Original Research Article

Factors Determining Adoption of Climate-friendly Oxo-Biodegradable Napkins among women in India

ABSTRACT

With the aim of making and providing generic drugs available at a cheap cost to everyone across the country, "Pradhan Mantri Bhartiya Jan Ausadhi Pariyojana (PMBJP) was launched and under this scheme, Jan Ausadhi Suvidha Sanitary Napkins were launched to provide biodegradable sanitary napkins at less price for women of the country. Menstruation is a part of women's life and menstrual hygiene product is the basic need for women to face this menstruation period. There are many health issues that were faced by women during menstruation and the sanitary napkins used during menstruation causes different pollution. For the purpose of safeguarding the health, financial affordability of Indian women this suvidha sanitary napkin was launched. Earlier in rural areas by abandoning non-biodegradable sanitary napkin a lot of pollution was caused but now it is under check. Binary logistic analysis revealed that Profession and Annual income were significant at 5 percent level and variables like AWARE PMBJP and Marital status were significant at 10 percent level and all significant factors determine the adoption of climate-friendly bio-degradable Jan Ausadhi Suvidha Sanitary Napkins. The result of the study of the impact on women will surely be used to enhance the health status of women and also compliment Swachh Bharat Abhiyan.

Keyword: JASSN, Climate-friendly, Bio-degradable, Menstruation, Binary logistic model

INTRODUCTION

The "Jan Ausadhi Scheme" was redesigned as the "Pradhan Mantri Jan Ausadhi Yojana" in September 2015 (PMJAY). To give the programme more momentum, it was renamed "Pradhan Mantri Bhartiya Jan Ausadhi Pariyojana (PMBJP)." in November 2016. The Department of Pharmaceuticals started the Pradhan Mantri Bhartiya Jan Ausadhi Pariyojana (PMBJP) initiative to offer the general public high-quality medications at affordable prices. (PIB, 2020) Under this scheme, Jan Ausadhi Suvidha Oxo-biodegradable Sanitary Napkins

were launched on August 27, 2019, (Ministry of chemical and fertilizer, 2020) as a vital step in safeguarding the health and security of Indian women. They will be available for Rs. 1/pad only. Jan Ausadhi Suvidha Napkins are available for purchase in over 8000 Kendras around the country. This would ensure 'Swachhta, Swasthya, and Suvidha' for India's impoverished women and would contribute to Prime Minister Shri Narendra Modi's Mission of Affordable and Quality Healthcare for All. Jan Ausadhi Suvidha comes with a special additive, which makes it biodegradable when it comes in contact with oxygen after being discarded. Lal *et al*. (2021) studied rural Bihar through their Livelihood security (LS) Index under an exhaustive list of 7 sub-indicators and revealed that Health Security in Bihar was meagre i.e. 0.497 as the maximum possible value could be 1, thus it denoted that health security couldn't cross half way mark. The most critical requirement is maintaining the health security of those women in India who still use filthy products during their menstrual periods due to the unaffordability of some of the most popular brands of sanitary napkins available today. Fungal infections, Reproductive Tract infections, Urinary Tract infections, Cervical Cancer, and infertility are all caused by such filthy aids. Jan Ausadhi Suvidha Sanitary Napkins are eco-friendly since they are made of Oxo-biodegradable material that fulfils the ASTMD-6945 (biodegradability test) criteria (Stephen, 2022). These pads are being offered for Rs. 1 each under the Pradhan Mantri Bhartiya Jan Ausadhi Pariyojna. (Ministry of chemical and fertilizer, 2020) If the supply of Suvidha pads can be streamlined, it would make an impact on female health, female economic status, also on environment. In order to get a wide picture and assess effectiveness of the program in rural area in Bihar an explorative impact study has been conducted to assess how JASSN schemes were impacting the rural women of two villages chosen in the district of Muzaffarpur of Bihar.

