Caregivers nutrition knowledge and perspectives on the enablers and barriers to nutrition provision for male academy football players

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Abstract

Background: The assessment of nutrition knowledge, alongside the enablers and barriers to optimal dietary intake, in youth football players has previously been documented. However, there is comparatively little research on either of these within parents or host families, which is of value to understand given the vital role that these stakeholders play as the primary food provider to young football players. Thus, the purpose of this study was to assess the nutrition knowledge of these caregivers and explore their perceptions of the barriers and enablers to nutrition provision for male academy football players. **Methods:** A validated 35-item online questionnaire (A-NSKQ) was completed by 30 parents and 31 host family providers of youth academy football players from 16 different professional football clubs in England. The questionnaire consisted of 35 questions (total), 11 of which focussed on the assessment of general nutrition knowledge (GNK) and the remaining 24 assessed sports nutrition knowledge (SNK). Scores are presented as a percentage for total and each sub-section (GNK & SNK) and classified by the following rating: "poor" (0–49%); "average" (50–65%); "good" (66–75%); and "excellent" knowledge (76–100%). Differences in Total, GNK and SNK were compared between parents and host families using Independent-samples t-tests, with the alpha value set at $p < 0.05$ for all tests. A series of focus groups was also conducted with six parents and twelve host family representatives from four clubs to explore their perspectives of the enablers and barriers to providing nutrition support to youth football players. Thematic analysis was used to interpret the data. **Results:** Host family providers demonstrated significantly better total nutrition knowledge than Parents (49.95 ± 11.64% vs. P = 42.67 ± 14.43%; $p = 0.035$), although the knowledge of both groups is classed as "poor". For the sub-sections of GNK & SNK, GNK was considered "average" and significantly better than SNK, which was classed as "poor" (GNK = 58.12 ± 16.87% vs. SNK = 40.98 ± 14.91%; $p < 0.001$). Host family providers reported significantly better SNK than parents (44.89 ± 13.21% vs. 36.94 ± 15.69%; $p = 0.037$) whilst no significant differences were observed in GNK between groups (61.00 ± 15.07% vs. 55.15 ± 18.33%; $p = 0.180$). Three key themes were generated relating to the caregivers' perceptions of the barriers and enablers to their food provision: 1) Club Support and Communication; 2) Time and Financial Resources; 3) Player-specific Characteristics. **Conclusions:** These findings suggest a clear need for football clubs to educate caregivers in the fundamental principles of healthy nutrition and football-specific nutrition requirements and encourage

clubs to develop initiatives to better support caregivers in helping to young players to meet their dietary requirements.

Keywords: *Youth Soccer, Nutrition support, Nutrition provision; Parents; Host Families.*

Introduction

In order to develop more high-quality home-grown football players, the English Premier League, the Football Association, and representatives from the Football League, developed a strategic plan known as the 'Elite Player Performance Plan' (EPPP) (Premier League, 2011) which was launched in 2012. The EPPP works across three phases: Foundation Phase (FP) (Under (U)9-U11 years), Youth Development Phase (YDP) (U12-U16 years) and Professional Development Phase (PDP) (U18-U21 years), and aims to develop players technically, tactically, physically, and psychosocially, as well as support the holistic development and lifestyles of their players (Premier League, 2025). Academies in the EPPP are categorised from Categories 1 to 4, with greater service provision and funding availability for Category 1 academies. Furthermore, guidance from the EPPP indicates that a Category 1 academy must employ a Sport and Exercise Nutrition Register (SENr) accredited nutritionist on at least a part-time basis (Premier League, 2024) with a recent audit into sports nutrition services of UK male football academies indicating that 64% employ a nutritionist on a full-time basis (Carney et al, 2023). Given that sports nutritionist indicate that time may be limited to provide holistic support not only to players but other key stakeholders such as caregivers and that even a full-time role does not necessarily translate to contact time available to work with individuals (Bentley et al, 2019), the limited requirements for sport nutrition support set by the EPPP may be detrimental.

