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Effectiveness of SERP Telangana's Health/Nutrition Intervention in Improving Women's Nutrition/Sanitation Practices

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List of Abbreviations

SERP (T)	:	Society for Elimination of Rural Poverty (Telangana)
SHG	:	Self-Help Group
MHM	:	Menstrual Health Management
IKP	:	Indira Kranti Patham (World Bank)
LMIC	:	Low- & Middle-Income Countries
KAP	:	Knowledge Attitude & Practice
PSM	:	Propensity Score Matching
ATET	:	Adjusted Treatment Effect on Treated

Executive Summary

An evaluation study was conducted with the objectives of examining the impact of SERP (Telangana)'s Dweetiya Meeting delivered Health/Nutrition/sanitation modules on the knowledge, attitude and practice around menstrual health and hygiene, gender attitude, and menstrual health behaviour.

The final survey was conducted in the villages of Manchal, Moinabad, and Shamshabad. Major sites where FGDs were conducted include Tippaiguda, Ajijnagar and Chilkoor villages. A sample of 306 women was collected; of this seven were dropped due to quality issues. The final study used a sample of 299 women, including 103 who attended SERP second meetings regularly and were exposed to the health/sanitation modules, and 196 who neither attended these meetings regularly nor get exposure to the modules.

The responses from the women who regularly attended the second SERP meeting and were trained on health sanitation were compared against those unexposed to the SERP training on sanitation. A propensity score based on logistic regression with nearest neighbour matching was used to examine the average treatment effect of exposure to the second training on women's menstrual health management levels. The ATETs were reported alongside the category-wise proportions in the tables.

The evaluation results revealed that

1. The women attending the second meetings had a statically significant impact on reducing all restrictive behaviours around menstruation in women.
2. Women attending the second meetings were also more likely to take strategic decisions than their counterparts.
3. The second meetings did not influence other gender, KAP or health indicators such as procurement of safe products by self.

It was concluded that the module had a selective impact in the areas, such as restrictive hygiene behaviour around menstruation, where intensive discussions were conducted in focus groups. There was no visible trickle-down of the gender-attitude from one dimension to the other. For the second meetings to have a direct impact on all gender indicators and menstrual health behaviours, focused and scalable intensive training and follow-ups must be developed.

It is recommended that menstrual hygiene training and awareness programmes must spread their outreach to all relevant topics regarding the theme. Ttraining should also be given to beneficiaries

from all age groups, including both the mothers and guardians and the actual young adolescent and new menstruators. The agency of choosing menstrual products should be with the menstruator for a transformative behavioural shift.

There needs to be a more in-depth and large-scale study to better understand the effect of SHG meetings on gender, health/nutrition, and sanitation outcomes. Transformative impact can be made only through intensive and topical discussions with women-groups. In that, the SERP Telangana's Dweetiya meeting-based modules have a long path ahead.

I. INTRODUCTION

Development models utilising women's collectives have captured the attention of the government for several decades. Women collective-led interventions have been attractive to both government and private development organisations due to the economies of scope and ease of reaching a large community, which is beyond the scope of individually targeted programmes (Díaz-Martin et al., 2022). It is observed that the SHG programmes have a significant impact on women's access to livelihood, food intake, and social capital (Gash, 2017), on household welfare such as reduction of borrowing rates (Hoffmann et al., 2018) but also moderate or mixed effects on social empowerment (Banerjee et al.; Brody et al., 2016a; Hoffmann et al., 2021; Raghunathan et al., 2019). Some SHG-led programmes have shown a positive impact on nutrition, health outcomes and quality of service delivery (Mehta et al., 2020), but the impact of collectives is not universal across the world. Some studies have found insignificant to no effect of collectives on development outcomes (Hoffmann et al., 2021).

The pathway of women collectives to nutrition or economic welfare outcome is not straight and is often dependent on other macro and micro social factors (Nichols, 2021). There is also evidence of SHG-led programmes showing counterintuitive relations with gender-indicators such as workload or leisure available to women (Brody et al., 2015). In many of the studies, the gender and social developmental outcomes such as rejection of traditional gender beliefs have been observed as the downstream impact of collectives (Jejeebhoy et al., 2017). An important question for policy is to thoroughly analyse the link between these SHG-led behavioural change interventions and the development outcomes such as gender attitudes, nutrition knowledge, and health behaviour of women.

This study evaluates the social impact of the Society for Elimination of Rural Poverty (SERP) (Telangana). SERP SHG-led programme is a mixed intervention model where financial intervention has been combined with social and health interventions with a specific focus on gender attitude, and menstrual health/sanitation behavioural outcomes in women.

The National Rural Livelihoods Mission of the Government of India conceptualised the self-help groups as instruments of household poverty reduction through the provision of institutionalised micro-credit to the women members. Other than fulfilling a fundamental developmental need of reducing household poverty, the programme has multidimensional targets to reach some strategic outcomes such as women's financial autonomy, livelihood, and eventual higher achievement in terms

of health, nutrition and quality of life. Quantitative evidence of the impact of the programme shows partial or mixed results (Saha et al., 2015a). Delivering all interventions through SHGs, including livelihood, entrepreneurship development, etc., may be contradictory with the goal of gender-equality by adding to women's time-use burden. Some evidence also points to the provision of micro-finance benefitting men in the household at the cost of putting women in debt (Kabeer, 2005). The impact of collectives on empowerment is contextual and remains an important enquiry for every new SHG-led programme.

Linked to the question of gender is the issue of women's health, which also has immense public health and social significance. The direct and relevant indicator to capture women's health behaviour is menstrual hygiene behaviour. Out of the many dimensions and facets of health sanitation and hygiene management, the issue of menstrual hygiene was taken up as the core problem for this study for its direct link with the gender roles and status of women in society.

The debate around menstrual hygiene management in India has been overwhelmingly about sanitation and hygiene-aspect of it, with sufficient absorbent products, sufficient sanitation equipment and knowledge, and access and supply to water being the major policy recommendation of the studies. Women face a variety of challenges ranging from health issues such as urinary tract infections, reproductive tract infections, and social stigma, shame, and school absenteeism (Dasgupta and Sarkar, 2008; Narayan et al., 2001; Oster and Thornton, 2011; Tjon A Ten, 2007). In India, the uptake of sanitary products and healthy behaviour during menstruation is low; many women using unhygienic products have no access to water and sanitation, and link menstruation with purity (Kumar and Srivastava, 2011; Mahajan and Kaushal, 2021; Mahon and Fernandes, 2010; Paria et al., 2014; Sharma and Gupta, 2020; Thakur et al., 2014). Studies have observed that non-usage of sanitary products is linked to adolescent girls and their mother's education, taboo, shame, age, and caste among other factors (Ahmed and Yesmin, 2008; Anchebi et al., 2017; Baumann et al., 2019; KB et al., 2019; Z and B, 2019). Recent evidence has pointed to the complex gender-water-health linkages (Pouramin et al., 2020). The knowledge, attitude, and practices around menstrual health, therefore, are an important mirror of the gender attitude of the community.

