



Visualizing the Shift: Word Cloud Analysis of Pradhan Mantri Jan Aushadhi Suvidha Sanitary Napkin

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HIGHLIGHTS

- The frame of mind regarding menstruation and sanitary napkin before and after the conception of Jan Aushadhi Suvidha Sanitary Napkin was recorded through word cloud.
- Affordable Price was top-ranked positive factor which perfectly aligns with the program's mission of ensuring economically accessible sanitary napkins for all women.
- The JASSN program addresses menstruation health holistically, which not only enhances women's quality of life but also advances sustainable development goals pertaining to social inclusion, gender equality, and health.

ARTICLE INFO

Keywords: Biodegradable, Frame of mind, Jan Aushadhi Suvidha Sanitary Napkin (JASSN), Menstruation, Sanitary Napkin, Tag Cloud, Word Cloud.

<https://doi.org/10.48165/IJEE.2024.60304>

Conflict of Interest: None

Research ethics statement(s):

Informed consent of the participants

ABSTRACT

Word cloud is a graphical representation of knowledge that lets a viewer acquire a quick and intuitive impression of a text. The study was conducted in Muzaffarpur and Samastipur districts of Bihar to find out the frame of mind of 160 respondents regarding menstruation and menstrual-related products before and after the commencement of Jan Aushadhi Suvidha Sanitary Napkin (launched by the Government of India in 2018) through word cloud. Analysis was done for both positive and negative frame of mind. High Price, embarrassment, uncomfortable, social restriction, isolation, dependence, stigma, taboo, pain, and itching, were negative aspects. Affordable price, easily available, awareness, hygiene, social participation, empowerment, independence, openness, menstrual health, and rash-free were positive aspects. Utilizing word clouds to analyze women's expressions regarding menstruation provided valuable insights into their frame of mind. It reveals recurring themes, concerns, and emotions, assisting in effectively identifying and addressing menstrual-related difficulties. The data-driven strategy (through word cloud) is critical for improving menstrual health and well-being.

INTRODUCTION

Menstruation is a period of change in females including physical, mental, physiological, and social changes. It is a natural phenomenon that starts at the age of 11-12 years (Menarche) and it lasts till the age of 45-50 years (Menopause). It is an essential developmental period that symbolizes the change in females from girlhood to womanhood. In many parts of India, menstruation has

historically been linked to notions of impurity and uncleanness (Kaundal and Thakur, 2014).

As part of Indian beliefs and customs, the act of sorrow and its link to menstruation have been passed down from generation to generation (Chawla, 1994). However, it has been consistently encircled by cultural taboos and misconceptions that marginalize women from numerous aspects of socio-cultural existence. In India, this subject continues to be considered a taboo even today. These

Received 28-04-2024; Accepted 21-06-2024

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societal taboos concerning menstruation, prevalent in numerous cultures, have significant consequences on the emotional well-being, mind-set, lifestyle, and, most crucially on the health of girls and women (Garg & Anand, 2015). In many countries, and also in India, menstruation is now an integral part of the educational curriculum, aimed at creating awareness and imparting knowledge to students. In the NCERT Science textbook for Class 8 in Chapter 7, there is now an addition of content related to menstruation (NCERT, 2022). This approach recognizes the importance of breaking taboos and myths surrounding menstruation. By including menstruation as a subject in schools, young students, both girls, and boys, gain a comprehensive understanding of this natural biological process (Kirk & Sommer, 2006). Along with this, The Department of Pharmaceuticals in India initiated the Pradhan Mantri Bhartiya Jan Ausadhi Pariyojana (PMBJP) program to make high-quality medicines accessible to the general public at cost-effective rates (PMBI, 2021). Jan Aushadhi Suvidha Sanitary Napkin under Pradhan Mantri Bhartiya Jan Ausadhi Pariyojana (PMBJP) was launched by the Government of India, on 5th June 2018, on the occasion of World Environment Day (PIB, 2020a). As part of this initiative, Jan Ausadhi Suvidha Climate-Friendly Oxo-biodegradable (Srivastava et al., 2023) Sanitary Napkins were introduced @ Rs. 1/unit on August 27, 2019, as a significant measure to protect the well-being and safety of Indian women (PIB, 2020b). These napkins are available now at a cost of just Rs.1 per pad (Srivastava et al., 2022).

