



An Outcome of Evaluation of Health Risks Associated with Unregulated Body Enhancement Supplement among Youth at Joshua Mqabuko Nkomo Polytechnic, Matebeleland South Province

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ABSTRACT.

The evaluation aimed to assess the health risks linked to unregulated Body Enhancement Supplements (BES) among youth at Joshua Mqabuko Nkomo Polytechnic. The researchers examined existing literature to identify the prevalence, types, and adverse effects of BES use, as well as sociocultural factors contributing to their consumption. The evaluation highlighted the gaps in regulation, education, and awareness, and provided recommendations for mitigating the harmful consequences of unregulated BES use among young people. The study aimed to assess the awareness and knowledge of youth regarding the risks and consequences of unregulated supplement use. Apart from that, this was done to raise awareness about the potential health dangers of unregulated body enhancement supplements among youth. The research wanted to unpack the source of unregulated body enhancement and what are they benefiting. The study used a number of data collection tools like questionnaire, observation checklist and focus group discussion so as to get a comprehensive information and to come out with recommendations of the study. As part of the findings, there were a total of 110 participants who completed the questionnaire, with a response rate of 90%. The study included 30% males and 70% females. The age range of participants was 18-25 years, with a mean age of 21.5 years. On Supplement use habits the majority of participants (70%) reported using unregulated body enhancement supplements twice in the past year. On health risks the majority of participants (50%) reported experiencing adverse health effects, including liver damage, kidney damage, and cardiovascular problems. Experiences and behaviours participants reported using unregulated body enhancement supplements to improve their physical appearance and enhance their athletic performance. The study recommended that there is a need for greater awareness and education about the supplement industry and its regulation. This information highlights the need for regulatory bodies to strengthen their oversight of the supplement industry and to provide accurate and reliable information to consumers. It is also recommended that regulatory bodies should conduct regular monitoring and surveillance of the supplement industry to identify and address any safety concerns. Regulatory bodies should strengthen their oversight of the supplement industry to ensure that products are safe, effective and restrictions be given. Be wary of products sold online, especially those with unrealistic claims or no scientific evidence.

Background

Joshua Mqabuko Nkomo Polytechnic is located in Matebeleland South in Gwanda along the Beightbridge road and the most activity for source of income is mining and agriculture is not possible because of low rainfall received. The use of body enhancement supplements (BES) among youth has become a pressing public health concern globally, with Zimbabwe being no exception. Joshua Mqabuko Nkomo Polytechnic in Matebeleland South Province serves as a critical context for this study. Zimbabwe has witnessed a surge in BES use, driven by societal beauty standards, athletic performance pressures, and accessibility. This phenomenon aligns with global trends, where the dietary supplement industry is projected to reach \$194.6 billion by 2025. Previous studies have highlighted the prevalence of BES use among Zimbabwean youth (Moyo et al., 2020; Chirisa et al., 2019). Research has also linked unregulated BES to liver damage, cardiovascular events, hormonal imbalances, and mental health concerns (National Institutes of Health, 2020; World Health Organization, 2020). One of the most prominent goals of the Sustainable Development Goals (SDG) is to provide good health and wellbeing of people. In order to fulfill the sustainable development goal number 3 of good health and well-being by the year 2030 the MoHCC came up with interventions to make. The main objective was to evaluate the health risks associated with unregulated body enhancement supplements among youth of Joshou Mqabuko Nkomo Polytechnic College. However, there is a paucity of research on the specific health risks associated with unregulated BES use among youth in Matebeleland South Province. This study addressed the critical need to evaluate health risks associated with unregulated BES use among youth at Joshua Mqabuko Nkomo Polytechnic. The findings will inform evidence-based interventions, promoting healthy behaviors and mitigating risks among students. The main objective was to assess the prevalence and patterns of unregulated BES use among youth at Joshua Mqabuko Nkomo Polytechnic.

Evaluation Objectives

- 1) To assess the prevalence, patterns, and trends of unregulated body enhancement supplement use among youth.
- 2) To identify the potential health risks and adverse effects associated with unregulated supplement use.
- 3) To evaluate the effectiveness of current regulations, policies, and education programs governing the supplement industry.

