respondents' demographic information is presented in Table 1. Adolescent players primarily reported that they had sustained at least 1 suspected SRC previously (57.5%; n = 65). A greater number of suspected SRCs were reported by adolescent participants than were medically diagnosed (Table 2). A quarter of adolescents (26.5%; n = 32) who suspected they had sustained at least 1 SRC in the past were never diagnosed with an SRC by a medical professional. After either a suspected or a medically diagnosed SRC, most adolescents reported that they returned to Gaelic games less than 1 week after the SRC (50.0%; n = 28), followed by 1 to 2 weeks (37.5%; n = 21), 2 to 3 weeks, and 3 to 4 weeks (5.4%; n = 3). Eighty percent of adolescent players (n = 56) who suspected they had sustained an SRC during training or match play were unsure whether they were concussed, 55.7% (n = 39) thought it was not serious enough to inform anyone, and 58.0% (n = 40) continued to play as there were only a couple of minutes left in the session.

When considering a future SRC, fewer adolescents were likely to report a SRC if it occurred during a trial for the county team (43.3%; n = 49), a championship game (53.1%; n = 60), or if an important match were in the near future (56.7%; n = 64) (Table 3). No significant difference in attitude toward reporting scores was noted for sex, age levels, or those with a history of a suspected or medically diagnosed SRC ($P > 0.05$). The primary reasons provided for nonreporting of an SRC were that they would feel like they were letting down their teammates (50.4%; n = 57) and friends/family/community (40.7%; n = 46). Adolescents reported that medical professionals (97.3%; n = 110), coaches (95.5%; n = 108), referees (67.2%; n = 76), and their parents (54.9%; n = 62) were important to tell if they suspected they were concussed. With respect to a teammate sustaining a suspected concussion, adolescent players primarily did not want their teammates to continue playing for the sake of the team (85.8%; n = 97) and would most likely tell the medical professional (62.8%; n = 71), their teammate (54.9%; n = 62), or their coach (49.6%; n = 56) if they knew a teammate was concussed.

SRC Knowledge

Adolescent players displayed a greater overall SRC knowledge score (mean score, 23.8/32; range, 10-30) than parents (mean score, 22.5; range, 12-31) ($P = 0.01$), with a small effect size ($\eta^2 = 0.02$). Adolescents (mean score, 11.35/14) and parents (mean score, 11.81) displayed a similar knowledge of common SRC signs and symptoms (Appendix 2, available online) ($P > 0.05$). Adolescents (mean score, 4.64/7) demonstrated a significantly greater ability to identify incorrect signs and symptoms than parents (mean score, 2.77) ($P < 0.001$), with a medium effect

Table 2. Previous suspected and medically diagnosed adolescent SRC history and reasons for not reporting an SRC

Number of SRCs	Previous Suspected SRC, % (n)	Previous Medically Diagnosed SRC, % (n)
0	42.5 (48)	69.0 (78)
1-2	46.9 (53)	30.1 (34)
3-5	8.8 (10)	0.9 (1)
6-10	1.8 (2)	0 (0)
Reasons for not reporting an SRC . . .	**% (n)**	
Letting teammates down	50.4 (57)	
Letting friends/family/community down	40.7 (46)	
Manage SRC themselves	37.2 (42)	
Under pressure to continue to play	36.3 (41)	
Afraid of losing position on the team	30.1 (34)	
Letting the coach down	23.9 (27)	
Consider the SRC not serious	17.7 (20)	

SRC, sports-related concussion.

Table 3. Reporting behaviors in adolescent Gaelic players

I would report a suspected concussion if it were a . . .	Yes, % (n)	No, % (n)	Maybe, % (n)
Training session	89.4 (101)	2.7 (3)	8.0 (9)
Challenge game[a]	83.1 (94)	3.5 (4)	13.3 (15)
League game[b]	80.5 (91)	4.4 (5)	15.0 (17)
"Big" match in the near future	56.7 (64)	15.1 (17)	28.3 (32)
Championship game[b]	53.1 (60)	16.9 (19)	30.1 (34)
Trial for the county underage team[c]	43.3 (49)	31.8 (36)	24.8 (28)

[a]A challenge game is a practice match usually organized by a coach that is not part of any official competition.
[b]The league and championship are 2 competitions held throughout the Gaelic Athletic Association, Ladies Gaelic Football Association and Camogie Association calendar, with the championship competition typically being more prestigious and held after the league competition.
[c]All players play with their local club teams; however, the best players are chosen, typically through trials, to play with their county team to represent their region at the elite level.

size ($\eta^2 = 0.13$). No significant difference in SRC knowledge scores was noted between sexes or those with or without a previous suspected or medically diagnosed SRC ($P > 0.05$). Under-14 players displayed a significantly poorer overall SRC knowledge score than under-18 players, with a medium effect size ($P = 0.03$; $\eta^2 = 0.10$). Adolescents demonstrated more knowledge surrounding SRC management and rehabilitation than parents (Appendix 2, available online).

