

Emergency Feminine-Hygiene Accessible Stations: Action Research to Advance Gender Equality in a Chinese University

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Manuscript received January 11, 2024; revised February 6, 2024; accepted February 22, 2024; published May 29, 2024.

Abstract—Many individuals presume that gender equality will naturally improve in tandem with technological advancements and economic progress. However, despite significant economic disparities between the United States and China over the past three decades, the Gender Inequality Index (GII) for both countries (Fig. 3) has exhibited a striking similarity. This data suggests that policy intervention is imperative to advance gender equality despite the economic situation. This project started as the author was surprised by the lack of sanitary napkins despite the state-of-the-art facilities at Hong Kong University of Science and Technology (Guangzhou). Although the economic development in China has enabled advanced technological innovations on campus such as unmanned autonomous driving vehicles, she could not convince the logistics department to provide sanitary napkins even for purchase. What puzzles her more is the widespread availability of personal electronic charging stations and free family planning products in public areas in Guangzhou. This contrast underscores the potential to use technology and social innovation to improve Chinese women's living conditions. This report records a social enterprise project of Emergency Feminine-Hygiene Accessible Stations and demonstrates a preliminary implementation result of increased awareness level about menstruation and 3 male allies to advance gender equality. The study not only outlines the current project progress in a Chinese university but also compares it to international norms. In conclusion, the report synthesizes these findings and lists multiple policy recommendations to diminish menstrual poverty, and menstrual stigma, as well as enhance gender equality in public areas using this Chinese school as an example.

Keywords—gender equality, period poverty, period stigma, sanitary napkin, China

I. BACKGROUND

A. Period Poverty and Period Stigma in China

The movement of installing shared sanitary napkin mutual aid boxes was created by students at the East China University of Political Science and Law during the coronavirus pandemic in late 2020 [1]. The movement then developed to other schools such as Nankai University and Shanghai Jiao Tong University, etc. Although this list of events has drawn society's attention to the topic of period poverty, the operation was only partially successful on a limited number of campuses. Its setup process and social influence 3 years after the movement is still unknown.

The news of the demand for sanitary napkin sales on high-speed trains in 2022 in China also became a hot topic on social media. This phenomenon reflects the attention on this topic and the urgency of providing this service in public areas. Despite the urgency, few understand, study, or address this issue in public areas. The benefit of such studies is related to female children's protection and development, as well as public health, gender equality, and sustainable development.

This paper reports how a master student from a Chinese university openly discusses this topic in classes, develops a team, and forms an entrepreneurial project to advance gender equality. The student researcher also aspires to continue this research to address this social problem on a larger scale.

Quality education and sufficient information about women's menstrual circle, also known as a period, is crucial to understanding and addressing the social problem of period poverty. Many Chinese scholars researched period poverty in the context of a lack of financial ability to purchase hygiene supplies [2, 3]. However, its accessibility and affordability in public areas such as schools, hospitals, train stops, and subway stations deserve more recognition and research.

In addition, the social stigma against menstrual circles troubles more women and compounds the menstrual poverty problem. For example, menstruation is often regarded as shameful, replaced by euphemisms such as "great aunt" in conversations. Another example is that period products are often deliberately hidden in daily life, such as black plastic bags in convenience stores. According to Tencent Guyu Data, only 48% of Chinese men and 72% of Chinese women think it's allowed to discuss menstruation in public [4]. 19% of women have been discriminated against during adolescence because of menstruation, mainly by men. More than 60% of women are worried about leakage and soiling chairs during menstruation and choose not to wear light-colored pants. This data indicates that alleviation of period stigma and period poverty not only requires better accessibility of sanitary pads in public areas but also needs the collective effort of men.

Thus, to address the lack of access to female hygiene products in public and the period stigma issue, we initiate action research among both male and female students, faculty members, and the affiliated off-campus community at a new entrepreneurship-oriented research university in China to answer the following questions:

- 1) How was this Emergency Feminine-Hygiene Accessible Station (EFAS) set up at the university?
- 2) How has this student-initiated project impacted the community about menstrual stigma and gender equality?
- 3) How did male project members' perceptions of menstruation and gender equality change during the 4 months of involvement?

Hong Kong University of Science and Technology (Guangzhou) is a new Chinese university that advocates project-based learning and self-organized education [5]. Different from other universities, master students at HKUST(GZ) receive extensive entrepreneurial training and support to develop their products and business plans. For example, the Design Thinking philosophy which is popular in Silicon Valley is taught as a requirement course.