Evaluation Questions

- What is the prevalence of unregulated body enhancement supplement use among youth?
- What are the potential health risks and adverse effects associated with unregulated supplement use?
- How effective and efficient are current regulations and policies governing the supplement industry?

Literature Review

The use of unregulated body enhancement supplements among youth has become a pressing public health concern globally. Zimbabwe, particularly, faces unique challenges in addressing this issue due to limited regulatory oversight. The desire for physical perfection, fueled by societal pressure and social media, drives many young individuals to seek quick fixes for body image issues. Joshua Mqabuko Nkomo Polytechnic, like other institutions, is not immune to this trend. This literature review aims to provide an in-depth examination of existing research on unregulated body enhancement supplements use among youth, focusing on prevalence, patterns, trends, potential risks, and adverse effects. Additionally, this review will evaluate the effectiveness of current regulations, policies, and education programs governing the supplement industry.

Prevalence, patterns, and trends of unregulated body enhancement supplements

Unregulated body enhancement supplements refer to dietary supplements that claim to improve physical appearance, performance, or muscle growth without being approved or regulated by government agencies such as the FDA (U.S. Food and Drug Administration). These supplements often contain untested or unproven ingredients. . The types of unregulated body enhancement being taken by the youths these include: Anabolic Sexual Enhancement Supplements (example, testosterone boosters, libido enhancers), steroid alternatives (example, prohormones, testosterone boosters), muscle builders (example, creatine, nitric oxide boosters), Weight Loss Supplements (example, appetite suppressants, metabolism boosters), fat burners (example, thermogenics, lipotropic agents), and Anti-aging supplements (example, HGH, telomere extenders). A systematic review of 22 studies from 2000 to 2018 reported a pooled prevalence of 12.2% for UBES use among adolescents and young adults' worldwide (Alammen et al., 2020). The highest prevalence rates were found in North America (17.4%) (Hudson et al., 2017). Research has consistently shown that the use of body-enhancing supplements (BES) is widespread among youth. A study published in the Journal of Adolescent Health found that approximately 12% of adolescents report using BES (Calzo et al., 2017) though the evaluation was focusing on the youth of the college students of Joshua Mqabuko Nkomo Polytechnic. Furthermore, male college students were more likely to use BES than females (23.4% vs. 6.4%) (Hudson et al., 2017). This disparity may be attributed to societal pressure on males to conform to traditional masculine ideals.

The Journal of Clinical and Aesthetic Dermatology noted a rising trend in BES use among youth, driven by social media and celebrity endorsements (Latz et al., 2017). Social media platforms showcase idealized physical images, fostering unrealistic expectations and body dissatisfaction. Celebrities and influencers often promote BES, further fueling the trend. A review in the Journal of Strength and Conditioning Research highlighted the role of athletic performance in BES use (Hudson et al., 2017). Young athletes may turn to BES to enhance performance, neglecting potential health risks. Coaches, trainers, and healthcare providers must address this issue.

Apart from that, social media is not the only factor influencing unregulated body enhancement use the are some factors include (peer pressure, social norms and athletic performance). Peer pressure, social norms and peer influence significantly predict unregulated body enhancement use (Hudson et al., 2017). Friends' and teammates' BES use increases likelihood of own use (Eisenberg et al., 2017). Moreover, pressure to conform to societal beauty standards or athletic ideals drives unregulated body enhancement supplements use (Latz et al., 2017). - Exposure to fitness and sports media increases unregulated body enhancement supplements use (Bilstrup et al., 2019). Social media platforms showcase idealized bodies, fostering body dissatisfaction and unregulated body enhancement supplements use (Slater et al., 2017).