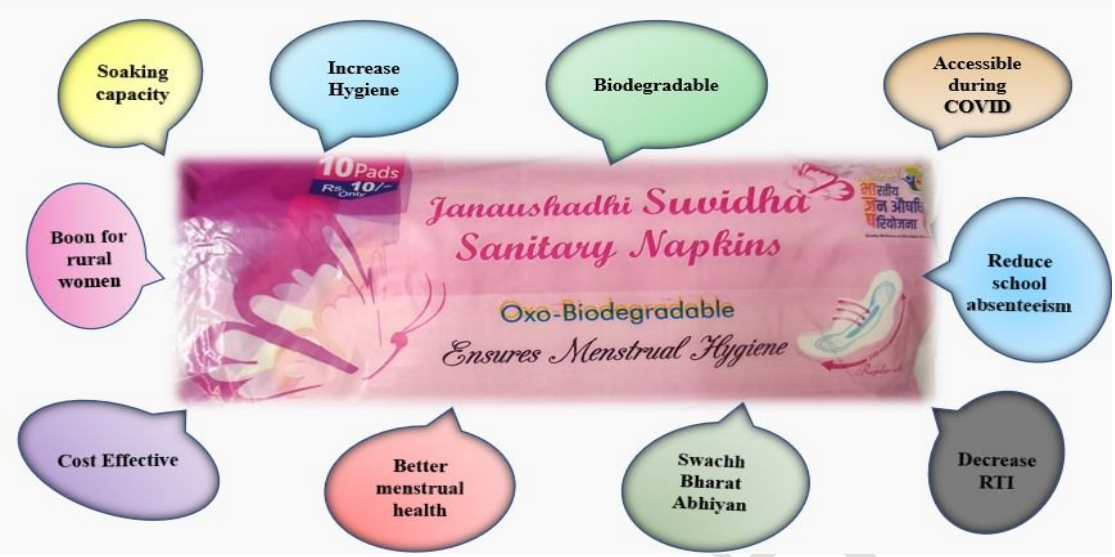

Fig. 1. Key features of oxo-biodegradable climate -friendly Jan Ausadhi Suvidha Sanitary Napkins

RESEARCH METHODOLOGY

In order to determine factors affecting adoption of climate-friendly bio-degradable Jan Ausadhi Suvidha Sanitary Napkins among women in India, Muzaffarpur district of bihar was selected as locale of research based on convenient or purposive non-probability sampling techniques. Two blocks Muraul and Sakra have been selected for the study, as these blocks found with established structures of Jan Ausadhi Kendras. In muraul block, Pilkhi village and in sakra block, muhammadpur village were selected for the study as these villages are nearby to Jan Ausadhi Kendras and sampling technique used for the selection of the research area was simple random selection of sampling method. From each village, 40 respondents were selected and all these selected respondents known to this scheme or having experience in using Jan Ausadhi Suvidha Sanitary napkins. So, total no. of respondents were 80 and sampling method snowball sampling technique. Data were collected by personal interview schedule with the help of a structured interview schedule with observation method. Secondary data were also gathered from sources such as annual reports, statistical manuals and reports etc. Data were analyzed using inferential statistics in this study. Inferential statistics involving frequency, percentage and binary logit model was employed to test the

hypotheses and the statistical significance to determine the level of agreement or disapproval of beneficiaries.

BINOMIAL LOGIT MODEL

$$Ln = \beta_0+\beta_1X1+\beta_2\ X2+\ \beta_3X3+\beta_4X4 + \beta_5X5 + \beta_6X6 + \beta_7X7 + \beta_8X8 + \beta_9X9 + \beta_{10}X10 +\beta_{11}X11+ \beta_{12}X12 + \beta_{13}X13$$