The objectives of sports nutrition guidelines for academy football players are to enhance performance during training and matches, optimise recovery and reduce the risk of injury and illness (Garcia-Roves et al., 2014) and consideration for the healthy growth and development of adolescents during these formative years is of the utmost importance (Desbrow, 2021). However, research suggests professional academy football players exhibit inadequate dietary practices to sustain the demands of health, wellbeing, training, and competition, particularly insufficient energy (Russell & Pennock, 2011; Briggs et al., 2015) and carbohydrate intake (Granja et al., 2017; Carter et al., 2023),

highlighting the need for more effective nutrition support programmes. The exact reasons underpinning the prevalence of sub-optimal dietary practices in male academy soccer players are not yet clear. Currently only two studies have investigated the factors that influence youth academy footballers' dietary behaviours (Carter et al., 2022; Carney et al., 2024). This research suggests adolescent soccer players' dietary behaviours can be influenced by a range of factors, such as nutritional knowledge, cooking skills, and training venue provision (Carter et al., 2022) as well as cultures within sport, social media, taste, convenience, price, culture and religion (Birkenhead and Slater, 2015). Qualitative findings from within male English football suggests that the culture of football can impact on nutrition support provided, with many managers often being ex-players with conservative, often negative, views about the impact of nutrition for health and performance (Ono, Kennedy, Reeves and Cronon, 2011). Clearly, the factors that influence dietary intake and eating behaviour in academy footballers are complex and require deeper investigation.

Stakeholders such as parents and primary caregivers also play a crucial role in supporting and influencing dietary intake, preparing and purchasing food and beverages, and contributing to the development of relationships with food and eating in young athletes (Carney et al., 2024; D'Urso et al, 2023; Klein et al, 2017). This may also include host family providers, who are individuals paid to accommodate young academy footballers who do not live locally to the team. Host family providers will provide accommodation, support with travel, and food and meals to players who may originally be from the UK or abroad (Crawley, 2021). Given the large amount of time that parents and host families spend with youth football players, and thus the significant role these stakeholders could potentially play in influencing their dietary behaviours, it is of value to investigate caregivers' knowledge to ensure that they are aware of both general and sports-specific nutrition requirements. However, to date only one study has sought to directly assess the nutrition knowledge of these stakeholders (Callis et al., 2023) who reported that knowledge was "poor" (~43%) across a group of 360 primary caregivers of FP and YDP academy football players in England. The authors concluded that this finding was not surprising given that a recent audit of the varying nutrition services provided within English football academies indicated that the collective amount of dedicated nutrition delivery to these two age groups was <20 hours per month (Carney et al., 2023). Given that the same audit reported far greater total nutrition service delivery hours to academy players within the older PDP age group (>70 hours per month), alongside an increase in the proportion of clubs reporting bespoke Host-

Family Education for PDP caregivers (~80% of Category 1 clubs) (Carney et al., 2023), it would be interesting to establish whether the nutrition knowledge of primary caregivers of PDP players is any better than that which has previously been reported from those of FP and YDP players (Callis et al., 2023). Additionally, given that several studies have reported that these stakeholders play a vital role in enabling positive dietary behaviours for young football players (Carter et al., 2022; Carney et al., 2024), it is also of value to evaluate their perspectives of the factors that may influence their abilities to support youth soccer players to meet their dietary requirements which, to date, no research has yet established. As such, the aims of this study were two-fold: (1), to quantify and compare nutrition knowledge levels using a validated questionnaire in the primary caregiver and host family providers of PDP academy football players; and (2) to gain a deeper insight into the barriers and facilitators of nutrition support provision for PDP academy football players by both primary caregivers and host family providers.

Methods

Whilst nutrition knowledge can be quantified based on the use of validated questionnaires, this alone does not describe or predict what may influence an individual in the food choices they make for their children and/or dependents. As such, this research project was separated into two distinct parts, allowing for the quantification of nutrition knowledge levels in the population, followed by a deeper exploration of contextual factors that may influence the ability to provide nutrition support to academy football players in the UK.