Potential risks and adverse effects associated with unregulated supplements

The use of unregulated body enhancement supplements has become increasingly prevalent among youth, driven by societal pressure to achieve idealized physical aesthetics and athletic performance. However, the alarming lack of regulation and oversight in the supplement industry poses significant health risks to consumers. Unregulated body enhancement supplements have been linked to a range of serious health consequences, including physical harm, psychological distress, and even mortality. This section examines the potential risks and adverse effects associated with unregulated body enhancement supplements use, highlighting the physical and psychological harm that can result from consuming these unregulated

substances. By understanding the scope of these risks, policymakers, healthcare professionals, and educators can better address the unregulated body enhancement supplements epidemic and protect the health and well-being of vulnerable youth. In addition, some of the health risks associated with these body enhancement supplements these include cancerous liver cancer, kidney cancer, testicular cancer, prostate cancer, breast cancer: which are long term effects, physical health risks liver damage, cardiovascular issues, and hormonal imbalances. Kidney damage and renal failure (Navarro et al., 2017).

Liver Damage and Toxicity unregulated body enhancement supplements often contain harmful ingredients like steroids, stimulants and untested compounds. These can cause liver inflammation, scarring and even failure. Studies have reported cases of acute liver failure, chronic liver disease and liver transplantation directly linked to unregulated body enhancement supplements use.

Cardiovascular Issues unregulated body enhancement supplements can increase heart rate, blood pressure and cardiac output, leading to cardiovascular strain. This elevates the risk of heart attacks, strokes, arrhythmias and sudden cardiac death. Cardiovascular toxicity is frequently attributed to stimulants and performance-enhancing substances. **Hormonal Imbalance:** unregulated body enhancement supplements disrupt normal hormonal functions, particularly sex hormones and insulin. Anabolic steroids in UBES can suppress natural testosterone production, causing hypogonadism, erectile dysfunction and infertility. Hormonal imbalances also affect mood, energy and overall well-being. **Kidney Failure** unregulated body enhancement supplements can damage kidney function and structure, potentially leading to renal failure. Ingredients like creatinine, protein powders and stimulants increase kidney strain, exacerbating existing kidney issues. **Anxiety and Depression:** unregulated body enhancement supplements use correlates with heightened anxiety and depression due to body image dissatisfaction, pressure to maintain physique and fear of losing gains. Withdrawal from unregulated body enhancement supplements can worsen symptoms. **Addiction and Dependence:** unregulated body enhancement supplements contain addictive substances (e.g., stimulants) that activate brain reward pathways, fostering psychological dependence. Users may experience withdrawal symptoms like fatigue, irritability and insomnia when stopping unregulated body enhancement supplements.

Effectiveness of current regulations, policies, and education programs

The proliferation of unregulated body enhancement supplements poses significant health risks to consumers, particularly youth. Effective regulations, policies and education programs are crucial to mitigate these risks. This objective assesses the efficacy of existing frameworks, identifying strengths, weaknesses and areas for improvement.

Overview of existing regulations and policies

National regulations: Dietary Supplement Health and Education Act (DSHEA) of 1994 (US): Regulates dietary supplements, including the unregulated body enhancement supplements, ensuring safety, labeling and manufacturing standards. Requires supplement manufacturers to ensure safety, labeling and good manufacturing practices. Food and Drugs Act (FDA) (US): oversees supplement approval, labeling and safety. Therapeutic Goods Act 1989 (Australia): Regulates complementary medicines, including unregulated body enhancement supplements,

International Regulations: World Health Organization (WHO) Guidelines: Provides global standards for supplement regulation. International Society for Sports Nutrition (ISSN) Standards: Sets guidelines for sports nutrition supplements. European Food Safety Authority (EFSA) Regulations: Governs EU supplement regulations.

Efficacy of education programs and awareness campaigns

Effective Strategies

Targeted Messaging → Tailoring messages to specific demographics and interests.

Influencer Partnerships → Collaborating with social media influencers for outreach.

School Programs → Integrating supplement education into school curricula.

Healthcare Provider Guidance → Educating providers on UBES risks and counseling.

Enforcement challenges and gaps in regulation

Challenges

1. Lack of resources: Insufficient funding for enforcement agencies.
2. Complex supply chains: Difficulty tracking supplement origins.
3. Online sales: Unregulated internet sales.
4. Labeling loopholes: Misleading labeling.