METHODOLOGY

The present research was carried out during 2021-22 in a specific location including Jan Ausadhi Kendras (JAKs) and adjacent villages. Two JAKs were chosen from each of the Muzaffarpur and Samastipur districts of Bihar (Srivastava et al., 2024). Forty respondents from each village, thus a total of 160 rural women, were chosen because they knew about the JASSN scheme or had used Jan Ausadhi Suvidha Sanitary Napkins. In the 21st century, obtaining a comprehensive understanding of people's frame of mind "the way someone thinks or feels about something at a particular time" (Cambridge University Press, 2023) is vital, but it can be hard to figure out what people think about something directly. Investigating women's frame of mind on menstrual-related issues in rural locations is a significant challenge. So, it has become imperative to use a new tool to map what has come into their mind before and after the introduction of JASSN in order to find out frame of mind of rural women, (Jayashankar & Sridaran, 2017). By making word clouds, the main purpose is to generate the frame of mind of rural women regarding menstruation into a visual representation of data.

A word cloud is a visual depiction of a group of words, generally a set of tags, in which qualities of the text such as size, weight, or color can be utilized to represent elements of the text (Hayle & Keane, 2007). The origin of word cloud began with the early work of Stanley Milgram and Denise Jodelet, who published "Psychological Maps of Paris" in 1976 in which participants made Paris maps and mentioned landmarks in this study. Further, participants built a map based on landmark mentions. Frequently mentioned landmarks appeared in larger fonts, like word clouds and

this research served as a foundation for the development of word clouds as a method for displaying textual data, where word size denotes word frequency. With the rise of "tag clouds" during the Web 2.0 era, word clouds moved into the digital world and in the early 2000s, Web 2.0 giants like Flickr introduced Internet users to the word cloud by making the most popular buzzwords (called "tags") bigger. Wordle was the first freely available word cloud generator (Edward, 2023). In present study, word cloud was used while having the personal interview from 160 respondents and by following ex-post facto research design (Anand et al., 2023; Singh et al., 2023; Sharma et al., 2023). The frame of mind regarding menstruation and sanitary napkin before and after the conception of Jan Aushadhi Suvidha Sanitary Napkin was recorded. The words were predominant while describing the JASSN; therefore, both positive and negative words were recorded in the line of positive sentiment and negative sentiment.

RESULTS

Word cloud visualization ranking for negative word

Figure 1 presented that how was frame of mind of female respondents before the commencement of initiatives like "Jan Aushadhi Suvidha Sanitary Napkin" (JASSN), women often faced significant challenges in managing menstruation, as reflected in the negative aspects such as, "High Price" was ranked first (f=155; 96.87%) showed that the high cost of commercial sanitary napkins placed them out of reach for many women, forcing them to opt for cheaper but less hygienic alternatives, such as cloth or old rags. "Embarrassment" ranked second (f=138; 86.25%) implied that



Figure 1. Respondents negative frame of mind about menstruation and traditionally used product during menstruation

menstruation was often accompanied by feelings of embarrassment due to the lack of accessible and discreet menstrual hygiene products. This led to discomfort and anxiety for many women. “Uncomfortable” was ranked third ($f=127$; 79.37%) addressing the traditional methods like cloth were uncomfortable and lacked the absorbency and convenience of modern sanitary napkins, making menstruation a physically challenging experience. “Social Restriction” ranked fourth ($f=114$; 71.25%) showed that societal norms and lack of access to suitable products sometimes led to social restrictions for women during menstruation, limiting their participation in daily activities and social interactions. “Isolation” ranked fifth ($f=104$; 65%) revealed that the stigma and lack of proper menstrual hygiene solutions isolated women from their communities during their periods, negatively affecting their social lives. “Dependent” ranked sixth ($f=97$; 60.62%) depicted women often depended on others for access to menstrual hygiene products, making them reliant on family members or closed ones which could be inconvenient for them. “Stigma” was ranked seventh ($f=87$; 54.37%) indicated menstrual stigma and taboos are present in many communities, further isolating women and hindering open discussions about menstruation. “Taboo” was ranked eighth ($f=80$; 50%) which showed that the cultural taboo surrounding menstruation meant that women often had to hide their menstrual status and practices, contributing to the sense of shame and embarrassment. “Pain” was ranked ninth ($f=73$; 47.50) illustrated that inadequate access to pain relief options and discomfort from poor-quality menstrual products meant that many women experienced lot of pain and discomfort during their periods. “Itching” ranked tenth ($f=65$; 40.62%) revealed that the use of unhygienic alternatives like cloth sometimes led to itching and irritation, causing additional discomfort. Thus, due to the absence of affordable, accessible, and reliable menstrual hygiene products, women faced numerous physical, emotional, and social challenges which can hinder their overall development and empowerment.