Where,

X1 = Age

X2 = Caste

X3 = Religion

X4 = Marital Status

X5 = Family size

X6 = Family type

X7 = No. of Females

X8 = Education

X9 = Profession

X10 = Mass media exposure

X11 = AWARE PMBJP

X12= Nutrition

X13 = Annual Income

β_0 to β_{13} = Value of coeffficient

RESULTS AND DISCUSSION

Women in rural regions often lack access to sanitary goods, are unaware of several methods and sources of use, or are unable to afford such products like pads due to their high cost. (Kaur *et al,* 2018) As we know, different varieties of pads were available in market but these pads are made up of chemicals and also available at high cost which rural people unable to afford on monthly basis. When these pads were discarded in fields , river, drains, open area or when the used pad is burnt, the chemicals released from it leads to harmful pollution of environment which affect fertile fields, aquaculture, dairy etc. In contrast Jan Ausadhi Suvidha Sanitary Napkins are cost effective and climate friendly bio-degradable in nature. Thus, adopting JASSN at affordable cost via Jan Ausadhi kendras for improving health and hygiene conditions during menstruation and controlling over the pollution caused by

discarded sanitary napkins had a significant and positive impact on women's health and hygiene and environment in the area researched. Data presented in table 1 is to assess at what extent or level the respondents adopted the JASSN. 12.5 % respondents come under the category of least adoption while majority (68.75%) of the respondents partially adopted the JASSN and 18.75 % respondents fully adopted the JASSN.

Table 1 Distribution of respondents based on the level of adoption of Jan Ausadhi Suvidha Sanitary Napkin (JASSN) (N=80)

Adoption of JASSN	f	%	
Least adopted (<50)	10	12.5	Mean=57
Partially adopted (50-63)	55	68.75	SD=6.89
Fully adopted (>63)	15	18.75	

Effect of various independent factors (variables) on adoption of Jan Ausadhi Suvidha Sanitary Napkin (dependent variable) through Binomial logit model

Dependent variable was Adoption of Jan Ausadhi Suvidha Sanitary Napkins and effect of independent factors on dependent variable were found through Binomial logit model. The binomial logistic model is preferred wherever strata-wise comparison is applied. It has been earlier applied by Lal *et al.* (2018) for "Building synergism through resilience measuring and predicting instrument ground zero results from national calamity devastated province of India" for 2 strata comparison, i.e., resilient and non-resilient respondents in Bihar , Lal (2017) in "Critical appraisal of farmers mental health", Lal *et al.* (2016) for "Expectation of participants in national dairy fair of India: A complete itemization by multivariate analysis" and also used by Kumari, S. *et al.* (2022) in " Rice Varietal Preference of Farmers in Rice Bowl Region of Bihar: A Polychotomous Logistic Regression Analysis".

In variable view values *were* further coded as 0 & 1, 0 means comparatively less adoption and 1 means comparatively more adoption. (n = 80)

Table 2 Distribution of respondents on the basis of their adoption

Sl. No.	Category	Frequency	Percentage
1.	Comparatively Less Adoption	47	58.75
2.	Comparatively More Adoption	33	41.25

Table 3 Omnibus test model of Coefficients (n=80)

	Chi square	Df	Sig.
Step	67.244	13	.001
Block	67.244	13	.001
Model	67.244	13	.001

From the Table 3 it was operationally defined as the significance value of less than 0.05(0.000) indicates that the binary logit model outperforms the null model.

Table 4 Model Summary (n=80)

-2 Log likelihood	Cox & Snell R Square	Negelkerke R Square
41.197	0.569	0.766

From Table 4 it shows that empirical fact clearly depicted that the variables predicted the model fairly as Nagelkerke R square statistics (Lal *et.al.*, 2018) indicated overall modest fit for the model was 0.766 or 76.60 %.

Table 5 Effect of various independent factors (variables) on adoption of Jan Ausadhi Suvidha Sanitary Napkin (dependent variable) through Binomial logit model (N=80)

Category	B	S.E.	Wald	df	Sig.	Exp(B)
Age	-.163	.101	2.618	1	.106	.850
Caste	.697	.760	.842	1	.359	2.008
Religion	-.084	1.003	.007	1	.933	.919
Marital Status	2.172	1.191	3.323	1	.068*	8.775
Family size	-3.726	2.817	1.750	1	.186	.024
Family type	.555	.496	1.251	1	.263	1.741
No. of Females	-.336	.900	.139	1	.709	.715
Education	.267	.558	.230	1	.632	1.307
Profession	3.781	1.564	5.842	1	.016**	43.871
MME	-.275	.296	.868	1	.351	.759
AWARE PMBJP	.485	.277	3.054	1	.081*	1.624