An aspect which is relatively unexplored in the MHM discourse is the gender-dynamics of product access. Often the menstrual products are not procured by the menstruator and there may be different societal factors associated with this behaviour, starting from shame to lack of access to scientific information and correct knowledge (AM et al., 2018; Boakye-Yiadom et al., 2018; Gold-Watts et al., 2020). There is a lack of focus given to it from a gendered perspective, especially looking at the details of the overall menstrual health behaviour of women in society, the taboos and the restrictions around it. Given the extreme significance of menstrual hygiene management in reproductive health in

women's well-being and growth, this study also looks at the level of Knowledge, Attitude and Practice around MHM and whether the SHG meetings have any effect on it.

About the SERP Intervention

To conduct the study, the beneficiaries of SERP programme (IKP in erstwhile Andhra Pradesh) were chosen. Although the IKP programme has been studied for a long time in undivided Andhra Pradesh, the Telangana SERP programmes are relatively new. The modules on health such as menstruation and sanitation were recently added, and no large-scale evaluation studies were undertaken. The evaluation of the health and sanitation vertical of SERP (T) have the potential to yield significant policy learning for the progress of menstrual health management in

- Planning health intervention
- Planning effective nutrition module
- Promoting safe health practices
- Effective implementation of Poshan Mission

The Indira Kranti Patham (IKP) Programme (World Bank) for alleviating rural poverty through collectivisation is known as one of the largest self-help group-driven programmes against rural poverty. Starting in the year 2000, the Society for Elimination of Rural Poverty (SERP) was set up all over undivided Andhra Pradesh to manage the IKP programme. Since 2005-06, World Bank's funding weaned out and State and Centre funding was introduced to run the programme. At this stage, SERP started running through the District Rural Development Agencies (DRDA) all over the State. In 2014, Telangana state was formed with an autonomous SERP (registered under the Public Society Registration Act) with independent activities and goals. It was earlier observed that in undivided Andhra Pradesh, the IKP programme increased participants' access to loans, leading to ownership of livestock and durables for the poorest and non-farm assets for the poor. Some of them could invest in education and increased total expenditures for the poorest and poor (Prennushi and Gupta, 2014). SHG and community-driven development have been observed to have positive externalities in terms of economic opportunities and social empowerment (Deininger and Liu, 2009). The Telangana SERP has been working on multiple verticals starting from livelihood, Stree-Nidhi (micro-credit), health, nutrition, sanitation and gender. This study proposes to evaluate the performance of SERP (T) in the health-nutrition vertical.

Intervention: 'Dweetiya' (II Meeting) of SERP

The study analyses the impact of the Dweetiya (Second) SHG Meeting of the SERP (Telangana). The second meeting primarily focuses on the social development objectives of the collectivisation programmes. These meetings have the following main objectives:

1. Enhancing the quality of life through behavioural change communication on nutrition, safe water, sanitation, health and other development goals.
2. Creating community self-reliance on the development goals
3. Stimulating village-level public action to demand better services for health nutrition and sanitation for enhanced quality of life.

Vol 1	Vol 2	Vol 3	Vol 4
Food	**Nutrition**	**Health**	**Gender**
1. Health, nut & hygiene 2. Dietary Diversification 3. Health in your plate 4. Child nutrition 5. Anaemia	1. 1000 days approach 2. Feeding practices 3. Hand wash and hygiene 4. Safe food 5. Household waste management	1. Birth planning 2. Communicable and non-communicable diseases 3. Vaccine preventable diseases 4. Vector borne diseases 5. Menstrual hygiene	1. Challenging gender discriminatory norms 2. Girl child education 3. Gender advocacy (PWD)

Figure 1: Dweetiya (Second) SERP Meeting Modules

Source: Pausumi Basu, CEO SERP (Available at: http://www.mcrhrdi.gov.in/group1-2019/week3/Society%20for%20Elimination%20of%20Rural%20Poverty%20(Serp)%20-%20mcr.pdf)

Objectives

In this study, analysis is undertaken to

- evaluate the scope of SERP's work in gender in the selected study sites
- measure the status of knowledge, attitude and practice (KAP) around gender and menstrual hygiene, sanitation in women
- examine the effectiveness of SERP (T)'s 'dweetiya' meetings in terms of gender attitude, and around menstrual health and hygiene
- elicit further steps required to strengthen the nutrition/sanitation KAP through community.

Structure of the report

The report is divided into six chapters. The objective and methodology are elaborated in the first chapter, followed by a discussion on the existing evidence on gender-attitude and gender roles, women's KAP around personal hygiene, and menstrual health. This is followed by a description of the intervention, descriptive statistics of the survey, estimation of effectiveness of the intervention and finally, discussion of the results and conclusion.

II. EXISTING EVIDENCE

SHG-led programmes started around the decade of women empowerment across the world and captured the imagination of all development agencies by the end of the 19th century. The programmes were initiated early on in India with Andhra Pradesh as one of the oldest States to form women-SHGs for development. The National Rural Livelihoods Mission was launched in 2005 to govern the State Livelihood Missions across India, and women across India's villages were enrolled in SHGs in mission mode. By 2022, nearly 8.58 crore women have become SHG members with around 79 lakh SHGs formed in rural areas (The Hindu, 2022).

SHG and economic outcomes

Existing evidence points to the relationship between SHGs and improved development outcomes such as increased savings, better income, better health-seeking behaviour and potential to participate in society and polity (Deininger and Liu, 2009; Greaney et al., 2016; Kumar, 2006; Kumar et al., 2021; Raghunathan et al., 2022; Sinha and Kumar, 2020).

SHG-led programmes in India have been widely studied to improve economic outcomes such as the overall reduction of interest rates in the rural risk market (Kochar et al., 2020). The impact pathway, as pointed out in the introduction, is not straightforward and beyond contradictions. Multiple studies have found a limited impact of SHGs on outcomes beyond the direct or targeted indicator of intervention.

SHG and gender outcomes

Collectivisation has also shown a positive impact on gender roles in families in many studies. Women have better finances through higher savings, perform better in all the pillars of empowerment such as agency, autonomy and development outcomes, and have shown a greater decision-making power when part of the SHGs, especially for a long duration (Anderson et al., 2009, 2014; Brody et al., 2016b; Deininger and Liu, 2009; Gugerty et al., 2019).

