A survey of the attitudes and knowledge of parents of high school children on the East Rand on the usage of nutritional supplements

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Background: The use of nutritional supplements (NS) by adolescents seems to be an escalating problem in South Africa. Any supplementary product ingested to boost the nutritional content of a normal diet to either fill a need or presumed deficiency, including any sports or energy drink, tablets or injections, are deemed as NS for the purpose of this study. Parents seem to agree that children who play sport are allowed to use NS to assist them to perform better, without knowledge of the health risks associated with these products. Despite information on websites and information sessions arranged by schools, parents seem to disregard advice given to them by experts.

Objectives: The objective of this study was to determine the attitudes and level of knowledge of parents of children on the East Rand with regard to NS usage.

Methods: This was a cross-sectional study which used a previously validated, self-administered questionnaire for the parents (n = 198). It also included an interview with a focus group consisting of coaches and administrative staff (n = 9) representing each sports code selected for the purpose of this study. The data were analysed using largely descriptive statistics.

Results: Nine percent of parents indicated that they considered themselves well informed with regard to NS; 13% indicated that they would support their children in obtaining NS without efficacy being proven and 75% indicated their awareness of the risk of NS being contaminated. Coaches viewed the role of parents as integral regarding a healthy diet but indicated that the use of NS could not be ignored, also admitting to a lack in knowledge regarding NS.

Conclusion: Parents and coaches demonstrated limited knowledge regarding NS. Their knowledge was formed from information on labels and the internet. Parents have a positive attitude towards the use of NS by their children despite indicating an awareness of the health risks related to NS usage.

Keywords: adolescents, presumed deficiency, nutrients, health risks, limited knowledge

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The South African Institute for Drug-Free Sport introduced a campaign for school-going youth, indicating the risks to the youth when exposed to these supplements.[1] This, however, does not seem to be successful in preventing adolescents from using NS and exposing themselves to potentially contaminated products. Any supplementary product ingested to boost the nutritional content of a normal diet to either fill a need or presumed deficiency, including any sports- or energy drink, tablets or injections, are deemed as NS for the purpose of this study.

The gateway hypothesis suggests that possible future use of prohibited substances or drugs can be related to the previous use of legal NS, as drug use could follow a sequence of steps starting with so-called soft drugs. Significant evidence exists about a relationship between the use of NS (fat burners, muscle builders), leading to the use of prohibited substances.[2]

It is widely accepted that adolescent sports persons use various NS. This is confirmed in a study where 57% of Johannesburg schoolboys used caffeine, 32% creatine and 54% carbohydrate supplements.[3] Reasons for their use varied from assisting performance in sports to giving a sense of assurance of being selected for a specific team.[3]

In a recent review, it was shown that at least 40-70% of athletes used NS, of which 10-15% may have contained prohibited substances.[4] Nutritional supplements have no scientifically proven benefits in a healthy diet of an adolescent, but can contribute to children being overweight due to the high contents of sugar and carbohydrates,[5] increasing the risk of Type 2 Diabetes (T2D).

Studies which failed to accurately explain dehydration and its consequences, created an opportunity for marketing strategies targeting adolescents into believing that usage of NS is a necessity to enable high performance.[6] Natural healthy foods such as fresh fruit and vegetables are viewed by parents as inadequate to fulfil dietary requirements of a growing athlete,[8] often resulting in young boys consuming excessive amounts of NS.[7]

Parental pressure and endorsement of NS contribute to their usage, to prevent being overlooked for possible success later on in the sporting world.[8] Role models are also influential, as 57% of Indian schoolboys in KwaZulu-Natal indicated that they felt pressurised by their Bollywood idols to look stronger and bigger.[9]

No studies, nationally or internationally, could be found covering the reasons why parents would endorse and even encourage the use of NS by their children despite there being a possible health risk.

The primary aim of this study was therefore to determine the role and attitude of parents in their support and knowledge of NS, and at the same time, to determine to what extent they were aware of the health risks their children were exposed to.