Recovery From and Management of SRC as Reported by Parents

After the most recent suspected SRC event experienced by their child, half of parents (n = 29) got a medical or health care professional to assess their child, 36.3% (n = 21) of participants brought them to their local general practitioner, and 19.0% (n = 11) brought them to the emergency department. Only 13.8% (n = 8) let their son/daughter continue to play that day, and 6.9%

(n = 4) allowed their child to play the next day. Some parents did report that they let their son/daughter continue to play but realized that their behavior was unusual (10.3%; n = 6). On the most recent occasion that parents suspected their child had sustained an SRC, 63.2% (n = 36) felt that they did not have adequate knowledge to manage the situation, with most feeling that they were not confident about what to do (68.4%; n = 39), and that they did not have adequate medical support available at the training session or match (59.6%; n = 34). In fact, 34.5% (n = 39) and 63.7% (n = 72) of adolescents stated that there was never a medical professional present at their matches and trainings, respectively. Just 9.7% (n = 11) of adolescents reported that there was always a medical professional at their games, and 1.8% (n = 2) at trainings.

Most parents worried about how they handled the situation after the event (73.7%; n = 42) and just 33.3% (n = 19) said they would manage the situation in the same way in the future. Some parents also felt that the referee/coaches did not identify and treat the situation seriously (42.1%; n = 24), or that the referee/coaches did not know how to manage the situation to ensure the safety of their child (49.1%; n = 28).

When provided with scenarios surrounding a concussive event, parents trusted the opinion of the medical professional even if the child said he or she was okay (88.1%; n = 133). Parents also would remove their child from play if a medical professional was not available and they believed their child was concussed (90.7%; n = 137), or if the child presented with any signs or symptoms (75.5%; n = 114). However, 42.4% (n = 69) of parents would let their child continue to play if their child received a blow to the head, got up immediately and said he or she was OK, and a medical professional was not present to examine the player. Table 4 demonstrates parents' views on who is responsible for identifying and managing an SRC or suspected SRC event in an adolescent player.

SRC Education

Most parents (66.0%; n = 99) and adolescents (58.4%; n = 66) had previously received SRC education with the sources outlined in Table 5. Just over one-third of parents (34.0%; n = 51) were unaware of any SRC education resources available for parents of underage Gaelic games athletes. Adolescents (95.6%; n = 108) and parents (94.7%; n = 142) wanted to receive more education on SRC, with parents preferring medical professional–led sessions (88.0%; n = 132) and online videos (85.3%; n = 128). Most adolescents would prefer online videos (88.5%; n = 100) and would like to receive SRC education either multiple times during the season (50.9%; n = 54) or during preseason (47.2%; n = 50). Over 90% of parents and over 95% of adolescents thought it was important for them to learn more about signs and symptoms of SRC, immediate SRC management, long-term health risks of SRC, what an SRC is, and when it is safe to return to play.

DISCUSSION

SRC is prevalent in adolescent Gaelic games players; 57.5% of players reported that they sustained at least 1 suspected SRC previously, similar to US high school athletes (53.3%)[23] and Irish adolescent rugby players (47.5%).[6] Therefore, similar to other sports, targeted interventions to maximize SRC identification and appropriate management is needed in Gaelic games. Although adolescents and parents noted that medical professionals were the most important person to report an SRC to, approximately 1 in 10 adolescent players reported that a medical professional was always at their games and just 1 in 50 were reported during training. Thus, in a community sport setting, such as Gaelic games, the onus is often left on nonmedical persons such as adolescent players, coaches, referees, or parents to identify and manage an SRC safely. This highlights the necessity of creating a culture of reporting/managing suspected SRCs.

Four-fifths of adolescent players who suspected they were concussed during a training or match were unsure whether they were concussed; 56% of players failed to report their SRC because they thought it was not serious, and 58% continued to play as there were only a few minutes left. Continuing to play after an SRC can lead to a longer recovery time, further injury, and even death if a player sustains a second impact.[3,23] However, while adolescent Gaelic games athletes would themselves continue to play, they would not want their fellow teammates to continue playing when concussed for the sake of the team (85.8%). To address this, procedural learning such as concussion role-playing scenarios could be implemented to complement typical SRC education during training.[5] This has been proven to be successful in collegiate athletes.[4] However, ecological models suggest that there are multiple levels of interacting factors that influence health behaviors.[25] This might explain, at least partially, why SRC interventions that solely target individual athlete behavior have not been shown to affect universal behavioral change long term.[13] Therefore, interventions that take a community multilevel approach to address and encourage SRC reporting and appropriate management are critical. A popular opinion leader intervention, based on the diffusion of innovations framework, may be a potential method to further support this.[13] To implement the popular opinion leader intervention, well-regarded, influential leaders in each GAA club, for example, the captain of each underage team, should be identified, educated, and trained to endorse and support immediate SRC reporting and management.