Part One

Participants and Recruitment

30 parents and 31 host family providers of youth academy football players were recruited from 16 different professional football clubs in England. All clubs involved were Category 1 status of the Elite Player Performance Plan (EPPP) and all parents and host family providers were the primary caregivers for players within the Professional Development Phase. Following ethical approval by the Faculty Academic Ethics Committee at Birmingham City University, UK, all participants provided written informed consent and all procedures were completed in accordance with the Declaration of Helsinki.

Study Design

The nutrition knowledge of parents and host families was assessed using the validated Abridged Nutrition for Sports Knowledge Questionnaire (A-NSKQ) (Trakman et al., 2018). This questionnaire has previously been shown to be both a valid and reliable tool for the assessment of both general and sports nutrition knowledge in a range of athletic populations (Renard et al., 2020; Arnaoutis et al., 2024; Burger et al., 2024). The questionnaire consists of 35 questions (Total), 11 of which focus on the assessment of general nutrition knowledge (GNK), with the remaining 24 assessing sports nutrition knowledge (SNK). Scores are reported as a percentage for the Total questionnaire and each subsection (GNK & SNK) and knowledge is classified according to the following criteria: “Poor” = 0–49%; “Average” = 50–65%; “Good” = 66–75%; and “Excellent” = 76–100% (Trakman et al., 2018).

Data Analysis

Each category of nutrition knowledge score (Total, GNK and SNK) was assessed for normality (Shapiro–Wilk), with homogeneity of variances determined via Levene’s test. An independent samples t-test was performed to compare differences between Parents and Host Families for GNK, whilst a non-parametric equivalent (Mann-Whitney U Test) was used to determine any differences in Total knowledge and SNK.

Part Two

Following completion of the A-NSKQ, all participants were invited to participate in a semi-structured focus group to explore their perceptions of the enablers and barriers to nutrition provision for male academy football players. Given the combined experiences of the research team as both active practitioners and researchers who have worked specifically in supporting academy football players, we sought to gain a deeper insight into the factors that may influence how caregivers support the nutrition provision of their dependents beyond simply knowledge. The use of semi-structured focus groups in this way allows participants flexibility to share and discuss their own experiences with others and enables any areas of interest to be elaborated upon (Gratton & Jones, 2015).

Procedures

A qualitative descriptive design was utilised to conduct five semi-structured focus groups with six parents (Focus group one: two female participants; Focus group two: three female participants, one male participant) and 13 host family providers (Focus group three: three female participants, one male participant; Focus group four: four female participants; Focus group five: four female participants)

from four clubs, who all declared that they were the primary caregiver for a male academy football player within the PDP. All the focus groups were conducted by one researcher (JC) and took place online via video-conferencing software (Microsoft Teams, Microsoft, Redmond, USA) with only the researcher and participants present throughout (Duration = 39 ± 3 mins). Prior to any data collection, each focus group was pilot tested with a sub-sample of participants, who were not included within the final sample. This allowed questions to be tested for intelligibility and relevance, and for questions to be revised where necessary, particularly to ensure appropriate terminology and structure (Sparkes & Smith, 2014; Kallio et al, 2016; McGrath, Palmgren & Liljedahl, 2018). The semi-structured focus group question guide is presented in Table 1.

Table 1. Semi-structured focus group question guide

Question	Prompts
Tell me about your experience as a host family/parent to an academy football player	Nutrition-specific experiences
Do you feel you have the necessary skills to provide high quality nutrition provision for players?	Where do these skills come from? If not, how can these be improved?
Do you feel you have the necessary knowledge to provide high quality nutrition provision for players?	Where does this knowledge come from? Do you feel this could be improved, is so how?
What do you think influences players to adhere to nutritional guidance?	Examples: knowledge, skills
Do you have the opportunity to provide healthy meals to players?	What influences this?
Do you feel you have a good relationship with the players?	Do you think they can communicate and be honest with you?
Do you think players have the opportunity to adhere to nutritional guidance?	What do you think influences their opportunity?
What motivates you to provide good quality food for players?	Examples: health, performance
Are there any barriers you feel you face to providing high quality nutrition?	Examples: budget, player attitudes
What do you think motivates a player to adhere to nutritional advice?	
What would you like to receive from the club to improve nutrition support for you as a parent/host family provider?	