Additionally, entering into startup competitions is celebrated. The school hosts roadshow workshops, Venture Capital talks, and pitching contests periodically to recognize high-quality projects.

Furthermore, students sit in a collaborative community space called Makerspace as their official working spot that offers engineering lab resources and meeting rooms. Students were encouraged to pass on their project to the next cohort of students if they could successfully recruit a diverse team and pass the oral defense selection process.

My seat in Makerspace and the equipment prototype as of the state in November 2023 are illustrated below (Fig. 1). This project is a typical example of how a student successfully develops a project and how a project could transcend the physical Makerspace to build profound social impact on campus, off campus, and online.



Fig. 1. Vending machine prototype in makerspace in HKUST(GZ).

B. Researcher Subjectivities and Positionality

This ongoing action research involves a group of individuals who play a critical role in implementing the EFAS project on campus. The project team currently has outside entrepreneurs, professors, staff members, and students. The gender ratio is balanced in the team. Key members consist of me (a female student researcher), 1 female teacher-researcher, 1 male quasi-teacher researcher who is an off-campus entrepreneur, and 2 male student researchers (Table 1). We are particularly interested in this group of 3 male members to explore their knowledge and attitude on menstruation and gender equality. As they are all men and can be viewed as “students” in this research, motivating their involvement could help move this project forward.

As a woman who was educated and worked overseas, the author is used to having sanitary napkins provided in female restrooms together with toilet paper from her previous working environment. In her review of past gender-related studies, she found that women are often placed on the

opposite side of men, and the relationship between men and women is modeled as a zero-sum game. Considering the recent public violent attack against women in Tangshan, North China’s Hebei province, the polarization between genders in China seems to be exacerbating.

We also experienced this tension during our research. In the initial stage of openly discussing the need for sanitary napkins online, a few male students attempted to stop the discussion and condemned the legitimacy of this request despite seeing the comparative study evidence of practice in other countries.

Additionally, during the process of recruiting male members, 1 female volunteer quit as she believed that this topic was purely a women’s topic. She even commented that male allies would be ridiculed and alienated by other men. At a later stage, some male students questioned the offline poster campaign as well.

Our research shows that the proper functioning of any group depends upon the cooperation between genders and the efforts of these male allies make us see hope to advance gender equality in China. Their participation in this action research strengthens the quality and significance of the data collected. By recruiting them as allies and documenting their involvement experiences, we can create a more productive operating model for our future project stakeholders who have never considered menstruation-related issues, such as most Chinese and possibly American students and teachers.

Table 1. The 3 male allies for case study

Name	Bio	Previous education
Shen	1. Off-campus entrepreneur friend of a Makerspace manager 2. Mentored and sponsored on business development and technology 3. Designed pictures	US
Liu	1. Student member to participate in the Guangzhou Women’s Federation Innovation Contest 2. Built 3D printed vending machine prototype 3. Wrote the social media articles	US
Zheng	1. Student member to compete in funding pitch and business plan contest on campus 2. Revised the business plan 3. Assisted with offline implementation	China

C. Research Context in University

In the process of promoting our project, we are exposed to different stakeholders. We analyzed the attitudes, interests, and power of these groups (Table 2). Some male teachers are part of the project team, but we heard that they might just not want to annoy the students. Another difficulty in convincing the male teachers for authentic support is that the project’s members are mostly second-year master students so they would graduate soon.

Table 2. Analysis of relevant interest groups on campus

Related interest groups	Support		Oppose		Interest point	Power Analysis
	Public	Potential	Public	Potential		
External	Makerspace managers	√			Development of school	Policy support
	Office of Student Affairs	√			Student Club Activity	Financial support
	Most Female students and teachers	√			Women’s rights	Public opinion
	Some male students			√	Inconsistent Values	Public opinion
	School academic faculty			√	Pressure to produce research results	No Financial support
Internal	1 Former Female member			√	Inconsistent Values	Labour support
	Female Teacher advisors	√			Education and consistent value	Guidance
	Male teacher advisors	√		√	Doesn’t want to annoy students	Limited Guidance

Our project's scope extends beyond constructing a prototype. We sought sponsorship and designed a business model. This project entered some start-up competitions and successfully received a few recognition. For example, it won finalist at the Guangzhou Women's Federation Rose Charity innovation contest (Aug. 2023), ranked 2nd at the Society 5000 class (Dec. 2023), and ranked 4th at HKUST(GZ) sustainability smart life innovation contest (Jan. 2024).