At the same time, studies observe that the scale of the programme and/or size of funds available to the SHGs to distribute loans affect the impact of collectives on women's empowerment indicators and bargaining power (Hoffmann et al., 2018).

However, some studies also observed that increased decision-making is an outcome of

commitment to save and repay the credit demanded by the SHG programmes (Bhoj et al., 2014; Brody et al., 2017).

Some of the direct gender outcomes such as self-efficacy, confidence, negotiation skills, etc., are also observed to be positively impacted by SHG participation (Brody et al., 2017; Deininger and Liu, 2009; Desai and Joshi, 2014; Greaney et al., 2016).

Studies also point to the utilisation of women SHGs solely due to the economies of scope which reduce the work of governments but at the cost of increase in women's work burden and welfare (Caro et al., 2013; Hoop and Tripathi, 2020).

SHG and health outcomes

SHGs have been conceptualised to have a positive impact on multiple health and nutrition behaviour. However, the empirical evidence shows different results. While there is evidence of greater health-seeking behaviour, better service delivery and improved nutrition for women exposed to SHG-led initiatives (Brody et al., 2015; Mehta et al., 2020), studies do not find a conclusive empirical estimate of the direct impact of SHGs on health or nutrition performance of women (Hoffmann et al., 2021).

To analyse SERP's effect on health, we focussed the enquiry on menstrual health and hygiene which has major public health significance for women and adolescent girls. The discussion and discourse on menstrual hygiene have been going on extensively both from public health experts, gender experts and experts of WASH. The literature is focused on menstrual knowledge attitude practice and beliefs of AGYW across the world and some of the predictors and results of experiments.

Level and determinants of menstrual knowledge among young women, adolescent girls

Global evidence points to the lack of knowledge and proper behaviour around menstrual health and hygiene, especially among young girls. Poor knowledge about menstruation is especially prevalent in low-and-middle-income countries (LMIC) (Chandra-Mouli and Patel, 2017; Taimuri and Sumbal, 2022). Multiple studies in India have observed that girls have poor knowledge and misconceptions about the process of menstruation and often believe in taboos that are self-harming in nature (Dasgupta and Sarkar, 2008; Khanna et al., 2016; THAKRE et al., 2011). Girls are found to receive education primarily from mothers and in some studies from teachers, especially in urban areas (Thakur et al., 2014).

Menstruation is widely considered a curse, or shameful or a punishment for sin by adolescents

across LMICs with misconceptions or no knowledge about the biological process behind it (Dasgupta and Sarkar, 2008; Muralidharan, 2019; Narayan et al., 2001).

A reason why menstrual health management and knowledge is of significance to evaluate a self-help group-based initiative is because of its close association with gender norms in society. In India, studies observe that strict gender norms are the cause of creating and sustaining stigmas, beliefs, attitudes, and practices around menstrual health (Gold-Watts et al., 2020). Economic status had an important effect on menstrual behaviours (Thakre et al., 2011). However, regions of residence and nature of sanitary facilities schoolgirls have access to, showed close relations with menstrual hygiene behaviour (Sivakami et al., 2019) —both of which are linked to economic status.

A manifestation of menstrual health performance is access and uptake of sanitary products. Uptake of sanitary products in adolescent girls and young women has been found to be low in LMICs (KB et al., 2019). There has been a significant increase in usage of safe sanitary products as the NFHS data shows rural women using safe products going up to 72 pe cent in 2019-20 from 48.2 per cent in 2015-16. In our study area Telangana, the same was 67.2 per cent in 2015-16 increasing to 90 per cent in 2019-20. But still, there is no in-depth large-scale study of menstrual product usage, which gives us insights into the regularity of usage, ease of access and agency over the choice of the product.

The issue of menstrual products is linked not only to income and self-hygiene but also to a range of societal barriers (Garg et al., 2012). Women have been observed to face a range of restrictions imposed by cultural practices that make menstruation a focal point of their socialisation and growth (Chandra-Mouli and Patel, 2017; Larki et al., 2022). Depending on the religion and region of residence, the restrictions may range from mobility restriction, dietary restriction and even lesser access to necessities and services, such as accessing the kitchen, own room, and bed, and even living in own home (Dasgupta and Sarkar, 2008; Garg and Anand, 2015; K. et al., 2021).

Growing up with this fear of getting 'exposed' to an inevitable biological process has a long-standing psycho-social impact on women (Geertz et al., 2016; Larki et al., 2022). These may translate into self-hate and self-deprecating practices in the later stage of life. It significantly reduces health seeking and pushes women towards harmful health and hygiene practices such as using a product for too long due to lack of privacy for disposal, supplementing safe with unsafe products or even discarding safe products for inability to procure a comfortable or suitable option. Policies around menstrual hygiene do not go beyond providing a safe product such as sanitary napkin. Global studies have underlined the need to link menstrual health and hygiene with the overall discourse of sexual and reproductive rights (Wilson et al., 2021). A few studies have recorded the shame and taboo restricting women's access to the disposal and replacement of single-use products (Schmitt et al., 2017). But a majority of discussions around products are either about the uptake of any safe or

suitability of the product for the environment. For example, a recent UN publication on single-use menstrual products approaches the products from an environmental impact perspective – with concerns to reduce landfills and find sustainable alternatives that are better for the environment (UNEP, 2021).

About the agency of procurement of menstrual products

There is limited to no discussion around the fact that not all safe products suit the need of all women and that there may be unmet needs around menstrual products just as there may be unmet needs around reproductive health supplies. Similarly, procuring safe products from open markets and shops is as much difficult for women as disposing of used products due to the shame and taboo associated with menstruation. Evidence on determinants of uptake of sanitary napkins links it to mother's education, family wealth, and girl's access to school education as primary predictors (Chauhan et al., 2021). The discussion on safe products has mostly centred around the cost of procurement or period poverty (Jacob et al., 2014; Rossouw and Ross, 2021). But affordability is not the only constraint in the uptake debate. There is a major taboo and shame around women purchasing their health products in India. The literature in public health does not touch upon the constraints that may be faced in purchasing the safe product or the impact it may have on the psychosocial health of women. But discussions in feminist media studies have observed that menstrual safety products are purchased in secret – wrapped in black plastic or newspaper – emulating the purchase of an illegal substance. Koskenniemi (2021) observes that the widely marketed single-use products while allowing menstruators to participate in multiple spheres have also confined the process into a problem that needs to be a secret, where successful products and menstruators are one who can hide it better. Especially the commercial advertising of products has framed the goal of menstrual management as to keep menstruation a secret (Kissling, 2006; Wood, 2020). The advertisements of menstrual products widely use the rhetoric of 'giving freedom' to women, paradoxically, demanding secrecy during menstruation from women (Wood, 2020).

