Supplement A. Additional information regarding methods

Development of the interview schedule

As part of the broader project, our interdisciplinary research team developed a semi-structured interview schedule exploring actors’ perceptions about: (a) concussion knowledge, (b) attitudes towards concussion reporting, (c) roles and responsibilities in concussion management, (d) experience in the CMP, and (e) future considerations and improvements. The schedules were piloted among a convenience sample of school contacts (n=2), physiotherapists (n=3), NZ Rugby representative (n=1) and players (n=10) and revised according to their feedback.

Interview questions and probes were tailored to each specific interview group, resulting in seven separate interview schedules. For the purpose of this study, the analysis focused on a general question pertaining to concussion-related roles and responsibilities:

• With respect to concussions, what do you think your role and responsibilities are?

In addition, all data referring to concussion-related responsibilities identified in other parts of the interview were similarly included. For example, these questions included:

• Can you give me an example of an instance when a concussion may have happened this past season to a player on your team or to a player at one of your games? Can you walk us through what happened? Who was involved? Thinking back, do you think anything should have been done differently?

• Thinking about the whole concussion management process, from education and baseline testing, to a player potentially sustaining a concussion and getting them back to playing, what suggestions would you have to improve the process?

Data collection

Focus groups were conducted at the end of the 2018 rugby season by four interviewers experienced in qualitative methods. The interviewers consisted of MSc and PhD level researchers, 3 females and 1 male. These researchers were employed by New Zealand Rugby (n=3), and by an academic institution as part of a collaboration on the CMP project (n=1). As the interviewers we are all involved in the implementation of CMP to varying degrees, and in
different areas, we arranged each focus group to be facilitated by an interviewer who was not known to the focus group participants. To ensure consistency between interviewers, experienced qualitative researchers conducted training sessions with the interviewers prior to the focus groups. Additionally, interviewers met weekly with the research team to discuss interview consistency, the use of probing questions and paraphrasing to confirm understanding. The focus groups were held at a familiar location (i.e., school or rugby club) and time convenient to the participants and lasted for approximately 30-75 mins. Demographic data were collected using a paper survey.

**Analysis**

Both researchers involved in the analysis process were experienced in qualitative methods. During the coding and analysis process weekly meetings were held between the two researchers to discuss coding and test assumptions. The broader research team discussed the coding process and provided input on a bi-weekly basis.

**Rigor and Trustworthiness**

In keeping with the broader project, a study-specific approach to rigor and trustworthiness was adopted.[1,2] In line with our pragmatic approach, it was important to consider how these findings could enhance our understanding of concussion responsibilities within a community rugby system. Developing a practical framework that could aid in this understanding, while being supported by the data, required an iterative process of analysis with numerous reviews by different members of the research team. For this reason, two researchers independently coded and developed a preliminary framework that was then discussed and combined into a composite framework by the research team over the course of several meetings. Supplemental material was included to enhance the transparency of the analysis process. In addition, JC and DMS were actively employed by NZR at the time of study. It was important to consider that these members of the research team have an in-depth understanding, as well as existing perceptions of the context in question, informed by their work within the NZ community rugby system. Although these views aided in contextual understanding, the inclusion of the multidisciplinary research team (from various research affiliations) in the analysis was important to test assumptions, generate discussion, and ultimately develop findings backed by the data collected as part of this study.

Secondly, for the findings to be practically useful, we felt that it was important to maintain and present the detail (the 30 distinct responsibilities), as well as how these responsibilities
contribute to broader themes. As discussed in our limitations section, we were not able to include all potential stakeholders within the community rugby system. Instead, we regard this framework as a foundation for understanding the complexity of concussion responsibilities, from which future research can continue to expand. Within this study and the broader project, we have adopted an approach to saturation as described by Braun and Clarke[12] and Low[13]. These authors suggest that there is always the possibility of new insights and understandings to be gained, for as long as data continues to be collected and analysed. Instead, our focus was on an iterative and rigorous analysis process, of data collected from a variety of diverse stakeholders within the New Zealand community rugby system. Given this was a qualitative study, with a sample size of 155 participants, we believe that our approach to recruitment facilitated a broad and deep understanding of stakeholders within a community rugby system, in which players and parents would make up the largest number of participants, followed by concentrated numbers of stakeholders in supervisory capacities, such as team leads, coaches and finally union NZR representatives.[10]

Supplemental file A References


3 Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. Qual Res Sport Exerc Health 2019;00:1–16. doi:10.1080/2159676X.2019.1704846