Data analysis

Focus groups were recorded and transcribed verbatim, and then imported into Nvivo 12 (QSR International, Melbourne, Australia) for analysis. The raw data was then thematically analyzed, broadly following the process outlined by Braun & Clarke (2006). Two authors (MC & CR) independently reviewed the transcripts to identify codes and generate initial themes. MC and CR then

met and discussed, in detail, their initial interpretations, the coded data and apparent themes. Following this, MC & CR independently reviewed the data again to redraft themes, and checked these against previous qualitative findings in similar populations (Carney et al, 2024). Following this process, third author (JC) was consulted to offer insight and perspective on data groupings, how codes were categorised, and whether generated themes were appropriate. Finally, MC & CR met to finalise the themes and allow for a narrative discussion of the results. As such, the coding approach was collaborative and reflexive (Smith & McGannon, 2018). Throughout the analysis process, the researchers acknowledged and embraced the subjectivity that influences their interpretation of the data,. This subjectivity is shaped by the researchers' backgrounds, with three authors (MC, JC, CR) having worked as both researchers and practitioners in a variety of different sports and countries, which represents the experiential knowledge we brought into this research and analytical process (Creswell and Poth, 2016). Whilst this brought strengths to the research and interpretation, we were aware of the need to ensure our prior assumptions and experiences did not unduly influence the research. This was managed via the process outlined above, with various stages to the analysis with points of reflexive discussions and critical feedback. To ensure confidentiality, pseudonyms have been used throughout.

Results

Part One

Host family providers demonstrated significantly better total nutrition knowledge than Parents (HF = 49.95 ± 11.64% vs. P = 42.67 ± 14.43%; $p = 0.035$), although the knowledge of both groups is classed as "poor". For the sub-sections of GNK & SNK, GNK was considered "average" and significantly better than SNK, which was classed as "poor" (GNK = 58.12 ± 16.87% vs. SNK = 40.98 ± 14.91%; $p < 0.001$). Host Families reported significantly better SNK than Parents (HF = 44.89 ± 13.21% vs. P = 36.94 ± 15.69%; $p = 0.037$) whilst no significant differences were observed in GNK between groups (HF = 61.00 ± 15.07% vs. P = 55.15 ± 18.33%; $p = 0.180$).