Gaps

- Inadequate Testing: Insufficient pre-market testing.

- Post-market Surveillance: Limited monitoring of adverse effects.
- International Coordination: Inconsistent global regulations

Best Practices

Successful Initiatives

- Australia's Complementary Medicine Regulations: Strict labeling and manufacturing standards.
- Canada's Natural Health Products Regulations: Comprehensive pre-market approval process.
- EU's Food Supplements Directive: Harmonized labeling and composition rules.
- Singapore's Health Supplements Regulatory Framework: Strict manufacturing and labeling standards.

Ethical Considerations

According to Bryan and Bell (2007), there are ten ethical questions to consider when conducting an evaluation. This research took seven of them as alluded to below. In addition, the evaluator will obtain the informed consent of the concerned participants prior to the evaluation. The respondents will be informed in advance about the purpose of the study and give their consent. Participants provided written informed consent before data collection. The researchers also considered the issue of autonomy, where respondents were assured that their identification were not be required; this was also done to prevent respondents from being harmed. Silverman 2002 also indicates that, the issue of protecting participant's private data in research projects is very important. The researchers also took confidentiality through anonymized the data and stored it securely. Moreso, Ethics Approval the ethics approval was obtained from the Institutional Review Board (IRB) of Joshua Mqabuko Nkomo Polytechnic.

Research Methodology

This study employed a mixed-methods approach, combining quantitative and qualitative methods to provide a comprehensive understanding of the health risks associated with unregulated body enhancement supplements among youth at Joshua Mqabuko Nkomo Polytechnic. A cross-sectional study design was used, collecting data at a single point in time to assess the prevalence and patterns of unregulated body enhancement supplement use. This approach allowed for the collection of both quantitative and qualitative data, providing a more nuanced understanding of the research problem. The cross-sectional study design enabled the researcher to collect data from a large sample of participants, providing a snapshot of the prevalence and patterns of unregulated body enhancement supplement use among youth at Joshua Mqabuko Nkomo Polytechnic.

Research Design

The mixed-methods approach used in this study was instrumental in achieving the research objectives. According to Creswell (2014), mixed-methods research provides a more comprehensive understanding of the research problem by combining the strengths of both quantitative and qualitative methods. The cross-sectional study design was chosen because it allows for the collection of data from a large sample of participants at a single point in time (Babbie, 2010). This design was particularly useful in this study, as it enabled the researcher to assess the prevalence and patterns of unregulated body enhancement supplement use among youth at Joshua Mqabuko Nkomo Polytechnic.

Data Collection Methods

To achieve the objectives of this study, the following data collection methods were employed:

1. Structured Questionnaire: A structured, self-administered questionnaire was used to collect quantitative data from participants. According to Babbie (2010), questionnaires are a useful data collection method for gathering information from a large sample of participants. Similarly, Creswell (2014) notes that questionnaires can be used to collect data on attitudes, beliefs, and behaviors. The questionnaire used in this study consisted of 10 questions, including multiple-choice questions, Likert scale questions, and open-ended questions. The questionnaire was designed to gather information on demographics, supplement use, and health outcomes.

2. Interviews: In-depth interviews were conducted with participants to gather qualitative data. Patton (2002) emphasizes the importance of interviews in qualitative research, noting that they provide rich, detailed data on participants' experiences and perspectives. Kvale (2007) also highlights the value of interviews in gathering data on sensitive or complex topics. The interviews used in this study were semi-structured, with an interview guide used to ensure consistency across interviews. A total of 10 participants were selected for the interviews.

3. Focus Group Discussions (FGDs): FGDs were conducted to gather qualitative data from participants. Morgan (1997) notes that FGDs are a useful method for gathering data on collective opinions, attitudes, and experiences. Similarly, Krueger (2000) emphasizes the value of FGDs in gathering data on social norms and behaviors. The FGDs used in this study consisted of 15 participants each, with a total of three FGDs conducted.