Methods

The use of quantitative (validated questionnaires)[3] and qualitative research (a focus group interview) types were selected to ensure collection of empirical evidence for

statistical purposes. Four high schools were invited to participate as a sample of convenience. The sports codes selected included rugby, cricket, hockey, netball and athletics. These sporting codes are regarded as those most likely to provide opportunities for children to pursue professionally in adulthood.

Questionnaires

Arrangements were made with the headmaster of each selected school for an information session to be held, on a pre-arranged date, with all the learners who take part in the selected sports codes, and who played for an open team (such as, 1st, 2nd) in the previous or current season. The learners were instructed to hand the sealed questionnaire to their parents for completion. Parents were provided with information sheets and all signed a consent form.

- The information sheet described the purpose of the study and the requirements for participation in the study. The questionnaire[3] had been validated in a previous study and was divided into four sections, namely, demographics, attitudes, information sourcing and NS usage.
- Participation would be voluntary and anonymous, and the data gathered would be discussed as trends and not as individual schools or persons.
- One teacher at the school was selected as a drop-off point for the completed questionnaires.
- A period of three weeks was allowed for completion.

Focus group

The interview of the focus group was scheduled at a pre-arranged time and place that was convenient for all coaches to attend. Twelve coaches and/or administrative staff involved with the selected sports teams were invited on a voluntary basis of which nine participants accepted. An open discussion was facilitated with the nine coaches, using a list of 10 questions as a guideline.

- Information sheets on the purpose of study and informed consent forms were given to the participants to read and sign beforehand.
- Data recovered from the recording were transcribed verbatim and organised into clusters of relevant themes.

Statistical Analysis

Descriptive statistics were used to analyse the data obtained from the questionnaires. The data were group-analysed, based on specific sporting groups, gender, and age.

The data obtained from the focus group utilised 'Atlas Ti' computer software to decipher the data which assisted in the transcribing and coding of the data. Tape recorded interviews were transcribed verbatim and analysed so that codes could be assigned to repeated opinions by the focus group.

Results

Parents' opinions and attitudes towards the use of NS and factors influencing the usage (Table 1)

A large group of parents (75%) indicated that they were aware of the risk that prohibited substances could contaminate NS, 68% agreed that the use of NS could act as a gateway drug and 92% indicated a substantial need for education programmes on NS. Eighty-one percent of respondents indicated that the use of NS improved performance and 26% that their children needed the edge that NS added to the diet. Some 28% indicated that pressure from coaching staff and teammates (30% used NS) were the main motivation for using NS, 45% claimed that better results were obtained with NS than with purely natural food and 34% indicated that the use of NS is a must despite a healthy diet.

Extent of nutritional supplements/medication usage by children with parental knowledge (Table 2)

Most popular NS used: vitamins (63%), caffeine (36%) and protein supplements (35%). Other substances used: alcohol over weekends (18%), anabolic steroids (17%), creatine (10%) and other recreational drugs, such as Tik (crystal methamphetamine) and Ecstasy (methylenedioxymethamphetamine (MDMA)) (8%). Fourteen percent of participants indicated that their children used medication for health reasons.

Sources of information most likely accessed regarding knowledge of NS (Table 3)

The internet was selected by 50% of participants, magazines (42%), followed by television (30%), friends and coaches (25% each), books (23%), newspapers (22%) and professional athletes (21%). Gym instructors (15%), personal trainers, teachers and teammates (14%) were all used as sources. Doctors (24%), pharmacists (20%), physiotherapists (13%) and biokineticists (12%) were also selected, SAIDS was used by 10% and BokSmart (4%) rated as the least accessed source.

Sources providing substances to children (Table 4)

These sources were mainly the pharmacist (27%), other team members (18%), friends (17%), coach (14%), gym trainer and fellow parent (11%).

Importance of parents' role in the athletic triangle(Table 5)

Sixty-eight percent of parents deemed their role as integral in the athletic triangle (coach, parent and athlete), 13% indicated their support of children in obtaining NS despite efficacy not proven. Sixty-four percent indicated that their children relied on them for support and knowledge of NS, yet only 36% indicated awareness of an application for Therapeutic Use Exemption (TUE). Only 18% of parents informed their child's medical teams of medication usage.