If women must depend on other members to buy a product which is not only essential but also extremely intimate and closely linked to their wellbeing, the consistency in usage, continuity of usage and social wellbeing is bound to be affected. A factor that most product discussion ignores is that each menstruator has a different requirement in terms of safety and comfort from a product. Aggressively supplying a certain product or overflowing the distribution channels with a single product may create a spike in usage for a short period but will not change menstrual health behaviour fundamentally. To provide proper menstrual care, women and menstruators, in general, should have the agency to visit the market, compare the products and procure their products for usage.

Menstruators who procure their product themselves can be considered more in control of their menstrual health management.

Summary

Despite the large body of literature and initiatives conceptualising SHGs as an effective instrument for development, the exact empirical evidence in many cases is inconclusive and there is divergence in the effect of collectivisation on different outcomes (Gugerty et al., 2019). Recent studies have also revisited the conceptualisation of SHGs as a silver bullet for all developmental woes and observed how the emphasis on creating social capital for the programme and service delivery may be a middle ground for top-down governments and bottom-up communities (Castro-Arce and Vanclay, 2020).

This study evaluates the SHG-led poverty alleviation programme of SERP in this backdrop, with a focus on three outcomes: gender attitudes, knowledge, attitude, practices around menstruation and hygiene, and finally, agency of self-procurement of menstrual products. The literature on MHM and menstrual knowledge, attitude and practice from multiple countries suggest that education, especially of mothers, cultural taboos beliefs and practices have a huge impact on the menstrual hygiene management of girls. Few studies also highlight how young women and adolescent girls report more self-hate and have an abusive environment in restrictive surroundings where talking about menstrual health is a taboo. The effect of culture and education on MHM vary in different study settings but the insufficiency of menstrual knowledge and low menstrual hygiene behaviour is almost a uniform phenomenon across LMICs. Even knowledge-seeking behaviour is low in societies with a taboo around menstruation dialogues. In this backdrop, the question of the effect of self-help groups on menstrual health management is important as SHGs should impact directly by behaviour communication, and also indirectly by improving the economic status of the families.

III. METHODOLOGY

The key research question was to observe whether there is a systematic difference in KAP of women who are exposed to 'Dweetiya' meetings regularly vis-à-vis women who are not exposed to such meetings. The study used a mixed-method concurrent approach by collecting quantitative and qualitative information simultaneously using two surveyors. The quantitative data is analysed using quasi-experimental methods. Women at the study sites were collected in small focus groups and engaged in discussion. During the discussion, structured questionnaires were also filled out.

Study Area and Sample

The study analysed the KAP status around menstrual health in a rural set-up where product utilisation is already high. Selected villages of the Rangareddy district, Telangana was taken where nearly 90 per cent of women use menstrual hygiene products as per NFHS 4 data. The objective was to examine if there are systematic differences in the KAP levels for different socio-demographic attributes. A sample of 300 women in different villages was collected in February 2021. Additionally, focus group discussions were held to understand the nuances of the quantitative results. The evaluation was conducted in the blocks of Telangana where the health module has been rolled out. Selected women beneficiaries of SERP Treatment Group: SERP Women who have received the health/ sanitation module, Control Group: SERP women who have not received the health/sanitation module.

From selected Mandals, 100 women who are exposed to the health module training and 200 women who are part of SERP training but haven't received health training were selected. The study used mixed method - a structured questionnaire-based survey of women and a set of focus group discussions were used to collect information.

The final survey was conducted in the villages of Manchal, Moinabad, and Shamshabad. Major sites where FGDs were conducted include Tippaiguda, Ajijnagar and Chilkoor villages.

A sample of 306 women was collected and seven samples were dropped due to quality issues. The final study used a sample of 299 women, including 103 women who attended SERP second meetings regularly and were exposed to the health/sanitation modules, and 196 women who did not attend these meetings regularly and did not get exposure to the modules.

Methods

Propensity Score Method

The study used a quasi-experimental method to evaluate the effect of 'Dweetiya' meetings on women's KAP around health. The SERP(T) programme is targeting the BPL and poorest of the poor rural women. The evaluation was strictly restricted to the member universe of SERP. Through the DRDA Telangana Office, the women who have been exposed to the SERP health module (second training) were identified and included in the study. A simple causal analysis, in this case, would not have been suitable as the factors that affect health/nutrition/sanitation behaviour and knowledge such as demographic, social, and economic factors including religion, caste, literacy and poverty are also influential in determining the access to SERP training on behaviour/knowledge change. Therefore, there was a possibility of bias in the direct comparison of SERP-trained women/untrained women and we needed to adjust the differences in demographic, social and economic determinants. To estimate the effect of the meetings systematically, a Propensity Score Matching of SERP women was undertaken.

A group of unexposed control units (counterfactuals) with similar socio-demographic attributes as the exposed units in terms of confounding factors were identified and surveyed. To ensure that motivation to work with the SHGs is not a confounding bias in the estimation, the study only included women who are registered SHG members or their daughters in the SERP programme. Then, the regularity of attendance (no absence at least for the last six months) in the second meeting (Dweetiya) was used as a treatment. A set of socio-demographic attributes were used to match treated and untreated women within the SERP group.

The responses from the women who regularly attended the second SERP meeting and were trained on health sanitation were compared against those unexposed to the SERP training on sanitation. A propensity score based on logistic regression with nearest neighbour matching was used to examine the average treatment effect of exposure to the second training on women's menstrual health management levels.

Adjusted Multivariate Logistic Regression

Other than the Adjusted Treatment Effect on Treated (ATETs), elasticity of the outcome variables to the second meeting attendance was estimated using logistic regression.

Metrics

Outcome Indicator

1. As the first outcome, a set of five composite indicators of gender attitudes of sample women were analysed. Questions on women's autonomy and attitude towards gender roles were asked. Positive gender attitude was coded as 1 and other responses as 0. Transformation is detailed in Table 1.