II. THEORIES

A. Constructivist Social Learning Theory

This framework explains how individuals acquire knowledge as well as develop attitudes and behaviors through experiences. Learning is an active process in which individuals construct their understanding of the world based on interactions with others and their environment. Learning is the process by which learners are integrated into a knowledge community instead of merely accumulation and acquisition of new ideas [6].

The theory can be applied to understand how the implementation of EFAS can influence the perceptions and behaviors of students and staff. Change starts by impacting people nearby. What we appreciate (value) will appreciate (become valuable). Thus, our behavior of openly discussing menstruation makes more people pay attention to the needs of women and feel comfortable talking about this topic.

By making gender equality and health education a tangible project and providing sanitary napkins, EFAS can create a supportive and inclusive environment. In the community-building process, open discussions about menstruation are encouraged, ultimately contributing to the advancement of gender equality in public.

B. SDGs and Gender Inequality Index (GII)

Gender equality is important and closely related to sustainability, evidenced by its inclusion as the 5th goal of the Sustainable Development Goals (Fig. 2) proposed by the United Nations [7]. It received support from 192 countries with a target year of 2030.



Fig. 2. Sustainable development goals (UN, 2023).

Another international human development score closely related to my study is the Gender Inequality Index (GII). It is a United Nations composite metric of gender inequality based on three dimensions: "Reproductive health, empowerment, and the labour market". A low GII value indicates high equality between women and men [8].

Many people assume that gender equality will improve naturally with the development of technology and economics.

For example, economic foundation determines superstructure in Marxism is often used as evidence to support this argument. However, the GII for the U.S. is similar to the GII for China in the past 30 years (Fig. 3) despite the vast economic difference between the 2 countries. Furthermore, the U.S. has one of the least generous maternity leave policies among the Organization for Economic Cooperation and Development (OECD) countries (OECD 2006). Only 12 weeks of maternity leave is provided to most working mothers, the payment is not consistent, and there is no set paternity leave [9]. This data suggests that advocacy via entrepreneurship and policy intervention is imperative to advance gender equality despite the economic situation.

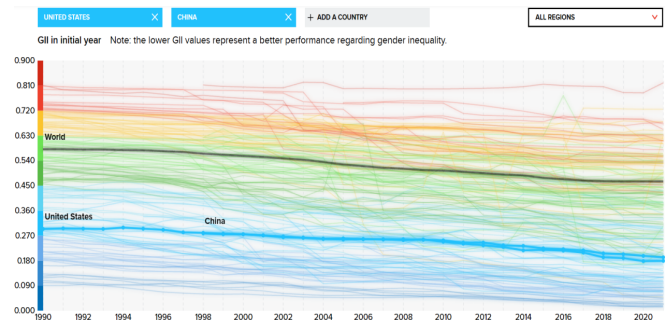


Fig. 3. GII of World, China, and the U.S. (UNDP, 2023).

In the context of female hygiene support policy, Scotland became the first region to offer menstrual supplies free of charge in 2020. India, our less developed neighbor, abolished the tax on sanitary products in 2018 and is promoting a program of cheap sanitary napkins for one rupee (RMB 0.09) a piece [10]. Korea, our more developed neighbor, doesn't have a nationwide program but started to distribute free sanitary napkins in 10 public areas in Central Seoul starting in 2018. 20 countries and regions provide different levels of free menstrual supplies, mostly in schools [11, 12].

III. METHODOLOGY

A. Surveys

We developed 2 surveys to understand the menstrual stigma and menstrual poverty situation on campus. We included both genders to obtain comprehensive perspectives. The 1st survey was conducted via Qualtrics in August 2023. I incorporated this survey in an undergraduate summer course on data literacy. As the instructor, I used this project as a domain knowledge example to show how to identify research topics, construct surveys, collect data, analyze results, and create data visualization. Before the course, I emailed the students the survey related to this EFAS project together with other class content.

