

BACKGROUND

Testosterone is a Schedule III controlled substance in the United States, primarily used as hormone therapy in transgender males and to treat hypogonadism. Under-the-counter use of testosterone is popular in the bodybuilding community to increase muscle mass.

Unlike illicit peptides being sold, these products do not carry warnings of “for research purposes only” or “not for human consumption” hence they are marketed for human consumption and being sold to consumers without a prescription.

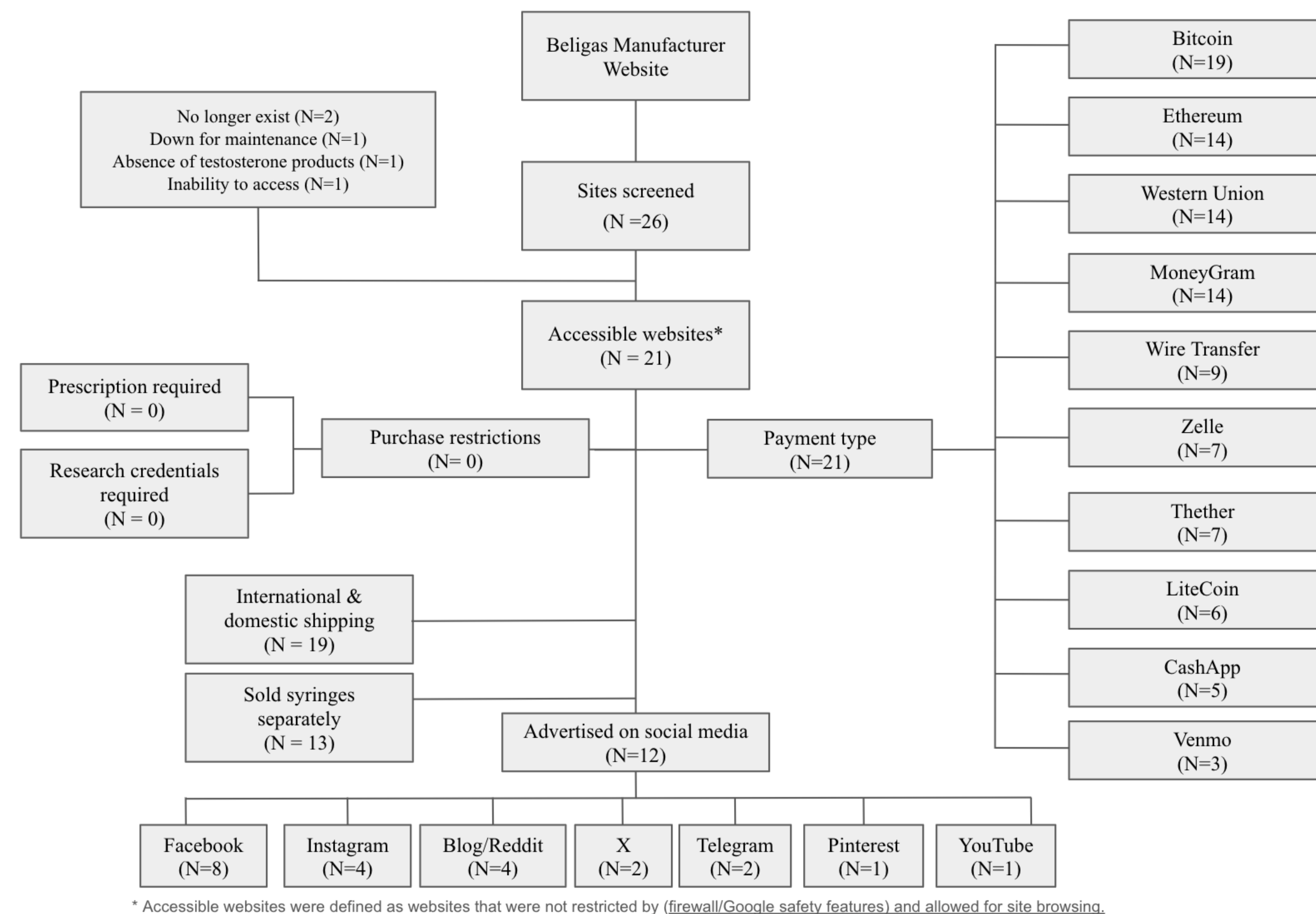
OBJECTIVE

To identify online sellers and manufacturers of testosterone products, examine their distribution methods, and assess the adequacy of consumer information.

METHODS

- **Locating Sellers**
 - Used Google search engine to search terms such as: “anabolic steroids for sale”.
 - Discovered the manufacturer, Beligas who listed all their certified sellers on their website. These sites were reached via backwards navigation from Beligas.
- **Collecting Seller Information**
 - Reviewed sellers about pages, product pages, FAQ pages and shopping carts.
 - From each site, extracted data included:
 1. The names of testosterone manufacturers on the site, and how many per site
 2. Injection supplies provided
 3. Disclaimers indicating the products were for research or entertainment purposes
 4. Restrictions such as a valid prescription or researcher credentials required
 5. Reship policies for seized products
 6. Domestic or international shipping options
 7. Acceptable payment methods
 8. Staff pharmacists involved in oversight or dispensing
 9. Social media presence to connect and advertise their products
 10. Strategies to gain trust from consumers
 11. Strategies to avoid detection from law enforcement

Figure 1: Website Characteristics



CONCLUSIONS

1. Many companies are explicitly selling the controlled substance testosterone in the United States for human use without a prescription.
2. Some sites provided explicit dosing information for “beginner”, "intermediate", or "expert/experienced" body builders.
3. Despite some sellers selling syringes separately, no product included needles and syringes. It is unclear if there are package inserts included with each product to aid consumers with proper administration.
4. There is no indication that there are healthcare professionals, particularly pharmacists, to aid customers with clinically relevant questions. Some sites have chatrooms or forums like Reddit for consumers to aid each other.
5. Further research is necessary to see if the products were created using good manufacturing practices and are suitable for injection at the time of arrival.

RESULTS AND DISCUSSION (FIGURE 1)

1. We found 21 websites selling 116 unique testosterone products.
2. Despite 4 sites requiring a consumer to sign up to add anything to the cart, and 1 site explicitly marketing testosterone products under the guise of "not for human consumption," none of the sites required:
 - a medical consultation
 - a valid prescription
 - age verification over 21 years
 - a low testosterone level or not having a testosterone sensitive tumor.
3. Testosterone products included vials, ampules, and tablets in varying strengths.
4. 8 websites did not sell or provide syringes separately for testosterone administration.
5. Only 4 websites included certificate of analysis reports for potency or purity.
6. Nineteen stated they would ship to the United States
7. 10 sites promised to reship if the product was confiscated. Some would reship 60 days from the purchase date, while others required a letter of seizure.
8. 3 websites specified they would not reship, while 8 had no clear reshipping policy.
9. The universal preferred payment method was cryptocurrency, although multiple sites provided alternative payment options as well.
10. 12 Sellers utilized social media platforms to advertise and connect with consumers including Facebook, Instagram, X, Blog/Reddit and YouTube. 19 sites could be contacted directly by consumers through their website.
11. Customers could review products and provide star ratings and testimonials.
12. Some sites included clinically relevant information including dosing, pharmacokinetic parameters and side effects. However, they are often shared across many products putting consumers of higher strength products at risk of using extremely high doses of testosterone.
13. Even companies identified and warned by the FDA still exist and ship products.