Table 1: Definition of Gender Indicators

Serial No.	Indicator	Questions	Responses	Aggregation
1	Autonomy in decision-making	Who decides how 'the money you earn will be used?', 'your husband's earnings will be used?' and 'Who usually makes decisions about healthcare for yourself?'	Self (0); Jointly with spouse (1); Mother/-in-law (1); Father/-in-law (2); Husband (3); Other female relations (4); Other male relations (5); You jointly with husband/family (6)	"self" or "jointly" in all three questions were coded as 'high autonomy in decision' (1), and otherwise 'low autonomy in decision' (0 Responses)
2	Acceptance to violence	It is justified for the Husband to beat up the wife if she (a) cannot cook the food, (b) goes out of home without permission, (c) cannot care for the children, (d) speaks to the in-laws disrespectfully, and (e) refuses to have more children.	Response on a 5-point scale: strongly disagree (0); disagree (1); neither agree nor disagree (2); agree (3); strongly agree (4)	"Strongly disagree" and "disagree" in all 5 questions were coded 'non-acceptance' (1), and otherwise 'acceptance' (0)
3	Freedom from restrictions	9 areas: a) can't eat a certain food, b) sleep in my bed, c) enter certain rooms, d) wear good clothes, e) eat prasadam (holy offerings), f) go out of the house, g) take shower/wash hair, h) (have to) take shower after 4 days before entering the kitchen, i) meet other family members	Face the restriction or yes (1); Don't face the restriction or no (0)	"no" in all of the 9 areas coded as 'freedom from restriction' (1), otherwise 'restricted' (0)
4	Autonomy of movement	"Need permission" to a) visit friends, family, b) market, c) temple or d) doctor	3-point frequency scale: never (0); sometimes (1); always (2)	"never" in all four as 'autonomy of movement' (1), otherwise 'no autonomy' (0)
5	Financial autonomy	Whether a) own property, b) has taken a loan, c) have a savings account	Yes (1); No (0)	"Yes" in any one out of three is coded as 'with autonomy' (1), otherwise 'no autonomy' (0)

Source: Indicators defined by the author.

2. The second outcome was a row transformation of all the 20 individual KAP responses with the desired/correct response coded as 1 and other responses as 0. The row total (range 0 to 20) was then transformed into a binary outcome with an 80 per cent cutoff, i.e. women who responded correctly in at least 16 questions out of 20, were labelled as MHM-educated, else no-MHM educated. Treatment was defined as women attending the second training of SERP where sanitation, health, etc., are discussed.
3. Finally, the third outcome was an indicator of the procurement behaviour of women and girls. Those who procure sanitary products on their own were coded as 1 (has the agency and confidence to self-procure), otherwise 0. Indicators of reproductive rights, menstrual health knowledge, attitudes, practices, and autonomy (KAPA) were added to the logistic model.

Key Predictor/Treatment (Exposure to SERP(T) Dweetiya Meetings)

The study analysed the effect of 2nd meeting of SERP on three outcome indicators. The binary variable of attended 2nd meetings was created for every woman in the sample.

Control Variables

Selected socio-demographic indicators were controlled for the analysis such as age, social identity, education, livelihood, and wealth. The age of women was transformed by coding 15-24 years as young women and adolescents (0), 25 to 35 years as "Adult women" (1), and above 35 years as older adults (2). Marital status was coded as never married (1) or otherwise (0). Employment was coded as unemployed (0), "Employed in farm" (1) and "Non-farm" (2). Other sociodemographic factors included education (illiterate to higher education), age at first pregnancy (<18 as 0; otherwise 1), social identity (Hindu Scheduled Caste(SC)/Scheduled Tribe (ST) (0), OBC (1), General (2), Muslim (3), and Christian (4)), household size (≤5 as 0, >5 as 1), asset level (tertiles of the combined score of possession of 11 durable assets (lowest tertile as 0, middle (1), and highest (2)) and hygienic menstrual practices (combining six questions of menstrual hygiene - during cycle do you use soap to clean private parts, wash hands after changing pads, change undergarment regularly, change absorbent at least 2-3 times a day, dispose of the absorbent through garbage bin, bury or burn (all appropriate behaviour as 1, otherwise 0).

The bivariate and multivariate results are reported first, followed by the synopsis of the qualitative study.

IV. RESULTS

We use secondary data published on the SERP website to understand the coverage of the second meetings. The primary quantitative and qualitative results are discussed together by using the outcomes and observations from the qualitative discussions to understand and contextualise the results from quantitative analysis.

Details of 'Dweetiya' meetings in the surveyed district

From SERP Telangana's published data, some details of the frequency of the second meetings could be observed (Table 2). The reported data gives details of coverage for all modules, however, we only report health sanitation and nutrition here for relevance.

In phase I, 8 out of 234 targeted Mandals, and in phase II, 14 more Mandals were reported to have completed the hygiene sanitation and health nutrition module in the second meeting. The records show second meetings covered 7034 SHGs in the first phase and 4 SHGs in the second phase for the hygiene sanitation module, whereas 7186 SHGs in the first and 10,597 SHGs in the second phase for the health nutrition module.

Table 2: Ranga Reddy District Phase I and Phase II coverage of 'Dweetiya' Meetings by Focus Subjects: 2022

Details of Meeting	Hygiene/Sanitation				Health/Nutrition			
	Phase I	TOTAL	Phase II	TOTAL	Phase I	TOTAL	Phase II	TOTAL
Organised the Dweetiya Meetings								
Mandals	8	234	14	314	-do-	-do-	-do-	-do-
VOs	305	7771	458	10079	-do-	-do-	-do-	-do-
SHGs	8189	195322	12000	251106	-do-	-do-	-do-	-do-
Members Registered in SHGs	93741	2140587	136229	2761181	-do-	-do-	-do-	-do-
Completed the Module								
SHGs	7034	123325	4	3209	7186	182377	10597	81302
Members attended the meetings	76105	1277392	43	35148	77050	1812909	116527	926648
Yet to start or incomplete								
VOs	7	2167	454	9924	7	122	15	6353
SHGs	1155	71997	11996	247897	1003	12945	1403	169804
Members Registered in SHGs	831	537441	110817	2312633	69	21931	3522	1516952

Source: Official Webiste SERP Telangana (Available at: https://www.efms.serp.telangana.gov.in/HD/HumanDevelopment/ReportViews/DwiteeyaTrainingReport.aspx)

Out of the SHGs that were part of phase I and phase II meetings in 2022, 97 to 99 per cent report completed the hygiene, sanitation, health, and nutrition modules. For sanitation hygiene, around seven VOs and 11,996 SHGs in the first phase and 454 VOs and 1003 SHGs in the second phase, and for health nutrition, seven VOs and 1003 SHGs in the first phase and 15 VOs and 1403 SHGs in the second phase were yet to start the module.