The first survey includes 5 questions:

Questions	Answer options
What is your gender?	Single choice: Male / Female
Where did you go to high school?	Open-ended
Did you receive enough gender and health related education?	Single choice: Yes. Enough training and I feel knowledgeable. / Yes. Some training but not enough. / No.
Do you feel comfortable talking about sanitary napkins and periods in public?	Single choice: Yes. / No.
Why do you feel uncomfortable talking about it in public?	Open-ended

The second survey was designed on Tencent vote and incorporated into our 3rd WeChat public account article and offline posters in October 2023. The second survey includes 7 questions:

Questions	Answer options
What is your occupation?	Single choice: Undergraduate / Master / PhD / Staff / Other Specify
How do you purchase sanitary pads?	Multiple choice: Supermarket / Third party online / Official account / Other Specify
What is your budget per pad?	Single choice: Below 1 RMB / 1–2 RMB / 2–3 RMB / Above 3 RMB
What are your commonly used brands?	Multiple choice: Procter & Gamble / Whisper / Space 7 / Sofy / ABC / Kotex / Kao Laurier / Libresse / Other Specify
Is the brand important?	Single choice: Important / Not important
What is the key factor when purchasing?	Single choice: Price Affordability/ Quality / Packaging / Convenient Purchasing Location / Others please specify
What else would you buy in emergency feminine-hygiene accessible stations?	Multiple choice: Cleaning supplies / Disposable underwear / Cosmetics / Snacks / Others specify

B. Social Enterprise Action Research Process

Online Activism: To promote our project, we started advocacy first online. We created a dedicated WeChat group chat for the project consisting of all stakeholders including professors, Makerspace managers, school administrators, off-campus industry partners, and students. Group members discuss project updates and share resources in the group periodically. We then built our official public account on the WeChat platform called *FreePeriod*.

Offline Implementation: On campus, Makerspace serves as a unique sandbox for this entrepreneurial innovation as there is less bureaucracy than deploying campus-wide implementation through the logistics department. In the beginning, we secured support from the managers of Makerspace. Then, we created posters and put them in 20 spots on campus. These posters are meant to raise awareness about our project and create feedback channels.

IV. RESULTS

A. Increased Public Awareness of Menstruation

The first survey received 95 answers from a total of 140 undergraduate students. Female students consist of 22%. The location of their previous high school education is Henan Province (13%), Guangdong Province (45%), Sichuan Province (20%), Shandong Province (11%), Hong Kong (2%), and others (9%). Other locations include Taiwan, Shanghai, and Assam in India.

Only 18% of students reported that they received enough training in gender and health education previously. 17% reported no training while the other remaining 65% reported some but not enough. Thus, this indicates that gender education for the students entering our school is not enough. 43% of students don't feel comfortable talking about periods in public. It's worth highlighting that most of the answers (56%) are related to negative emotions such as shameful, impolite, embarrassing, and bad. This result shows that period stigma exists at HKUST(GZ). Furthermore, the stigma not only persists among students but also in their familial and educational environments, indicating a deep-rooted issue that requires substantial effort and social welfare interventions to

overcome. An Indian study shows that the same factor in villages is 2.5 times higher than in cities [13]. We could repeat the survey in distinct locations in China, conduct similar comparison studies, and quantify the associated differences.

The second survey collected 62 answers in total, with 48% master students, 29% PhD students, 13% bachelor students, and 6% university staff. We used the purchase habit received to develop our project business model. For example, the second survey revealed a significant disparity in budget preferences (Fig. 4). 39% spend between 2–3 RMB whereas 10% spend below 1 RMB per pad, suggesting that period poverty might exist on campus and more studies such as interviews could be conducted.

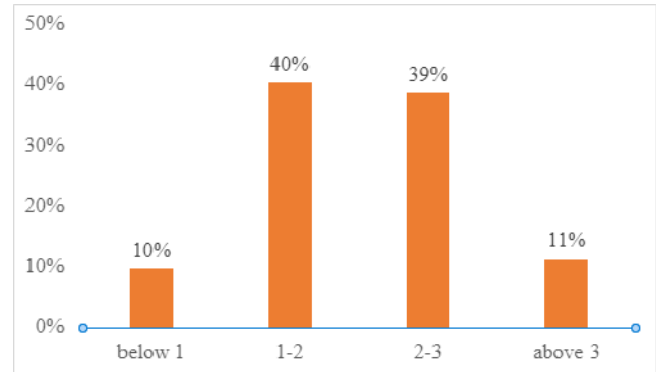


Fig. 4. Sanitary pad budget preference at HKUST(GZ).

On October 28th, we hosted a workshop with 20 female local middle school students in collaboration with the Nansha District Women's Federation (Fig. 5).



Fig. 5. Workshop with 20 female local middle school students.