The importance of the role of the parent in the athletic triangle as well as the role of the coach as deemed by the coaching staff

Coaches indicated that children remained free to make their own choices and did not always listen to advice. They themselves often felt pressurised in ensuring that children performed well at the competitive level in order to be more eligible for bursaries. Children did not seem to fear consequences of either positive testing or health risks regarding the usage of NS, therefore coaches deemed it imperative to work with the parents as a team. They indicated

Table 1. Attitudes, opinions of parents and factors influencing usage of NS

Factors influencing the attitudes and opinions of parents regarding the use of NS	% YES (*n*/*N*)	% NO (*n*/*N*)
Attitudes		
Parents feel sports bodies need to provide education	92 (180/197)	8 (17/197)
Parents deem usage of NS a must despite a healthy diet	34 (65/194)	66 (129/194)
Parents are aware of risk of contamination in NS	75 (149/198)	15 (30/198)
Parents are aware of usage of NS acting as a gateway drug	68 (135/198)	20 (40/198)
Parents are aware of teammates of children using NS	30 (60/198)	70 (138/198)
Opinions		
Parents indicate usage of NS improves performance	81 (161/198)	19 (37/198)
Parents indicate better results are obtained with NS than with food only	45 (89/198)	55 (109/198)
Parents indicate coaches encourage usage of NS	28 (55/198)	72 (143/198)
Parents indicate usage of NS gives child the edge to perform	26 (51/198)	74 (147/198)

N = sample size, *n* = number of responses

Table 2. Nutritional supplements/drug used by children with parents' knowledge

Nutritional supplement/ drug/medication usage	% YES (n/N)	% NO (n/N)
Vitamin supplements	63 (114/180)	37 (66/180)
Caffeine tablets, Red Bull, etc.	36 (64/179)	64 (115/179)
Protein shakes	35 (63/179)	65 (116/179)
Alcohol over weekends	18 (33/181)	82 (148/181)
Anabolic steroids	17 (30/180)	83 (150/180)
Creatine	10 (19/182)	90 (163/182)
Other recreational drugs: Tik, Ecstasy, etc.	8 (8/105)	92 (97/105)
Medication for health reasons	14 (28/198)	86 (169/198)

N = sample size, *n* = number of responses

Table 3. Sources participants were most likely to access for information regarding nutritional supplements (N=198)

Source	% Yes (n/N)	Source	% Yes (n/N)
Internet	50 (98)	Gym instructors	15 (29)
Magazines	42 (83)	Personal trainers	14 (27)
Television	30 (60)	Teammates	14 (27)
Coach	25 (49)	Teachers	14 (27)
Friends	25 (49)	Physiotherapists	13 (25)
Doctor	24 (48)	Biokineticists	12 (24)
Books	23 (46)	SAIDS	10 (20)
Newspapers	22 (43)	Sports bodies	6 (12)
Professional athletes	21 (42)	Other	6 (12)
Pharmacist	20 (40)	BokSmart	4 (8)

N = sample size, *n* = number of responses

Table 4. Indicated sources providing substances to children as reported by parents

Source of substances	% YES (n/N)	% NO (n/N)
Pharmacist without prescription	27 (20/74)	73 (54/74)
Pharmacist with prescription	23 (18/77)	77 (59/77)
Other team members	18 (11/60)	82 (49/60)
Friend	17 (13/76)	83 (63/76)
Coach	14 (10/73)	86 (63/73)
Fellow parent	11 (8/71)	89 (63/71)
Gym trainer	11 (8/72)	89 (64/72)

N = sample size, *n* = number of responses

Table 5. Importance of the parent's role in the athletic triangle

Importance of parent's role as deemed by the parent	% YES (n/N)	% NO (n/N)
Does the parent deem a healthy diet without added NS as adequate?	73 (143/174)	16 (31/174)
Is the role of the parent deemed important in the athletic triangle?	68 (129/160)	16 (31/160)
Does your child rely on your support and knowledge of NS?	64 (125/175)	26 (50/175)
Does the parent support the child in buying NS?	13 (25/171)	75 (146/171)
Does the parent have knowledge of the application of Therapeutic Use Exemption?	36 (72/198)	36 (71/198)
Does the medical team have knowledge of child's medication usage?	18 (35/198)	28 (56/198)

N = sample size, *n* = number of responses

a need to arrange for specialists in the field, such as dieticians, to present information sessions to the whole team and the parents.