Nutrition	.211	1.170	.033	1	.857	1.235
Annual Income	.000	.000	5.729	1	.017**	1.000
Constant	-14.485	5.879	6.069	1	.014	.000

** - Significant level 5 %

* - Significant level 10 %

Factors determining adoption of Jan Ausadhi Suvidha Sanitary Napkin

Binary logistic analysis revealed the Wald statistics were significant at 5 percent level for the explanatory variables viz. Profession and Annual income, while variables like AWARE PMBJP and Marital status were significant at 10 percent level.

Marital Status: The study revealed that marital status was positively significant (0.081) at 10% level with wald statistics value 3.054. It can be concluded that with 1 unit increase in marital status from unmarried to married, the adoption of Jan Ausadhi Suvidha Sanitary Napkin (JASSN) will increase by 7.76 times.

Profession: In this study, the profession was positively significant (0.016) at 5% level with wald statistics value 5.842. It can be concluded that with 1 unit increase in profession from housewife to student, the adoption of Jan Ausadhi Suvidha Sanitary Napkin (JASSN) will increase by 42.871 times.

AWARE PMBJP: The study revealed that AWARE PMBJP was positively significant (0.068) at 10% level with wald statistics value 3.323. It can be concluded that with 1 unit increase in awareness regarding, the adoption of Jan Ausadhi Suvidha Sanitary Napkin (JASSN) will increase by 62.4%.

Annual Income: In this study, annual income was positively significant (0.017) at 5% level with wald statistics value 5.729 but its direction was not clear.

Explanation of non-significant variables:

Age: Age was negatively non-significant and it shows that it was equally adopted by all age ranges because it was easily available and negatively non-significant denotes that young age people are adopting more.

Caste: Caste was non-significant and it shows that was it was independent of caste. As we know, menstruation has no effect on caste and it happens equally to women of all castes.

Religion: Same as caste, religion was non-significant and menstruation has no effect on religion.

Family Type: Family type was non-significant and it shows that it was independent of family type. There has no effect of family type on menstruation.

Family Size: Family size was non-significant and it shows that it was independent of family size. There has no effect of family size on menstruation.

No. of females: It denotes no. of females present in a family including all age ranges. And there has no effect of no. of females present in family on menstruation of single female of that family.

Education: Education was non-significant and it shows that education has no effect on menstruation that means even if a women is educated or illiterate, she still has menstruation.

MME: Mass media exposure was also non-significant and it shows that JASSN has less publicity.

Nutrition: Nutrition was non-significant and there has no relationship between JASSN and Nutrition. So, it was independent of nutrition.

CONCLUSION

Conducted study found that the level of adoption by respondents regarding Jan Ausadhi Suvidha Sanitary Napkin (JASSN) was nearly 88% women respondents had medium to high level of adoption of the Jan Ausadhi Suvidha Sanitary Napkin (JASSN). The findings of the effect of various independent factors (variables) on adoption of Jan Ausadhi Suvidha Sanitary Napkin (dependent variable) through Binomial logit model have been concluded as – Out of 8 variables, 3 variables were found positively significant with wald statistics value. Profession and annual income were found positive significant at 5 % level with wald statistics value 5.842 and 5.729 respectively. Aware PMBJP was found positively significant at 10 % level with wald statistics value 3.323. It means that 1 unit increase in profession, and aware PMBJP, the adoption of JASSN will increase by 42.871 times and 62.4 % respectively. This was due to the fact that JASSN focused and easy adoption standards which made available to women sanitary napkins at a negligible cost and it doesn't cause any pollution. This JASSN is proving to be a boon for the women of rural India because this pad is available at a cheap cost and it complements Swachha Bharat Abhiyan. This would also ensure 'Swachhta, Swasthya,

and Suvidha' for India's impoverished women and would contribute to Prime Minister Shri Narendra Modi's Mission of Affordable and Quality Healthcare for All.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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