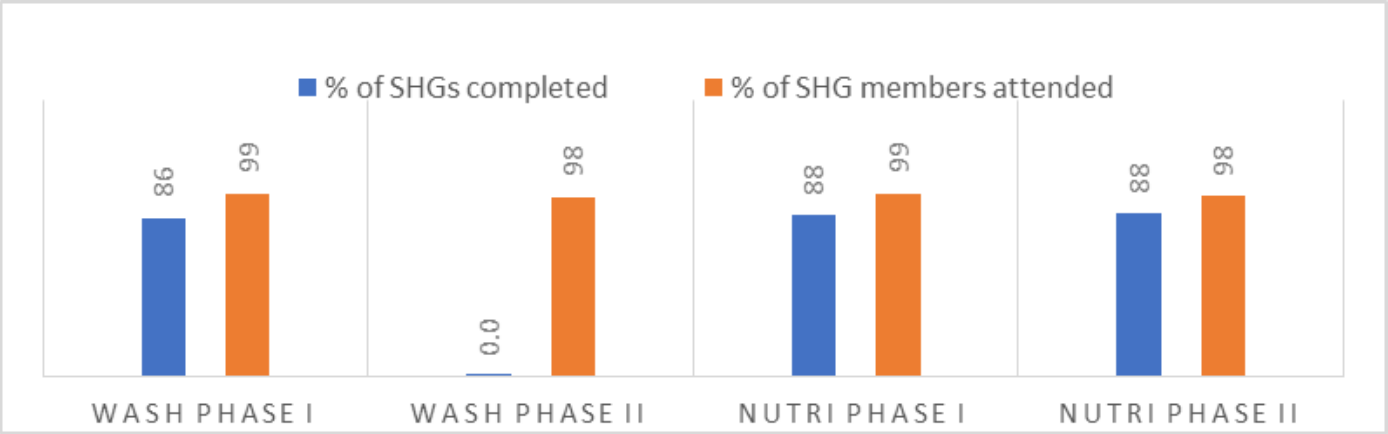

Figure 2: Attendance of SHGs and Members in 2nd Meeting of SERP 2022

Source: Authors using secondary data from website of SERP-Telangana (https://www.efms.serp.telangana.gov.in/HD/HumanDevelopment/ReportViews)

Out of the SHGs that were part of Phase I or Phase II of SERP for delivering the modules through Dweetiya meetings, completion and attendance as per the data was high (Figure 2). Eighty-six percent SHGs and within these SHGs, 99 per cent members completed phase I WASH modules, however, in phase II, 98 per cent members of only four SHGs completed the WASH module. As for nutrition, 88 per cent SHGs in phases I and II were delivered the module, and within these SHGs, 99 per cent women attended, as per reported data.

Date-wise attendance in the meetings showed that Moinabad was slightly more regular in terms of attendance as the number of members by date showed a flat pattern, as compared to Manchal where few days showed very high numbers and other days saw low turnout.

Table 3: Date-wise Details of Members Who Attended Dweetiya Meetings in 2022

Dates	Details of Meeting by Date			
	Rangareddy	Manchal	Moinabad	Shamshabad
Total Mandals	22	8	8	6
Total MS Clusters	135	51	43	37
Total VOs	763	1258	1413	1141
Total SHGs	20189	13881	15293	12496
Total Members	229970	0	0	0
1st - 13th	0	0	0	0
14th	0	86	520	39
15th	3756	99	410	26

Contd...

Dates	Details of Meeting by Date			
	Rangareddy	Manchal	Moinabad	Shamshabad
16th	5003	71	478	71
17th	5716	125	530	105
18th	6558	142	620	102
19th	7141	2522	810	162
20th	11071	186	520	139
21st	7537	175	780	128
22nd	7382	161	951	170
23rd	7316	207	900	201
24th	6893	261	1213	232
25th	8037	163	845	147
26th	5970	123	980	159
27th	5036	75	953	136
28th	4255	88	700	110
29th	2884	78	717	108
30th	2523	0	0	0
31st	0			

Source: Official website of SERP-Telangana (Available at: https://www.efms.serp.telangana.gov.in/HD/HumanDevelopment/ReportViews)

Socio-demographic attributes of the study area and the participants

The field survey commenced on the 1st February 2021. The first few days of the survey were spent in establishing rapport and connection with the key contact persons and sampled women, and identifying suitable study sites. With the help of SERP's project managers, study sites were consolidated, and the field team started daily data collection. Three villages in the Rangareddy district were surveyed over two administrative units (Mandals): Manchal and Moinabad. The surveyed sample consisted of women in the 15-49 age group who have reached menarche and haven't reached menopause. The average age of the women was 30 years. In the group attending second meeting regularly, approximately 59 per cent were Hindu OBCs, and in the group not attending the meetings, around 39 per cent were Hindu OBCs (Table 4). Other attributes were similarly distributed in the two groups.

Table 4: Attribute of the Study Area and the Participants

Indicators	Total	Attended Dweetiya Meeting Regularly	
		No	Yes
Age Group			
Adolescent & Young women	27.1	25.5	30.1
Adult women	49.8	50.5	48.5
Older adults	23.1	24	21.4
MHM Behaviour			
Low	25.1	26.5	22.3
High	74.9	73.5	77.7

Contd...

Indicators	Total	Attended Dweetiya Meeting Regularly	
		No	Yes
Knowledge Attitude Practice Scores			
Low	79.9	81.1	77.7
High	20.1	18.9	22.3
Age first pregnancy			
Below Teen	33.1	29.6	39.8
Above Teenage	66.9	70.4	60.2
Education			
Literate no school	21.4	23	18.4
Upto Middle	16.7	18.4	13.6
High school	47.5	45.9	50.5
Higher educated	14.4	12.8	17.5
Marital Status			
Ever married	87	88.8	83.5
Never married	13	11.2	16.5
Employment			
Not employed	56.5	60.7	48.5
Farm/labour	18.1	18.4	17.5
Business/salary	25.4	20.9	34
Social Identity			
Hindu SC/ST	26.4	33.2	13.6
Hindu OBC	46.5	39.8	59.2
Hindu General	5.4	5.1	5.8
Muslim	6	6.6	4.9
Christian	15.7	15.3	16.5
Asset Level			
Low	65.6	65.8	65
Medium	14.7	16.8	10.7
High	19.7	17.3	24.3
HH Size			
Large	14.4	15.3	12.6
Small	85.6	84.7	87.4
N	299	196	103

Source: Authors using primary data.

On average, 50 per cent of studied women were aged between 25-35 years or belonged to the adult age group. Around 70 per cent of women reported low KAPA scores around menstrual health, nearly one in three reported first pregnancy under 18 years of age, and every second woman in the sample had some livelihood either farm or business income. Two out of three women belonged to the poor asset class and more than 85 per cent had small (less than 5 members) household sizes.

Gender Attitudes and Roles in Sampled Women

The binary distribution of positive gender attitudes and roles revealed that around 41.8 per cent of women had the autonomy of making strategic decisions and did not have restrictions or taboos in

behaviour around menstruation (Figure 3). More than half the women reported that domestic violence is undesirable, around 5 per cent reported that they could move freely without any permission at their house and around 62 per cent had access to their finance and resources.