Discussion

It is significant that only 9% of parents indicated that they were well informed regarding NS when 64% indicated that their children relied on them for knowledge regarding the use of NS. The self-confessed lack of knowledge could be a good indication as to why children would use NS with

considering health risks and related side effects and parents' guidance would clearly be inadequate due to their lack of knowledge.

Despite a lack of knowledge, 75% of parents were aware that NS held the risk of being contaminated, raising the possibilty that parents could be influenced by vigorous marketing strategies claiming results of unproven efficacies, using role models to sell products, and believing the information provided on the labels of products.[1]

Consumers were proven to be strongly influenced by the information given on labels of NS, as 70% believed claims of being free from contamination, 50% believed claims regarding the quality of the product and 40% believed the authenticity of the ingredients listed on the label.[10] Coaches themselves admitted to having extremely limited knowledge regarding NS and believed that more expensive products were the more effective products.

The Medicines Control Council approved a new classification category for NS under the complementary medicines category, which places the burden of proof of efficacy and safety on the manufacturing company of that specific NS. Companies have an extended period in which they are given the opportunity to produce proof for their claims, failing which the product has to be removed from the shelf.[11] This ammendment to the existing regulations could protect the parent regarding the product's status pertaining to being free of health risks.

It is difficult to understand why parents would allow their children to use NS when neither efficacy nor safety have been proven. In some scientific tests, 47% of the results of the 138 NS products tested revealed that the levels of melamine detected could have potentially lead to kidney stones and related renal health problems. Melamine, in combination with other chemicals, also has the potential of causing health problems, yet it was not declared as an ingredient in any of the NS tested in this particular study.[12] Craven Week rugby players (U/19) that tested positive for the use of prohibited substances were found to be using at least four different NS simultaneously at any given time, adding up to the intake of a number of unknown chemicals that could be harmful to their long-term health.[8]

Companies which manufacture energy drinks repeatedly use marketing strategies aimed at creating a belief that extra NS are necessary. This creates a so-called 'need-strategy' to influence the consumer into believing that it is essential for these drinks to be taken during exercise.[6] Up to 50% of the energy drink market consists of children, adolescents and young adults using energy drinks which are high in caffeine levels.[5] They also have related long-term health risks , such as, seizures, cardiac abnormalities and T2D.[5] Parents were of the opinion that energy and sports drinks were harmless and that children needed them to hydrate during participation in sports. Coaches indicated that children often psychologically relied on energy and sports drinks during training sessions.

Twenty-five percent of parents indicated that they relied on coaches for guidance regarding NS, and 14% indicated that the coaches themselves were often the suppliers of NS. The question arises as to whether coaches have the best interests of the sports-playing child at heart given the fact that in this study they themselves admitted to be positively inclined towards the use of NS. The athletic triangle should interact with one another resulting in a complementary and harmonising relationship between coach and parent as this has a critical affect on the participation of the sports child.[14] Parents clearly feel the need to be better informed regarding NS as 92% indicated a demand for education programmes. In this study the main source of information utilised was the internet (50%), with SAIDS used by only 10% and BokSmart only by 4%. SAIDS seem to be reaching the people concerned with sports (coaches, etc.) but does not have a great impact on parents. Furthermore, medical professionals, such as doctors, were used by only 24% of parents, 13% used the physiotherapists and 12% the biokineticists. This study seems to indicate that the parents are not consulting credible sources for information regarding NS.

