

Problems Faced by China's Tampon Standardization and Improvement Countermeasures

Yining Zu

Business College, Beijing Union University, Beijing, China

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Abstract: With more and more women began to use tampons as menstrual hygiene products, its product standards have also entered the public eye, many women's menstrual hygiene products manufacturers output products were found to have varying degrees of product quality and other issues, cannot help but let the public worry about it. This paper focuses on the product standards for tampons and standards for comparative analysis of the problem, through in-depth study of a large number of relevant literatures, found that China's tampons in the standard system, the level of index standards and design there is room for improvement. On this basis, it is proposed that China should strengthen supervision, upgrade testing technology and call on enterprises, the government and consumers to collaborate to promote the improvement of standards. Pro-vide reference suggestions for China's tampon standardization of national standards.

1 INTRODUCTION

In recent years, with tampons and other female menstrual hygiene products standards into the public eye, female menstrual hygiene and safety issues such as industry and social concerns. In order to further provide protection for the safety of women's menstruation, tampons and even all female menstrual hygiene products to further enhance the influence and credibility of the domestic standards, tampon standards in China to international standards is particularly important. This paper will start with the domestic and foreign tampon standards, select some key indicators and analyze them one by one, explain the importance of tampon standards to international standards and the problems they face, and put forward the corresponding improvement measures.

In the first half of the 20th century, the predecessor of the commercial tampon was invented and began to be marketed in the United States, only to be criticized for its negative health and safety implications (Cui, 2022). Toxic shock syndrome (TSS), which once caused headaches for the U.S. Food and Drug Administration (FDA) and others, has been linked to tampon production standards (Hochwalt et al., 2023). Until now, warnings about TSS have been printed on the packaging of tampons, which has increased consumer concern about the

safety of tampons and the standardization of the product.

Under a cloud of doubt about the pathogenesis of TSS, although the cause is still unknown, the strong impetus of various medical research concluded that the absorption rate of tampons is the focus of the problem. In the tampon absorption rate development process, some tampon manufacturers with the medical "in vitro experimental device syngina" constructed a hypothetical, experimental environment of the female vagina, based on the syngina test to develop the absorption rate standard. However, this standard was challenged by women's consumer groups and some medical experts because the simulated vagina did not reflect the true absorption rate of tampons (Hochwalt et al., 2023). However, due to the controversy and inability to reach consensus, the FDA ultimately promulgated an absorption rate standard based on the syngina designation, and our tampon absorption rate test method is consistent with this, but still controversial.

Women's health and safety during menstruation is of paramount importance, not only in relation to a woman's own reproductive health, but also in terms of how it may affect her long-term physical health and overall well-being.

This research report analyzes from the perspective of importance, problems and other perspectives, the use of literature research method, read a large number

of literatures, selected part of the citation, according to the theme of the report in recent years related to the literature was read to summarize and discuss the research theme. Combined with the comparative research method, from the importance of tampon standard standardization, the domestic and international standards for comparison, penetration and summarize the standardization of the problems that exist and give the corresponding countermeasures.

2 LITERATURE REVIEW

In the comparison of domestic and international standards for tampons, the study points out that a total of one major indicator, fiber shedding, is lower than the international standard in the domestic standard, and a number of other indicators appear to have different emphasis in the domestic and international standards (Zhang et al., 2024). In addition to the above indicators, as tampons, as a kind of built-in feminine hygiene products, their usability and safety have been widely concerned by consumers, accordingly, the research on tampon standards in China in terms of product usability and safety needs to be continued and deepened.

Through the analysis of China's tampon standard standardization of the current situation, to find out the current standardization of China's tampon standardization of the problems encountered and solutions to countermeasures, in the current situation of the domestic standards, mainly from the existing regulations and standards for comparison and then analyzed one by one, and the importance of China's tampon standard standardization.

In addition, in the tampon standards to international standards and the significance of the importance of the tampon standard, domestic women on the use of tampons and consumer preference for its gradual increase in the public's attention to its standards also rose, and as the use of the product has been a place in the international community, tampons in the consumer market is not to be underestimated the vitality of tampons, tampon standards to international standards to bring the impact and Credibility of tampon standards to international standards to bring the impact and credibility of the relevant products is of great significance.

The study of the relevant types provides an important reference for identifying problems in benchmarking tampon standards to international standards.

3 CHINA'S TAMPON STANDARDS AGAINST THE INTERNATIONAL STATUS QUO ANALYSIS

3.1 The Importance of China's Tampon Standards to International Standards

The importance of the safety of female menstrual hygiene products should not be underestimated. The completeness of female menstrual health and safety can safeguard reproductive health, maintain a normal menstrual cycle, alleviate menstrual discomfort, enhance psychological status, reduce the risk of chronic diseases and promote overall health. Tampons, as female menstrual hygiene products, are closely linked to women's menstrual health and safety, and are an important part of ensuring women's menstrual health and safety. In addition, menstrual discomfort and health problems may affect women's productivity and career development. Maintaining menstrual health can reduce sickness-related absenteeism and work inefficiency, with positive personal and socio-economic impacts. It can also reduce the burden of health care and the use of health care resources for individuals and society.