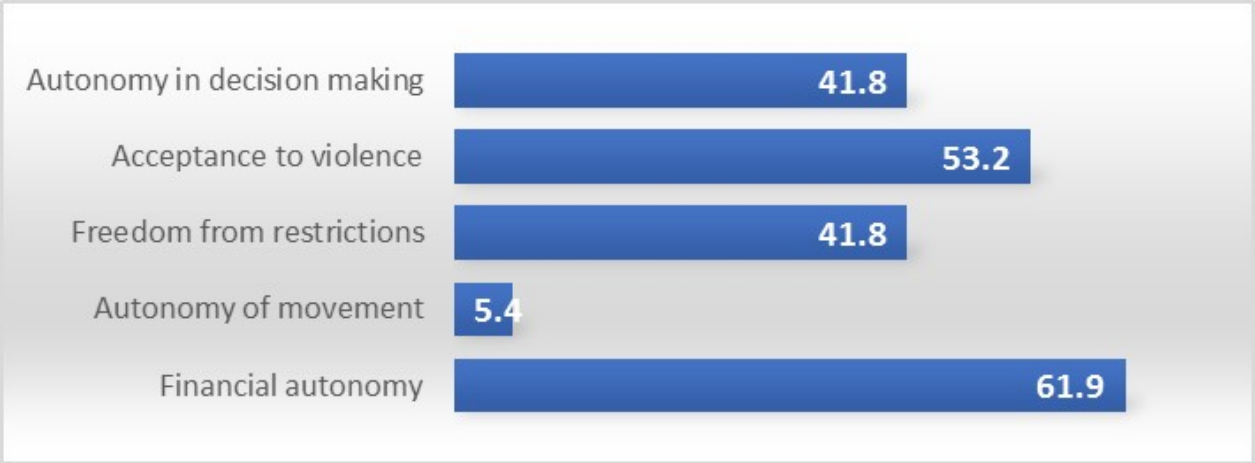

Figure 3: Percentage with Positive Gender Attitude/Performance of the Sample

Source: Authors using primary data.

Status and KAP around menstrual hygiene, sanitation in women

Menstruation in the sample started at around 12 years. More than three-fifths of women experiences a normal cycle. There were some restrictions applicable to women of all ages, however, specific restrictions such as staying away from family members such as husband or other men, and not being allowed to wash hair, sleep in their own bed, or leave the house were highly prevalent in the sample. It was also observable that the restrictions were taught or enforced by either mother or mother-in-law for most women (Table 5).

Table 5: Key Menstrual Health Characteristics of the Sample

Indicator	Categories	N/mean	% distribution/ SD
The mean age of first menstruation	Age in years	12.6	1.69
Perception of flow	Heavier than normal	37	12.37
	Normal	184	61.54
	Lower than normal	14	4.68
	Not uniform/regular	64	21.40
Who enforces restrictions at home?	Self	17	5.69
	Mother/MIL	268	89.63
	Other	14	4.68

Source: By author using primary data.

A disaggregated understanding of the restrictions shows that the highest taboos are observed in the hygiene indicators. For certain beliefs, women were not allowed to shower or wash hair during the five days of menstruation, followed by restriction to use their own bed for sleeping (Figure 4). Some women also reported that they were restricted from leaving the house and meeting male adult members of the family, including spouses.

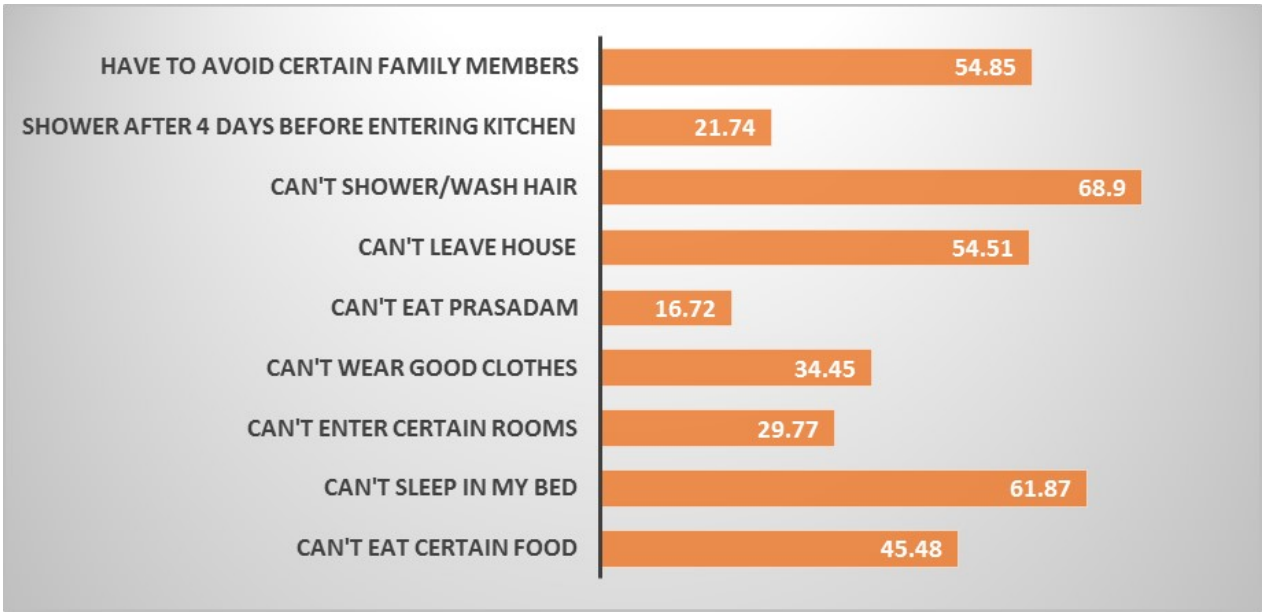

Figure 4: Restrictions during Menstruation

Source: By author using primary data.

Within the married women, we asked whether restrictions were changed or reduced after moving to matrimonial homes. In all three age groups, women recalled that the restrictions remained the same or increased after marriage – but this was highest for young married women (Figure 5). The recollection of increased restriction decreased in the higher age cohorts.