Parents indicated that sources of substance supply were mainly the pharmacists (27%) followed by team members (18%). Recently, a leading group of pharmacists agreed to form an alliance with the 'Informed-Sport' and 'Informed-Choice' campaigns which call for NS to be tested by the Laboratory of the Government Chemist.[13] Fairweather[13] explained that 'Informed-Choice' entails the testing of a random selection of NS off the shelves over a period of 12 months for potential contamination and mislabelling, whereas 'Informed-Sport' tests samples from every batch that is sold from the shelves. These actions, nevertheless, do not provide a 100% safety guarantee of these products as there could still be single containers which have not been tested and are potentially contaminated.[13]

Very limited studies nationally and internationally could be found regarding the role of parents and the use of NS by their children. The athletic triangle describes the importance of the role of the parents regarding knowledge of the child's chosen sports and this is seen as an integral part of the eventual enjoyment of sports by the child, which should be the main goal of participation.[14]

No scientific evidence is available to substantiate the parent's view that a diet consisting of natural fruits and vegetables, together with all the other requirements expected from natural foods, is inadequate.[8] A leading dietitian in the field who tried to educate parents on how to purchase healthy foods in the store concluded that parents avoided this responsibility as they lacked the knowledge required, largely as their own lifestyles were unhealthy.[7] Therefore children reverted to easy way out of this dilemma by turning to NS.[7]

It was found that paternal behaviour, influenced by personal conviction, plays an important role in the protection of their children from doping.[15] This finding could be very significant in achieving a change of attitude in parents and therefore ultimately having a significant influence on the child's attitude towards the use of NS. It is suggested that fathers should be encouraged to utilise their communication skills to influence their children regarding the potential dangers of doping.[15] Furthermore, the importance of education should be emphasised and focus on the positive role of nutrition, including all role players involved with the child athlete.[16

Study Limitations

There are always limitations with respect to the answering of a questionnaire, i.e. the loss of meaning, misunderstanding the intent of the question, participants not being utterly truthful or the determination of how much thought went into the responses. The researcher, however, has tried to ensure the integrity of the results' interpretation.

Conclusion

In this study, parents showed a severe lack of knowledge regarding the efficacy and related potential health risks with regard to NS and based their choices mostly on knowledge gained from information given on the internet. They indicated a dire need for educational programmes.

The South African Institute for Drug-Free Sport seems to have made little impression on parents as a source of information as only ten percent accessed this source of information. Parents relied mainly on inaccurate sources, such as the internet and coaches for knowledge, despite coaches also admitting to having very limited resources regarding information and knowledge of NS.

Coaches and parents acknowledged the importance of the role that parents play in respect of their involvement in the athletic triangle. Both parents and coaches exercise influence on the child's attitudes regarding NS and at present they all seem to hold a positive attitude towards NS believing that their use is more beneficial than harmful.

Recommendations

The responsibility to inform parents and children lies with all specialists and experts involved in the field of sports. More emphasis should be given to the nutrition of sportspersons through training and educational programmes by all professionals involved - physiotherapists, sports scientists, dietitians, etc. Schools should be encouraged by means of incentives to make use of the educational programmes offered by SAIDS, with coaches taking responsibility for this avenue of enrichment, as they are the entitiy closest to both the child playing sport and the parents.

The attainment of knowledge should be updated or renewed on a regular and long-term basis. This should start at primary school level and continue into high school, as children's needs change as they grow older.

The formation or the change of attitudes of individuals are easily influenced by someone else deemed to be a role model and displaying a good self-esteem. Attitudes can also be changed when new ideas are acknowledged by a person regarded as knowledgeable.[17] These tools can be used more effectively to bring about new and more informed attitudes regarding NS when arranging information sessions for parents. Professional athletes should not be utilised only as motivational speakers but also as role models to exercise influence in respect of healthy diets.

The athletic triangle as a unit should be born in mind at all times as no entity is more important than the other. The role of the parent should be maintained and emphasised at all times and parents should be made aware of the importance of their contribution to this relationship. The sense of ethics in training an athlete in an honourable and healthy manner should be impressed upon both coaches and parents alike – never forgetting that the main aim of junior sports should be enjoyment and development of skills. In fact, this should be expected from all professionals involved in the well-being of a growing child.

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