The global tampon market size has been expanding over the past few years, and this growth is mainly attributed to the growing female population across the globe, increased purchasing power due to economic development, and rising health and personal hygiene concerns among women (Pollard, 2023).

According to the U.S. Food and Drug Administration requirements, tampons as a Class II medical device, need to pass the biocompatibility test (ISO 10993), to obtain FDA 510k approval letter in the U.S. Customs clearance and sales, and China's export enterprises need to pay an additional 20-50 million yuan of testing costs. China's tampon standards to the international level, not only can help improve the quality of our products to further improve the quality of foreign countries can pass the test but also reduce the cost of foreign trade exports of related products in China.

Improving domestic standards for feminine hygiene products will help China's hygiene industry to improve the relevant discourse in the international context, help enhance the industrial landscape, promote industry upgrading, improve the industry's product supply chain, accelerate product promotion,

better serve the majority of consumers, and promote the rise of consumer market activity.

3.2 Comparative Analysis of Domestic International Standards for Tampons

For the analysis of domestic and international standards for tampons, comparisons were made in terms of the standard's attributes, raw materials, physical and hygiene indicators, as well as labeling and descriptions.

From the standard attributes, China's standards on tampons are national standards, many foreign standards for the relevant departments to develop standards and regulations.

In terms of raw materials, our country and the international standards in the focus and the requirements of the content of reflect the difference, our country in addition to the absorber of the material is also stipulated, while foreign standards are mainly on the absorber of the raw material itself to limit the raw material, can be seen in our country's standard on the raw material requirements are more stringent (Zhang et al., 2024).

In the physical indicators, the test requirements of various standards as well as the test method are different, but the unified are on the amount of absorption requirements, although other aspects of inconsistency, but the amount of absorption of the test method is the same, all for artificial vagina test. In addition, the U.S. FDA 510 (k) in the proposal of our country has not yet required the fiber shedding instructions.

In terms of hygiene indicators, China classifies tampons as disposable sanitary products, and in comparison, China's requirements for microbial limits are more stringent than foreign standards. In terms of labeling and descriptions, domestic and international standards are comparable (Zhang et al., 2024), and there are no special items for the time being.

3.3 Problems with China's Tampon Standards

3.3.1 Lack of Standard Systems

China's current standards are divided into national standards and group standards, with national standards including GB/T 43585-2023 "Disposable Tampons" and GB 15979-2024 "Hygiene Requirements for Disposable Sanitary Products". Group standards include T/CNITA 09102-2018

Tampon standard issued by China Industrial Textiles Industry Association. The coverage of the above standards and the degree of refinement is still to be improved, and there may be differences in the actual use of different brands and types of tampons, the standards need to be further refined to meet the diverse market demand.

And as the International Organization for Standardization (ISO) advances its standardization work in the field of menstrual products (ISO, 2022), China needs to accelerate the updating of standards and international convergence. For example, ISO has set up a specialized technical committee on menstrual products, and China should also actively participate in and promptly introduce international advanced standards into the country.

3.3.2 Lack of Standardized Qualification of Minutiae in Some Indicators

China's current tampon product standards do not explain the fiber shedding, in the U.S. FDA 510 (k), the fiber shedding instructions, the need for reporting and self-declaration, and China has not yet made the requirements of the indicator. In addition, China's domestic standards as a result of tampons as disposable sanitary products to manage, for microbial limit requirements are stricter than foreign standards, such as the production environment should be in line with the Good Manufacturing Practice for Pharmaceuticals (2010 Revision) in the requirements of the class D clean area, and take appropriate measures to monitor particles and microorganisms (GB/T 43585- 2023 , and so on. 2023), etc.

3.3.3 Inadequate Security by Design

The design of tampons is on the safety of some shortcomings, there are two main points. One for the tampon product conduit material, tampon conduit material mainly plastic and paper two kinds of different materials, there are some defects, in our country, two kinds of conduit material have products use. The defects of plastic catheter include poor environmental protection, due to most of the plastic tampon catheter is not degradable, the use of which will increase environmental pollution and aggravate the burden of plastic degradation, and the other defect, namely, the surface is not smooth enough, and the feeling of foreign body is strong, and other problems of the sense of experience of use (Reame, 2018). While paper tampon catheters are defective in terms of strength, absorbency and other issues, and the same drawbacks in terms of comfort as well as environmental friendliness.