*****INSERT FIGURE 1 NEAR HERE*****

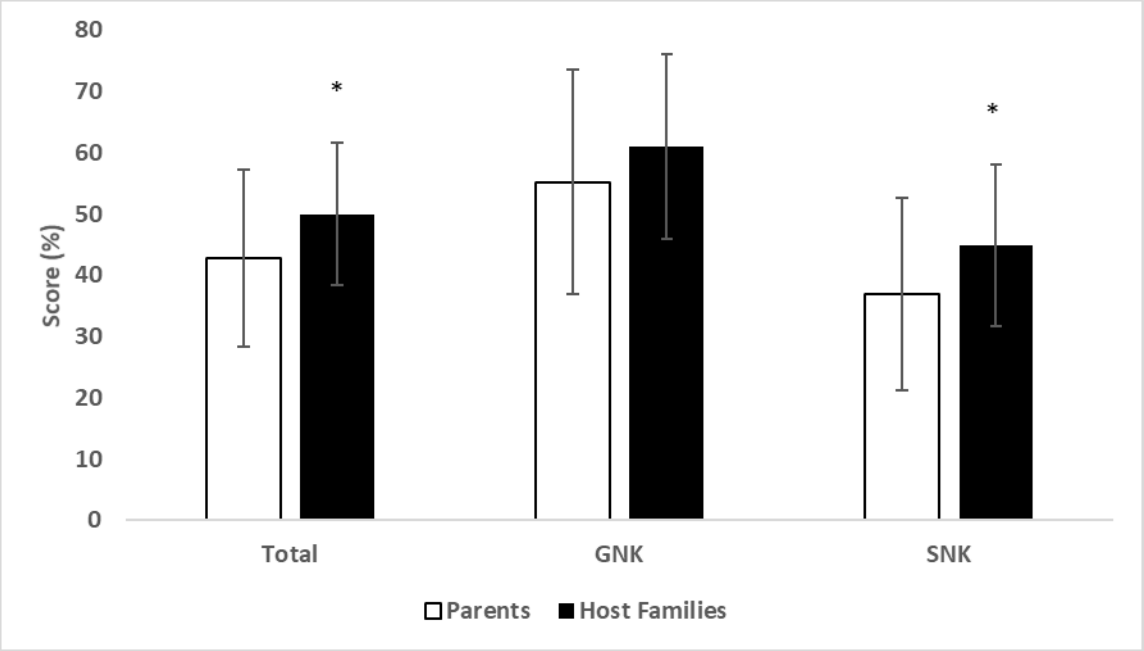

Figure 1. Total score, General Nutrition Knowledge (GNK) subscore, and Sports Nutrition Knowledge (SNK) subscore for Parents vs. Host Families. Data are mean ± SD.* Significant difference between groups ($p < 0.05$).

Part Two

Three key themes were generated relating to enablers and barriers of caregivers to providing appropriate nutritional support of academy football players in the UK (Table 2). These consisted of: (1) The communication and support link between clubs and caregivers; (2) The impact of time and money on caregiver nutrition efforts; and (3) Navigating dietary diversity in youth football players.

(1) Club support and communication

A key theme that was generated concerned the level of assistance and communication provided by the club to both parents and host family providers to allow for supporting external nutrition provision. This was identified as an enabler by numerous host family providers, with discussion around the availability of a nutritionist, communication from the club about dietary requirements, and the resources provided to facilitate optimal nutrition provision to the players in their care. Parents primarily

identified support from the club as a barrier to their ability to provide nutrition support to their dependents, with little to no contact or support reported.

(2) Time and financial resources

A second theme was generated regarding the external resources available to both host family providers and parents to allow for support optimal nutrition provision for academy players. These resources pertain primarily to the time available to prepare and provide food and meals, which was identified as an enabler and barrier in host family providers. Differences in dietary requirements and personal work commitments were also highlighted as barriers by both parents and host family providers. Some providers spoke of differences in daily schedules between members of the host family and the player in their care, and how this not only impacts their nutrition provision, but also limits the opportunities to eat together and fully integrate the player into the family. Additionally, financial constraints were discussed as a barrier by parents of young football players, highlighting the additional cost associated with providing healthy, nutritious meals to their children.

(3) Player-specific characteristics

The third theme relates to the diversity in food choice in young footballers as perceived, or supported, by the caregiver. Whilst some caregivers reported positive experiences with some young players being receptive to trying different foods, others outlined the challenges of encouraging diversity in food choice. Host family providers identified cultural differences as a potential barrier, with some outlining how this presents challenges in their ability to appropriately support dietary intake. These differences relate to both the potential dietary restrictions imposed by players' religious beliefs, alongside the lack of familiarity with traditional English food experienced by some players who were raised overseas. Whilst initially identified as barriers, providers also spoke about how they had adapted to these differences by considering how to be flexible in the way that they provide meals to be supportive of the players' needs.

*****INSERT TABLE 2 NEAR HERE*****

Table 2. Thematic analysis of parent and host family perspectives of the enablers and barriers to providing nutrition support for male academy football players.