Word cloud visualization ranking for positive frame of mind

Figure 2 provides profound insights into the factors influencing respondents' satisfaction, related with the menstruation and JASSN, “Affordable Price” was the top-ranked ($f=160$; 100%) factor with cent percent agreement, perfectly aligns with the program's mission of ensuring economically accessible sanitary napkins for all women (PIB, 2020c). “Easily Available” was ranked second ($f=134$; 83.75%), emphasizing the pivotal role of distribution and accessibility of JASSN. “Awareness,” was ranked third ($f=97$; 59.14%), underscores the importance of educational campaigns to inform women about the benefits and availability of the product. “Hygiene” holds fourth place ($f=87$; 54.37%), focusing the need for quality and safety. “Social Participation” was ranked fifth ($f=78$; 48.75%), highlighting the program's potential to foster community involvement of women's during menstruation. “Empowerment,” was ranked sixth ($f=69$; 43.12%), which showed that the goal of promoting women's empowerment by addressing key aspects of menstrual hygiene, and contribute to improving women's overall health and well-being, enhancing their quality of life, and promoting gender equality. Word “Independent” was ranked seventh ($f=38$; 23.75%), which showed contribution of JASSN to make women



Figure 2. Respondent's positive frame of mind about menstruation and JASSN

more independent in various areas such as, menstrual hygiene independence, education and work place, economic freedom, privacy and dignity. “Openness,” was ranked eighth ($f=28$; 17.50%) which implied that after the commencement of JASSN, women has become more open to each other. “Menstrual Health” was ranked ninth ($f=25$; 15.62%), addressing specific health concerns related to menstruation while “Rash free” at tenth ($f=19$; 11.87%) signals the need for comfort and quality.

Precisely, “Jan Aushadhi Suvidha Sanitary Napkin” empowers women by providing them with the means to manage their menstrual health independently, ensuring their education, work, and social participation remain uninterrupted. This empowerment goes beyond mere access to sanitary napkins; it encompasses financial independence, personal dignity, and informed decision-making, ultimately enhancing women's overall independence and quality of life.

DISCUSSION

As shown in Figure 1, female respondents faced multifaceted challenges in managing menstruation prior to the introduction of initiatives such as “Jan Aushadhi Suvidha Sanitary Napkin” (JASSN). Menstruation was not only a challenge because of practical difficulties, but also because of deeply rooted societal taboos and stigmatizations. A significant portion of women were unable to afford commercial sanitary napkins because of their exorbitant cost. In a study conducted by Smith et al., (2020), socio-economic disparities in access to menstrual hygiene products were examined, with the result that women from low-income families had a disproportionately high cost of commercial sanitary napkins. This economic barrier not only restricted access to essential menstrual products, but also perpetuated cycles of poverty and marginalization. Since women lacked discreet menstrual hygiene products, they suffered from embarrassment and discomfort during menstruation. As Jones & Brown (2019) explain, women's menstrual

experiences are shaped by their race, ethnicity, and socio-cultural background. Menstrual hygiene resources should be accessible to all women regardless of their socio-demographic characteristics. According to the rankings of “Stigma” and “Taboo,” menstrual stigma and taboos perpetuate a culture of silence and shame around menstruation, hindering open discussions and perpetuating systemic prejudice. According to Patel et al., (2021) in a cross-sectional study, this cultural context not only isolated women, but also contributed to physical and emotional distress. Moreover, culture taboos and stigmas surrounding menstruation were identified as significant barriers to menstrual health education and awareness. In order to challenge harmful stereotypes and promote menstrual health literacy among women and girls, community-based interventions and peer-led education programs are needed. Menstrual hygiene solutions that are accessible, inexpensive, and reliable are lacking, which not only creates practical obstacles but also impedes women’s empowerment and overall development. It will take coordinated efforts to challenge societal conventions and taboos around menstruation and promote an open, accepting, and women-empowered society in order to address these issues in addition to providing menstrual hygiene products that are inexpensive and accessible.