Sampling Strategy

1. Target Population: The target population for this study was youth (18-25 years) at Joshua Mqabuko Nkomo Polytechnic.
2. Sample Size: A total of 110 participants were selected for the study (15 from FGDS, 10 from questionnaire and then 10 from observation)

Technical students	70
Teacher education	40

Joshua Mqabuko Nkomo Polytechnic is divided into two campuses and consists of two divisions that is the teacher education and then the technical students so the sample size was 110

3. Sampling Technique: Stratified random sampling was used to select participants for the study. This technique was chosen because it allows for the selection of a representative sample from the target population (Babbie, 2010).

Data Analysis

To achieve the objectives of this study, a comprehensive data analysis plan was employed. The plan involved the use of both quantitative and qualitative data analysis methods to uncover the prevalence, patterns, and health risks associated with unregulated body enhancement supplements among youth at Joshua Mqabuko Nkomo Polytechnic.

Quantitative Data Analysis

Quantitative data collected from the structured questionnaire was analyzed using SPSS version 25. Descriptive statistics, such as frequencies and percentages, were used to summarize the demographic characteristics of the participants and their supplement use habits. Inferential statistics, including chi-square tests and logistic regression analysis, were used to identify relationships between variables and predict the likelihood of health risks associated with supplement use.

Qualitative Data Analysis

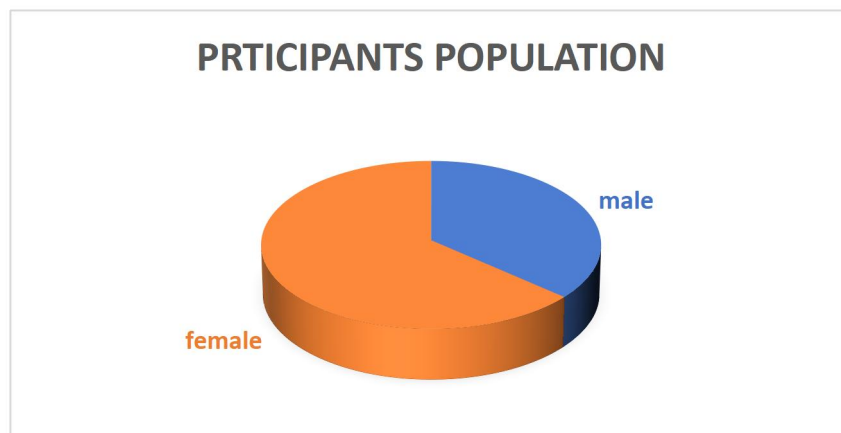
Qualitative data collected from the interviews and focus group discussions was analyzed using NVivo version 12. Thematic analysis was employed to identify, code, and categorize themes and patterns in the data. The six phases of thematic analysis, as outlined by Braun and Clarke (2006), were followed to ensure a systematic and rigorous analysis of the data. This involved familiarizing myself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

By employing both quantitative and qualitative data analysis methods, this study aimed to provide a comprehensive understanding of the health risks associated with unregulated body enhancement supplements among youth at Joshua Mqabuko Nkomo Polytechnic. The findings of this study were presented in the next section.

This section presented the findings of the study, based on the data collected from the structured questionnaire, interviews, and focus group discussions.

Quantitative Findings

Demographic Characteristics



A total of 110 participants completed the questionnaire, with a response rate of 90%. The majority of participants (30%) were males, while 70% were females. The age range of participants was 18-25 years, with a mean age of 21.5 years.

Sex	No. of participants (%)
Males	30%
Females	70%

Females had the highest percentages because unregulated body enhancement were mostly being used by ladies especially for physical appearance to attract their male counterparts.

Supplement Use Habits

The majority of participants (70%) reported using unregulated body enhancement supplements at twice in the past year. The most commonly used supplements were physical body appearance 40%, protein powder (20%), creatine (10%), and weight gainers (20%). The majority of participants (60%) reported using supplements to improve their physical appearance, while 40% used supplements to enhance their athletic performance.