Another point is the product's anti-reflux design, the tampon product's absorption path design is unreasonable, most tampons on the market have vertical grooves extending from top to bottom, menstrual blood will flow quickly along the grooves to the bottom, which is not fully absorbed by the tampon, but also easy to lead to the reversal of menstrual blood flow. If tampons are placed incorrectly or not changed in a timely manner, the menstrual blood may not be absorbed effectively, resulting in reflux (Shearston et al., 2024).

4 COUNTERMEASURES AGAINST INTERNATIONAL STANDARDS

4.1 Improve the Tampon Standard System

Requirements for indicators are refined to further improve the standard content of tampons, especially for product design, and other aspects of the technical requirements, in order to better meet consumer demand. According to the mandatory national standards management approach, the State Council administrative department in charge of standardization unified management of national standardization work, responsible for mandatory national standards for the project, number, external notification and approval of the release. The administrative departments for standardization at all levels, relevant administrative departments, industry associations and technical committees should organize the publicity and promotion of national standards. This includes popularizing the content of the standards for enterprises and the public through a variety of channels (e.g., training, seminars, publicity materials, etc.) to ensure that enterprises understand and are able to properly implement the standards. The administrative department for standardization under the State Council establishes an information feedback mechanism for the implementation of national standards and smooths the information feedback channels (Spitzer, 2024). Enterprises and consumers can provide feedback on problems in the implementation of the standards, and the regulatory authorities should handle and publicize relevant information in a timely manner to ensure the effective implementation of the standards.

Supervisory authorities should strengthen the supervision and inspection of the implementation of standards by enterprises and penalize non-compliant

enterprises in accordance with the law. In addition, the text of mandatory standards should be made available to the public free of charge to improve the transparency of the standards and facilitate the supervision of enterprises and the public.

4.2 Improve Tampon Testing Standards

Improving the testing standard of tampons should mainly start with the upgrading of testing technology and scenario-based testing. In terms of upgrading testing technology, testing technologies such as ultra-high-definition and high-speed image testing technology, rapid screening technology, intelligent sensor monitoring system and other testing technologies should be further improved. In the implementation of scenario-based testing, attention should be focused on simulating real use scenarios and doing multi-dimensional simulation under a variety of conditions, and real users should be invited to participate in the test, carefully collecting feedback and the feeling of use, and constantly enriching the quantity and quality of data (Vostral, 2020). Big data and intelligent technology can also be used to carry out multi-dimensional comparison and risk warning of test results and develop intelligent testing systems to automatically identify and classify test results to improve the accuracy and efficiency of testing.

4.3 Reinforce the Importance of Tampon Standards in China

By carrying out collaborative cooperation within the industry to help improve China's tampon standards and the implementation of the following, enterprises should establish a sound quality management system to ensure that products comply with national standards. For products that do not meet the standard, enterprises should take the initiative to recall and rectify. Mutual supervision and common growth in the industry, the realization of the enterprise Jianlian at the same time, the main strengthening of the importance of tampon product standards. Can also strengthen the cooperation between enterprises and testing organizations, in the enterprise should establish a sound self-testing system at the same time regularly invite third-party testing organizations to carry out independent testing to ensure the objectivity and fairness of the test results. Enterprises and testing organizations can also jointly carry out research and development projects to explore new testing technologies and methods, drawing on the strengths

of both sides to promote technological progress in the industry (Zhang & Li, 2021).

Raising the level of consumer attention. Through product manuals, publicity materials and other means, as well as school education, workplace lectures, media publicity and other channels, popularize the correct use of tampons, the main points of purchase and precautions, improve consumers' health awareness and discernment, popularize the correct use of tampons to tampon consumers as well as the hazards of improper use, including the placement of the position, frequency of replacement, etc., and reduce the number of problems caused by improper operation and safety awareness. This will minimize problems in menstrual health caused by improper handling and insufficient safety awareness.

5 CONCLUSION

This paper adopts the literature research method and other methods, the analysis of China's tampon standards, on than domestic and foreign tampon standards, summarizes the difference between China's tampon standards and foreign standards, and further elaborates on the standard to the international problems faced and countermeasures, which, the problem is specifically reflected in the standard system is imperfect, part of the indicators in the standard of the content of the subtle lack of standard qualification as well as the design of the Safety is insufficient, after that, from the perfect tampon standard system, improve tampon testing standards, strengthen the attention of all parties to China's tampon standards in three aspects of the narrative, gives the corresponding countermeasures in the problem.

China's tampon standards to international standards for women's menstrual safety, trade in feminine hygiene products, as well as to enhance the credibility and influence of domestic standards have an important role. Although the current tampon standards to international standards there is still a standard system that is not perfect, product design and some of the indicators are missing and other issues. But with the strengthening of the standard system of supervision, improving testing standards and other countermeasures continue to improve, will step by step tampon standards to international standards. In the future, we need to work together with all sectors of society and constantly promote the operation of standards to international standards, to protect the safety of women's menstruation, sales and exports of related products to help move forward, and to

promote the development of women's menstrual hygiene products.

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