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High-order theme	Low-order theme	Enabler or Barrier	Example quotations
Club support and communication		Enabler	*"Yeah definitely yeah, because then they also gave you menus as well, which was really good. So you can follow menus. Because we do get a three-week menu which is quite good, but then sometimes you just want to change it up a bit."* (HF11) *"Only just to say that when we first started, the nutritionist gave us sheets of paper. Menus that we used to follow and everything like that."* (HF11)
		Barrier	*"I've not had any direction from the club at all on nutrition direction."* (HF5) *"18 months we've been doing it for, we've not had anything at all. But as I said, we're pretty good in our own family in terms of nutrition, but the club don't necessarily know that."* (HF5) *"I do think that there could be a better relationship between the nutritionist and families and parents because we've had no contact"* (P2) *"I've never had menus to follow. I've never had menus."* (HF12). *"Yeah, we've got the printouts from 2015. That's the last time we had anything from them."* (HF7)
Time and financial resources	Time availability	Enabler	*"And then at the evening meal we all sit down together at six o'clock and we have our dinner together till about nine o'clock sometimes. So then we just sit around the table chatting about the day and stuff like that. Which is really nice and because some of them are from overseas, they miss the interaction with the parents more because they don't go home at weekends. So it it's quite nice and you have a lot of fun with them as well that it's a good laugh and it is really nice. Very rewarding."* (HF11) *"If you've got a plan, or if you go at 5pm and think what are we cooking tonight? You're going to lose. You're going to lose. You're on the back foot already. But if you can plan your weeks meals and this is what we're doing there, there, then it's so much easier."* (HF2) *"I'll do something that he can easily heat and which will still have the food quality."* (P1)
		Barrier	*"And he eats at a different time to us as well because he's a young person, a schoolboy, so he doesn't even get home here until about 8.30pm"* (HF6)

			"But you don't want to be cooking at that time of night for him to then say, well, actually, I don't like this. And then you've to then think of something else as well afterwards." (HF6) *"The biggest thing I think is the time issue. If you're not available to provide the meal when they need it."* (P2)
	Financial resources	Barrier	*"So yeah, very, very infrequent that I have to provide for him. But when I do it's costly, shall we say, because he eats a lot."* (P6) *"I was just going to say financially that's obviously put a lot of pressure on parents and yeah, you know, for those who may struggle from a financial point of view, I think that must be really hard, providing really healthy, nutritious meals when you haven't got the budget to be able to do it."* (P2) *"I think if you're struggling financially, and you have to provide, you know the protein in a way, that's quite expensive. So that could be a barrier for some people. And if you have to get the vitamins cause you have to get a particular type don't you? It's expensive anyway wherever you get it from. Yeah, but I mean, vitamins, you can get them cheaper elsewhere, but you're not allowed to do that. So I think that could be a barrier for some people."* (P1)
Player-specific characteristics	Dietary preferences	Enabler	*"I was going to say anybody who enjoys food. Cooking for somebody who enjoys eating food and trying food is amazing. Yeah, so that works greatly for us."* (HF1) *"What makes it quite easy is that he doesn't mind trying different foods. He's quite flexible, but at the same time he knows what he likes and he knows in his mind what he thinks is a healthy meal."* (P2) *"He's obviously had input from the club. So he sort of guides me on things like portion control and what types of foods he should be eating, particularly if he's got a match - he's got more knowledge than me probably on that."* (P2)
		Barrier	*"And I think for me one of the challenges is the lack of range of vegetables that our player will eat"* (HF5) *"And I agree you can, you know, put it in front of them. You can make it as tasty and lovely as you want, but they won't eat it. So it does become a bit of a battle, you want it to be an enjoyable experience for everybody sat around the table."* (HF7)

		"He won't eat it because I sometimes prepare meals and he looks at it and says 'no, I don't want any of that'. But I said 'you haven't tried it, you haven't tasted it'. 'But I don't like it.' So I don't know if he doesn't like the look of it or the texture of it." (P1)
Cultural differences between host family provider and player	Enabler	*"Yeah, but I had someone who was willing to try new dishes as well. So that was great. So he'd eat food from my culture as well. So he's quite good like that."* (HF4)
	Barrier	*"I think buying Halal food, getting decent Halal food can be a challenge, yeah."* (HF13) *"Yeah. I mean, the first lad we had was from XXXX. And he only wanted XXXX food. He's tried beans on toast, tried every night for the first few weeks so you wouldn't try anything else until we got XXXX restaurant involved, which was a whole other ball game."* (HF2) Note – name of country removed from quote to maintain participant confidentiality. *"You just have to then switch your menu. You think, right? OK. We can't have that because I can't get XYZ products. So we're gonna have to have a fish dish instead and see if I can get it from somewhere else. So yeah, it just causes a bit of hassle. You just have to be a bit more flexible."* (HF13)