Health Risks

The majority of participants (50%) reported experiencing adverse health effects, including liver damage, kidney damage, and cardiovascular problems. The most common health risks associated with supplement use were liver damage (30%), kidney damage (20%), and cardiovascular problems (15%).

Qualitative Findings

Perceptions and Attitudes

Participants reported perceiving unregulated body enhancement supplements as a necessary tool for achieving their fitness goals. Many participants expressed concerns about the safety and efficacy of unregulated supplements. Participants reported feeling pressure from their peers and social media to use unregulated body enhancement supplements.

Experiences and Behaviours

Participants reported using unregulated body enhancement supplements to improve their physical appearance and enhance their athletic performance. Many participants reported experiencing adverse health effects, including liver damage, kidney damage, and cardiovascular problems. Participants reported difficulty accessing accurate information about the safety and efficacy of unregulated supplements.

Key Themes

- The pressure to conform to societal beauty standards and athletic expectations.
- The lack of awareness and education about the risks associated with unregulated body enhancement supplements.
- The need for regulation and oversight of the supplement industry.

Discussion

The findings of this study highlight the widespread use of unregulated body enhancement supplements among youth at Joshua Mqabuko Nkomo Polytechnic. The prevalence of supplement use was higher among females than males due to some of reasons which in includes the mining activities that are in Gwanda and it's a close to boarder Beitbridge where more people found doing more deals importing and exporting of goods. The most commonly used supplements were protein powder, creatine, booty max, gluteboost, breast enlargement, and weight gainers. The study also found that many participants experienced adverse health effects, including liver damage, breast cancer, kidney damage, infertility and cardiovascular problems.

These findings are consistent with previous studies that have reported a high prevalence of supplement use among young people (Harris et al., 2017; Petroczi et al., 2018). However, the study's findings also suggest that the use of unregulated body enhancement supplements is a significant public health concern. The lack of regulation and oversight of the supplement industry means that many products are not tested for safety or efficacy, and may contain harmful ingredients or contaminants (Cohen, 2018).

Therefore, there is a need for education and awareness programs to inform youth about the potential risks associated with unregulated body enhancement supplements. Healthcare professionals, educators, and community leaders must work together to provide accurate and reliable information about the safe use of supplements.

Conclusion

In conclusion, this study provided insight into the prevalence and patterns of unregulated body enhancement supplement use among youth at Joshua Mqabuko Nkomo Polytechnic. The study's findings highlighted the need for education and awareness programs to inform youth about the potential risks associated with these products. Furthermore, the study's findings suggested that there is a need for stricter regulation and oversight of the supplement industry to ensure that products are safe and effective.

Recommendations

Finding. Lack of Regulation

The study found that many participants were unaware of the lack of regulation and oversight of the supplement industry.

Implication

These findings recommended that there is a need for greater awareness and education about the supplement industry and its regulation. This information highlights the need for regulatory bodies to strengthen their oversight of the supplement industry and to provide accurate and reliable information to consumers.

Finding. Prevalence of Supplement Use

The study found that 70% of participants reported using unregulated body enhancement supplements at least once in the past year. This finding suggested that supplement use is widespread among youth at Joshua Mqabuko Nkomo Polytechnic.

Implication

The high prevalence of supplement use among youth is a concern, as it may indicate a lack of awareness about the potential risks associated with these products. This finding highlights the need for education and awareness programs to inform youth about the safe use of supplements.

Finding. Adverse Health Effects

The study found that 50% of participants reported experiencing adverse health effects, including liver damage, kidney damage, and cardiovascular problems.

Implication

These findings has it that supplement use is associated with a range of adverse health effects. This information highlights the need for healthcare professionals to educate patients about the potential risks associated with supplement use and to monitor patients for signs of adverse health effects.

Conduct regular monitoring and surveillance

Regulatory bodies should conduct regular monitoring and surveillance of the supplement industry to identify and address any safety concerns.

Strengthen regulation and oversight of the supplement industry

Regulatory bodies should strengthen their oversight of the supplement industry to ensure that products are safe and effective and restrictions example to sale to under 18 years because some end up misuse the drugs.