Figure 2 provides an extensive comprehension of the variables impacting the respondents’ comfort regarding their menstrual cycle and the “Jan Aushadhi Suvidha Sanitary Napkin” (JASSN) initiative. These results underline the program’s wider effects on women’s empowerment and well-being in addition to demonstrating how successfully it addresses important components of menstrual health. Figure 2 also reveals a noteworthy aspect that everyone agrees on the significance of cost, with “Affordable Price” ranking as the most significant variable affecting satisfaction. This is in complete harmony with the JASSN program’s goal of providing all women, especially those from low-income families, with affordable access to sanitary napkins (PIB, 2020d). The program not only meets a basic need but also lowers financial barriers that can keep women from getting necessary hygiene items by making menstrual hygiene products inexpensive. This financial independence supports women’s involvement in school and the workforce, improves their ability to manage their menstrual health, and advances efforts towards greater gender equality (UNESCO, 2017). Moreover, the high rating of “Easily Available” highlights how important accessibility and distribution are to guaranteeing that JASSN is widely used. Regardless of their location or socioeconomic position, women who have easy access to sanitary napkins are empowered to efficiently manage their menstrual health, while also promoting sanitation and convenience. The fact that “Awareness” came in third place highlights how crucial it is to run educational programs to tell women about the advantages and accessibility of the JASSN product. The program helps women make educated decisions about their menstrual health and improves health outcomes by increasing awareness of menstrual hygiene and the value of using high-quality sanitary napkins. Furthermore, aspects like “Hygiene,” “Social Participation,” and “Empowerment” demonstrate how the JASSN program has an influence that goes beyond providing sanitary napkins. The program enhances women’s overall quality of life and well-being by encouraging community involvement during

menstruation, empowering women to take charge of their menstrual health, and promoting hygiene. Research by Gupta et al., (2021) supports these conclusions by highlighting the significance of managing menstrual health holistically, taking into account particular health issues associated with menstruation such reproductive health problems and menstrual disorders. Through addressing these issues, the JASSN program enhances women’s reproductive health and broadly menstrual health in addition to promoting physical well-being. Comparably, the placement of “Openness” as the eighth category suggests that, since the JASSN program began, there has been a favourable change in public attitudes toward menstruation. The program empowers women to talk openly about menstrual health and seek care when necessary, by shattering the taboo and silence surrounding menstruation. This mentality change is essential for fostering gender equity, menstrual health awareness, and challenging long-standing social conventions (Dasgupta, 2018). According to Sharma & Gupta (2022), holistic approaches to menstruation health are crucial because they combine efforts to promote general health with control of menstrual hygiene. The JASSN program addresses menstruation health holistically, which not only enhances women’s quality of life but also advances sustainable development goals pertaining to social inclusion, gender equality, and health.

CONCLUSION

Word clouds can be used as a method for textual analysis to reveal women’s frame of mind. In this present study it can be concluded through negative and positive aspect of women’s frame of mind regarding menstruation and menstrual related product before and after the introduction of JASSN. Before JASSN women don’t have access to cheap sanitary napkins, they have to deal with a lot of embarrassment, taboos, and stigma, physical, emotional, and social problems that make it hard for them to grow and be independent as a whole. Post JASSN, women have access to sanitary napkin which are highly affordable for women, along with this JASSN also helps women to be independent financially and socially. It enhances women self-dignity, self-awareness and also it makes them empowered. In conclusion, this study found that using word clouds to analyze women’s expressions regarding menstruation provides valuable insight into their mental state. Menstrual-related difficulties can be identified and addressed more effectively by identifying recurring themes, concerns, and emotions. As a final note, this data-driven approach (using word clouds) serves as a critical component of improving menstrual health and wellness.

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