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Discussion

The purpose of this study was to quantify nutrition knowledge levels in host family providers and parents of male PDP academy football players in the UK and qualitatively explore perceived enablers and barriers to nutrition support provision in this population. Caregivers play a critical role in the influencing the development of dietary habits and food choices throughout the life stages of children and adolescents (Schratz et al, 2023). Our data shows that host family providers demonstrated greater nutrition knowledge than parents, however both were classified as 'poor'. This is similar to previous findings from 360 registered caregivers of male FP and YDP academy soccer players from eleven professional academies in the UK, with scores of 42.8 ± 23.4% using the full NSKQ indicating similarly poor levels of nutrition knowledge (Callis et al, 2023).

Nutrition knowledge levels in athletes may correlate weakly with improved dietary practices, such as increased fruit and vegetable intake (Spronk et al, 2014; Spronk et al, 2015). However, given the major role that caregivers play in purchasing and preparing food, beverages, and meals for young football players, it is crucial that these stakeholders possess adequate knowledge of both nutrition for general health, as well as sport-specific dietary requirements. As such, our findings provide a valuable insight into a potential modifiable factor that could influence dietary intake in young elite athletes. Despite this, it is important to acknowledge the multifactorial nature of food choice, with nutrition knowledge only being one factor that may influence these.

Our findings also revealed that the volume of communication, nutritional information, and support provided by the football club to caregivers was mixed, with these being reported as both an enabler and barrier to both host family providers and parents of youth football players. Whilst some host family providers perceived that they received adequate levels of support from their club - including access to performance nutritionists, sample menus, and other tangible resources (e.g., educational leaflets) - others reported that they received very little or no support at all. The variability in these responses is unsurprising given that a recent audit into the nutrition service provision of English football academies revealed that host family education was not consistently delivered (Carney et al., 2022). The greatest proportion of academies reporting host family education were Category 1 PDP, with incrementally less reporting in Academy 1 YDP and FP, with a lower proportion of Category 2-4 academies reporting host family education delivery (Carney et al, 2022). Ensuring that both parents and host

family providers receive appropriate resources and support to enable good nutrition practices may not only influence sport-related outcomes but is important from a duty-of-care perspective to allow academy players to grow and develop optimally.

Tangible and non-tangible resources specific to the caregiver, including time available to cook and prepare fresh meals, were commonly reported by host family providers and parents as being both an enabler and a barrier to their ability to provide appropriate nutrition support. Differences in daily schedules between players and caregivers was commonly discussed as a barrier to providing meals and food at appropriate times, and to engaging in family meals. This finding is not unique as in a systematic review of qualitative studies, long working hours and limited time availability were highlighted as factors that prevented caregivers from preparing family meals and which may encourage the consumption of takeaways and convenience food (Liu et al, 2021). This may be further exacerbated given the large training volume of academy players, as evidenced by Johnson et al. (2023) who reported that players in U15/U16 age groups engage in six training sessions per week spread across four days, and typically play at least one match at the weekend. When combined with mandatory attendance at school, maintaining social obligations and sleep hygiene, it is clear how these diverging schedules may negatively impact caregivers' ability to provide fresh, performance-orientated meals in the family environment. Parents also discussed how financial stressors acted as a potential barrier to providing appropriate nutritional support for their dependents. This is not unexpected given the rising costs of food in the UK, with some evidence recently reporting that food prices are the most important factor that low-income caregivers need to navigate when considering the dietary choices made for families when shopping (Screti, Edwards, & Blissett, 2024). It is noteworthy that the financial burden was not highlighted as a specific barrier by host family providers, perhaps due to the optional nature of the role, alongside the financial support provided by professional clubs to host family providers. Whilst this support was evident for all the participants in our study, this may not be the case for all host family providers, especially those caring for players within football clubs lower down the English football pyramid who typically have limited resources with which to support their players.