On November 28th, our project set up the first EFAS in Makerspace in HKUST(GZ). We plan to initially sell sanitary napkins and eventually offer free products once a month, contingent on securing sponsorship support.

On December 20th, we discovered that a group of 2nd cohort of master students were also interested in this cause and designed a Design Thinking project with a poster displayed publicly (Fig. 6). This is strong evidence that we made the community more comfortable to have open dialogue on this topic. They also made their iteration and enhancement to the scope by adding a robotic arm to improve sanitary dispersion and increasing the free supply amount to twice per month. If this student group can carry on our project after we graduate, the impact on HKUST(GZ) could be continuous.

So far, we have posted 8 articles on our WeChat public account and have attracted 60 followers, 2300 Views, 27 Likes, and 5 Shares in just 3 months.

B. Male Allies

Liu joined the team as technology support. He summarized our EFAS prototype as having below benefits when compared with sanitary pad mutual aid box “The available database ensures that the recipients are compliant and could facilitate data analysis; Reliable and unattended for long periods; Can withstand extreme environments and is easy to maintain”. After learning more about the difficulties women face during menstruation, he commented that “it would be good if the school’s metaverse campus project budget could be used for this project to provide sanitary pads for women on campus”. He took the initiative to report the project update on WeChat as the correspondent.

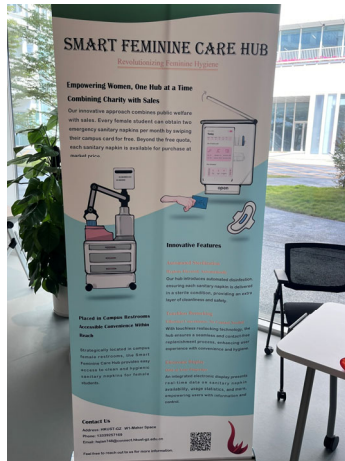


Fig. 6. Poster of a similar project by 2nd cohort master students.

Shen visited the campus during open lab days and joined the project because of a mutual interest in space design and entrepreneurship. His company sells office and home equipment such as chemical cabinets, toilets, and solar panels. He is passionate and supportive of the project. He helped extensively to test and build the prototype advising on material science, safety engineering, and design.

Zheng joined the team during the class Society 5000. He drafted the market analysis charts and agreed this project has huge potential. He says “Sanitary napkin market size is estimated to be around 100 billion RMB market size. Consumption of feminine hygiene products is 120 billion pieces in 2021 in China. The number of female users reaches 400 million in China. Our mode of operation has a channel advantage via cooperation with universities”.

V. CONCLUSION

Raising awareness that sanitary pads are as essential to daily hygiene as paper towels is crucial. We advocate for greater attention to women’s needs so that they could confidently discuss menstruation and conveniently get menstrual products. Fostering a society that is supportive of women and children is important. Offering affordable menstrual products in easily accessible locations recognizes basic human rights and upholds the fundamental values of equality and dignity for women.

To explore the potential implications beyond our university context, we researched a few local locations that already have EFAS. For example, the shopping mall Taikoo Hui and Landmark in Guangzhou as well as tourist attraction QingHuiYuan in Foshan. We visited them to conduct field

studies regarding the availability, number, location, and affordability of sanitary napkins in their locations. These cases will be discussed in detail in a future article.

In the future, we plan to seek support from members of the National People’s Congress and the National Committee of the Chinese People’s Political Consultative Conference. We would like to propose to our school president mandating the provision of sanitary napkins. Then, using HKUST(GZ) as a minimal viable product, we could expand to other settings. Finally, we will propose to the Health Commission office to advocate for legislative measures beyond the school context. We have identified a local entrepreneur who helped to enact the baby care room legislation in Guangzhou. Her experiences could provide a successful legislation case study.

We also would like to promote the inclusion of the basic version of sanitary pads into medical insurance and promote the reduction of value-added tax on menstrual products. According to the Ministry of Finance’s response to Recommendation No. 6209 of the Fourth Session of the 13th National People’s Congress in 2021, the Chinese Treasury Department redirected this topic to the National Health Commission. Thus, we will also research Chinese healthcare policy.

CONFLICT OF INTEREST

The author declares no conflict of interest.

ACKNOWLEDGMENT

The author would like to thank the Red Bird MPhil program, Professor Qingqing Xing, Society 5000 course instructors, Makerspace managers, and Mr. Huanan Shen, involved in this research process.

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