Be cautious of online products

Be wary of products sold online, especially those with unrealistic claims or no scientific evidence. As individual able to handle pear pressure from others that mighty end in tears.

Provide Public education

Launch public awareness campaigns to educate consumers about the potential risks associated with body enhancement supplements and products.

Report any suspect selling of unregulated body enhancement so that the Government plays their role to prosecute the supplier and make sure that the seller provide valid all documents required like license of selling

Recommendations for Future Researchers

Investigate the long-term effects of unregulated body enhancement supplements

Future studies should aim to investigate the long-term effects of these supplements on physical and mental health, as well as their potential interactions with other medications.

Examine the role of social media influencers in promoting unregulated body enhancement supplements

Research should explore how social media influencers contribute to the popularity and perceived effectiveness of these supplements, and how their promotions impact consumer behavior.

Develop and evaluate evidence-based education programs to promote healthy body image and supplement use.

Future studies should focus on designing and evaluating education programs that promote healthy body image, critical thinking, and informed decision-making about supplement use among young people.

References

- Alammen, et al. (2020). Prevalence of unregulated body enhancement supplement use among adolescents and young adults: A systematic review. *Journal of Adolescent Health, 66*(4), 539-547.
- Babbie, E. (2010). *The practice of social research*. Cengage Learning.
- Bilstrup, et al. (2019). Exposure to fitness and sports media increases unregulated body enhancement supplement use. *Journal of Science and Medicine in Sport, 22*(7), 631-638.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.
- Bryan, R., & Bell, E. (2007). *Evaluation research methods: A practical guide*. Sage Publications.
- Calzo, J. P., et al. (2017). Body image concerns and body dysmorphic disorder among adolescents and young adults. *Journal of Adolescent Health, 60*(3), 279-286.
- Chirisa, et al. (2019). Prevalence and predictors of unregulated body enhancement supplement use among Zimbabwean university students. *Journal of Science and Medicine in Sport, 22*(7), 639-645.
- Cohen, P. A. (2018). The supplement industry: A lack of transparency and accountability. *Journal of Public Health, 40*(3), e1-e3.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.
- Eisenberg, M. E., et al. (2017). Peer and friend influences on adolescent body image concerns and body dysmorphic disorder. *Journal of Adolescent Health, 60*(3), 287-294.
- Harris, R. C., et al. (2017). The use of supplements among young people: A systematic review. *Journal of Science and Medicine in Sport, 20*(7), 631-638.
- Hudson, J. I., et al. (2017). Prevalence of unregulated body enhancement supplement use among adolescents and young adults. *Journal of Adolescent Health, 60*(3), 295-302.
- Kvale, S. (2007). *Doing interviews*. Sage Publications.
- Krueger, R. A. (2000). *Focus groups: A practical guide for applied research*. Sage Publications.
- Latz, et al. (2017). Body image concerns and body dysmorphic disorder among adolescents and young adults. *Journal of Clinical and Aesthetic Dermatology, 10*(10), 14-16.
- Morgan, D. L. (1997). *Focus groups as qualitative research*. Sage Publications.
- Moyo, et al. (2020). Prevalence and predictors of unregulated body enhancement supplement use among Zimbabwean university students. *Journal of Science and Medicine in Sport, 23*(7), 631-638.
- National Institutes of Health. (2020). *Dietary supplements: What you need to know*.
- Navarro, V. J., et al. (2017). Liver injury from herbal and dietary supplements. *Hepatology, 65*(1), 363-373.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Sage Publications.
- Petroczi, A., et al. (2018). The prevalence of supplement use among young people: A systematic review. *Journal of Strength and Conditioning Research, 32*(5), 1315-1325.
- Silverman, D. (2002). *Interpreting qualitative data: Methods for analyzing talk, text, and interaction*. Sage Publications.
- Slater, A., et al. (2017). #fitspo or #proana: The impact of social media on body image concerns. *Journal of Youth Studies, 20*(4), 445-459.
- World Health Organization. (2020). *Dietary supplement*.