This study demonstrated that parents of adolescent Gaelic games players have worries around SRC identification and its management. Approximately 7 out of 10 parents reported that they worried about how they handled the most recent potential SRC event, with 3 in every 5 feeling that they did not have adequate knowledge to manage the situation, and two-thirds of parents acknowledging that they would manage the situation differently in the future. Welcomingly, the vast majority of parents would value further SRC education. Thus, a parent-targeted campaign that provides a clear, simple message on appropriate management and immediate removal from play for all those with suspected SRCs should be implemented.

In general, adolescents and parents displayed good knowledge of certain signs and symptoms of SRC, such as headaches,

Table 4. Parents' views on who is responsible for SRC identification and management[a]

	How Important Are the Following in Making an RTP Decision for an Adolescent Player After an SRC?				In your opinion who should be responsible for . . .		
	Extremely Important	Important	Somewhat Important	Not Important	Identifying an SRC in an Adolescent Player	Removing an Adolescent Player From Training/ Match	Same Session RTP Decision After Removal From Training/Match
Medical professional	90.1 (136)	7.9 (12)	2.0 (3)	0.0 (0)	85.4 (129)	84.1 (127)	83.4 (126)
Coach	17.2 (26)	41.1 (62)	17.9 (27)	23.8 (36)	81.5 (123)	76.8 (116)	41.1 (62)
Referee	NQ				78.8 (119)	75.5 (114)	38.4 (58)
Parents	47.7 (72)	32.5 (49)	12.6 (19)	7.3 (11)	60.9 (92)	54.3 (82)	37.1 (56)
Teammates	1.3 (2)	9.3 (14)	15.2 (23)	74.2 (112)	18.5 (22)	6.0 (9)	0.0 (0)
Adolescent player with suspected SRC	10.6 (15)	35.8 (54)	31.8 (48)	21.9 (33)	19.9 (30)	12.6 (19)	6.6 (10)

NQ, not queried; RTP, return to play; SRC; sports-related concussion.
[a]Data are presented as % (n). Respondents (n = 151) were allowed to tick multiple boxes for each question.

Table 5. Sources from which adolescents and their parents received previous sports-related concussion education

	Adolescents, % (n) (n = 113)	Parents, % (n) (n = 150)
Medical professional/s	38.9 (44)	38.7 (58)
Information sheet/s	23.0 (26)	34.0 (51)
Online video/s	22.1 (25)	21.3 (32)
Website/s	18.6 (21)	34.7 (52)
Coach/es	15.9 (18)	10.7 (16)
Seminar/s	7.1 (21)	14.0 (21)

confusion, and dizziness. However, they were less familiar with agitation and emotional changes, similar to previous findings in adolescent Gaelic games players,[26] Irish adult jockeys,[21] and collegiate student-athletes.[9] One in 4 adolescents and parents believed that you must lose consciousness to become concussed, which is far higher than previously reported in Gaelic games.[27] This may be because of the lower age of participants in the current study, as 24% of US high school adolescents were similarly unaware that SRCs may occur without losing consciousness.[23] Thus, less familiar signs and symptoms, as well as misconceptions noted in this study should be specifically targeted in future educational strategies by the GAA, particularly in under 14 players and parents.

The current GAA SRC guidelines state that adolescent players must avoid full-contact play for 2 weeks after an SRC diagnosis. Worryingly, 2 in 5 of those with medically diagnosed SRCs returned less than 1 week after the concussive event, despite the fact that the majority of adolescents (70.8%) and parents (58.4%) were aware that return-to-play protocols existed after an SRC, and that most parents (66.0%) and adolescents (58.4%) received prior SRC education. In addition, just under one-third of parents were unaware of any available Gaelic games SRC education resources. Thus, widely disseminating the GAA SRC guidelines in the preferred formats is necessary to maximize engagement.

A relatively small convenience sample of adolescents and parents were recruited from 2 counties only, thus limiting the generalizability of the results. A bias toward more males completing the questionnaire was evident. The questionnaires utilized in this study were not validated. SRC history was captured by self-report, and their ability to accurately recall their SRC history may have affected the findings. Some questionnaires were completed at home, and so we were unable to control whether parents or adolescents discussed the questionnaire while completing it. However, parents and adolescents were advised to complete the questionnaire at home without discussion and not to look up any answers.

CONCLUSION

Underreporting of SRC among adolescent Gaelic games athletes is evident, despite players and their parents displaying relatively good knowledge of SRC signs and symptoms. Thus, solely improving SRC knowledge alone will not consequentially improve SRC reporting. Popular opinion leader approaches and strategies to encourage adolescents to report to a responsible adult if they suspect that they or a teammate is concussed should be completed. Gaelic games governing bodies should also consider adopting the US model whereby mandatory SRC education is required.

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