Dietary diversity, or a possibly a lack thereof, was reported by both groups of caregivers, with the players' willingness to try new foods being identified as both a barrier and facilitator to providing

nutritional support. It has previously been reported that food neophobia is a present, but not necessarily common, concern amongst adolescents (de Andrade Previato & Behrens, 2017; Roßbach et al, 2016) which may impact a young athletes' willingness to eat foods that they are unaccustomed to (Appleton et al, 2019). Diversity in food choices due to cultural differences between the player and the host family provider related to both nationality (for example, a player moving from overseas to join a specific UK academy) or religion were highlighted specifically as a barrier. The cultural background and nationality of athletes is known to influence food choice (Pelly, Thurecht and Slater, 2022; Foo et al., 2004) however limited understanding of cultural practices (e.g., fasting during Ramadan) by others may influence the support provided to overseas players enrolled at UK football academies (Amjad et al, 2024). As such, further direction may need to be provided to host family providers to ensure a supportive and inclusive environment can be provided.

Limitations

Whilst the findings from this research offer some valuable insights into the current nutrition knowledge and perspectives of caregivers of male academy football players, it is important to consider a number of limitations when interpreting the findings. As the abridged NSKQ is a self-reported measure of nutrition knowledge, results should be interpreted with caution, and may not be truly reflective of an individual's understanding of nutrition and instead may be influenced by their understanding of questions and answers, or social desirability bias. The use of focus groups may present a limitation in that dominant voices may override discussion and represent the views and opinions of a sub-sample of participants present (Smithson, 2000) and may influence the discussion of sensitive topics. Additionally, whilst the participant sample within both elements of this study was drawn from several professional football clubs in England, the findings are potentially not representative all Category 1 football academies in England, nor equivalent academies in other countries. Future research should seek to replicate these findings across a more diverse and widespread participant pool.

Conclusion and Practical Considerations

In conclusion, the data from our mixed-methods study demonstrates that caregivers and host family providers of male academy football players in the UK may have poor levels of nutrition knowledge that could negatively influence the dietary support provided to those within their care. Furthermore, qualitative findings highlight a variety of factors that may act as both enablers and/or barriers to the

ability of these caregivers to provide adequate nutrition support to young football players. Our data provides novel practical insights that support the rationale for professional football academies to not only provide nutrition service delivery to youth football players, but also to their primary caregivers, thereby contributing to the duty of care and player welfare requirements of male football academies in the UK (Premier League, 2025). Current guidance stipulates that Category 1 academies (the highest ranked academies in the EPPP) are only required to hire an accredited nutritionist on a part-time basis (Premier League, 2024). Whilst many clubs do provide nutrition support to greater levels than the minimum required, there is evidence to suggest that a proportion of academies may not, especially those from Category 2-4 (Carney et al, 2022), thus highlighting a potential barrier to adequate nutrition support for youth athletes. Based on the findings of our study, we propose that professional football clubs should seek to:

- Provide regular, consistent nutrition support to all players enrolled in their academies, that covers a range of topics to best support health and wellbeing, growth and development, and training and performance.
- Educate parents and host families on the importance of nutrition for healthy youth athlete development and provide greater emphasis on football-specific nutrient guidelines. Ideally this should be in the form of a structured curriculum and aligned to the education of the players.
- Provide more regular and effective communication to caregivers, through a qualified and registered performance nutritionist.
- Support host families to improve their understanding of players' culture and background, to promote inclusivity and better cater to an individuals' dietary preferences and requirements.

Acknowledgements

JC & MC conceived the research design, administered the knowledge questionnaire, formulated the focus group framework, conducted the focus groups, analysed the data and prepared the manuscript. CR analysed the data, contributed to the preparation of the manuscript, and provided critical review throughout all aspects of the study design. FB contributed to the organisation and analysis of the data and preparation of the manuscript. All authors have had an opportunity to review of the manuscript

and agree with the final submission. The authors would like to thank the parents and host families for giving up their valuable time to participate in this research.

Declaration of Interest

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Disclosure Statement

The authors report there are no competing interests to declare.

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