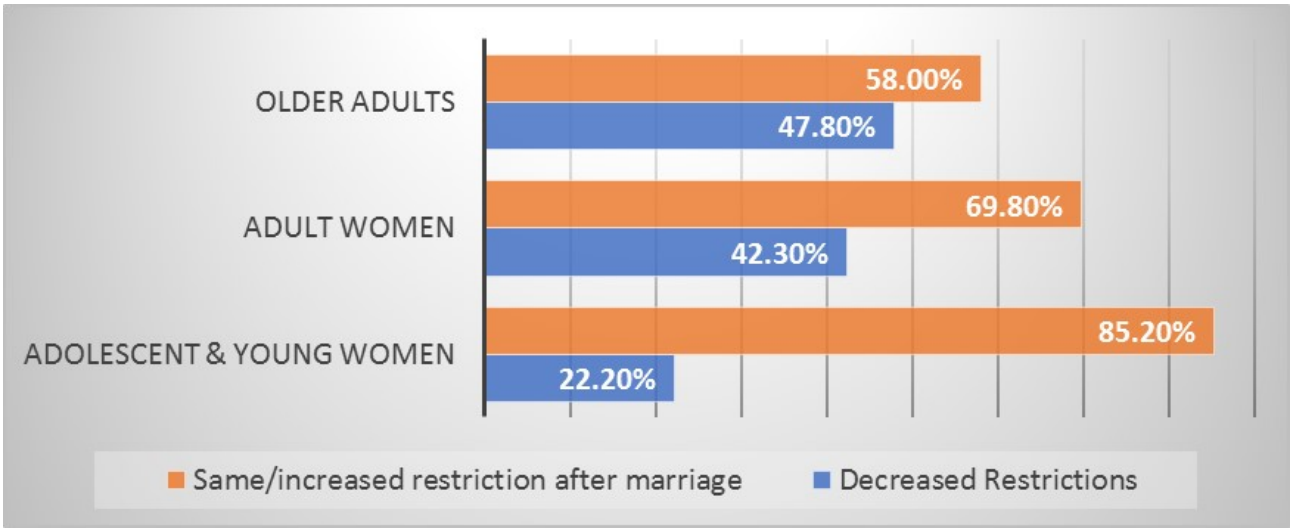

Figure 5: Restrictions by Age

Source: By author using primary data.

In any age group, approximately 83-84 per cent of women experienced a cycle duration of 2-5 days (Figure 6).

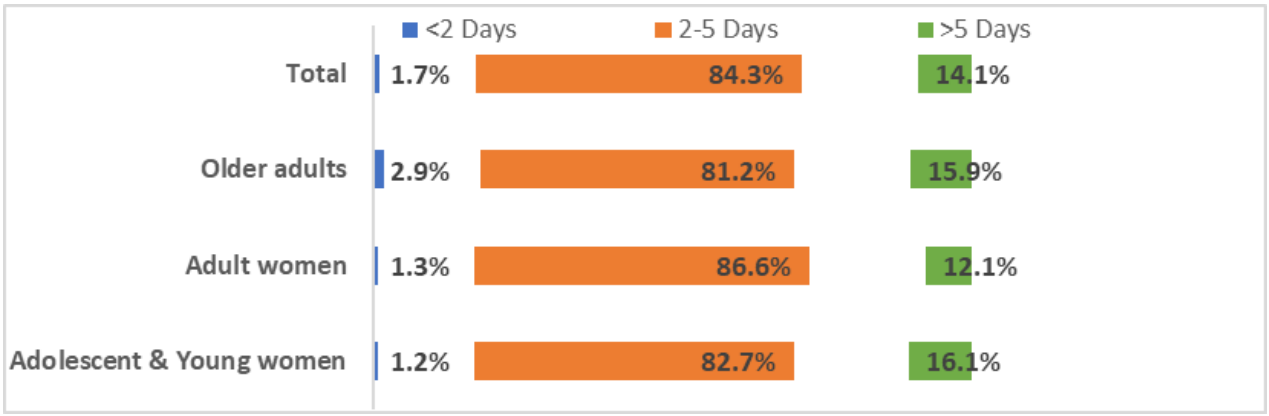

Figure 6: Duration of Cycle in the Sampled Women

Source: By author using primary data.

Close to one-fifth of the sample reported severe abdominal pain, and one-tenth reported severe weakness during the cycle (Table 6).

Table 6: Physical Discomforts during Cycle in the Sample

Discomfort	Adolescent & Young women	Adult women	Older adults	Total
Severe abdominal pain	30.90%	16.10%	10.10%	18.70%
Mild abdominal pain	11.10%	10.10%	2.90%	8.70%
Fever	0.00%	0.70%	1.40%	0.70%
Severe Nausea	0.00%	1.30%	0.00%	0.70%
Mild Nausea	0.00%	0.00%	1.40%	0.30%
Severe Weakness	6.20%	13.40%	18.80%	12.70%
Mild weakness	0.00%	5.40%	5.80%	4.00%
Nothing	51.90%	53.00%	59.40%	54.20%

Source: By author using primary data.

Analysis of the KAP levels showed variation in misinformation and taboo in women. Regarding information such as "during menstruation should exercise/rest or sleep" or "menstruation is a natural process" and "linked to fertility", nearly 80-90 per cent of women gave correct responses. Similarly, on the topic of behavioural practices such as changing undergarment regularly, using soap to clean, and washing hands after changing pads, nearly all women had the correct answer (Table 7). However, a few taboos were also strong in society, such as not being able to wash hair or shower during menstruation in every third woman, thinking that menstruation is a disease in more than one-third of women, restrictions on mobility and interaction with other family members in more than 40 per cent of women (Table 7).

Table 7: KAP Levels in Full Sample

Statement on MHM Knowledge/Attitude/Practice	% Correct response
During Cycle one should exercise	65.60%
During Cycle one should take Rest/ Sleep	66.90%
Natural process occurring in every adolescent female	70.20%
During Cycle one should eat/drink more Fruits/water	74.90%
Menstruation is related to fertility	78.60%
Monthly cycle where blood flows from vagina for 4-5 days in every female	78.90%
A sign of maturity	82.60%
During the Cycle do you change undergarment regularly	92.30%
During the Cycle do you use soap to clean private parts	98.00%
During the Cycle do you wash hands after changing pads	98.30%
Statement on MHM Taboo/wrong knowledge	**% With Taboo**
During the Cycle one can use pads Instead of taking a shower	17.10%
Have the restrictions increased after/during the lockdown?	17.10%
During menstruation women are impure	25.10%
Menstruation is Undesirable/frightening	27.40%
Not allowed to shower/wash hair	31.10%
Menstruation is a disease	33.10%
During menstruation shouldn't stay with other family members	38.80%
During menstruation shouldn't eat sour food	40.10%
I Can't go out of the house	43.80%
I am not allowed to meet other family members	45.20%
Menstruation is a Curse from God	47.80%

Source: By author using primary data.

Across all age groups, women had the same proportion of misinformation (Figure 7). Women were more misinformed in some facts such as "menstruation is dirty" or "pads manage the flow of blood" compared to statements, such as duration of cycle, on which nearly 70-80 per cent had the correct answer.

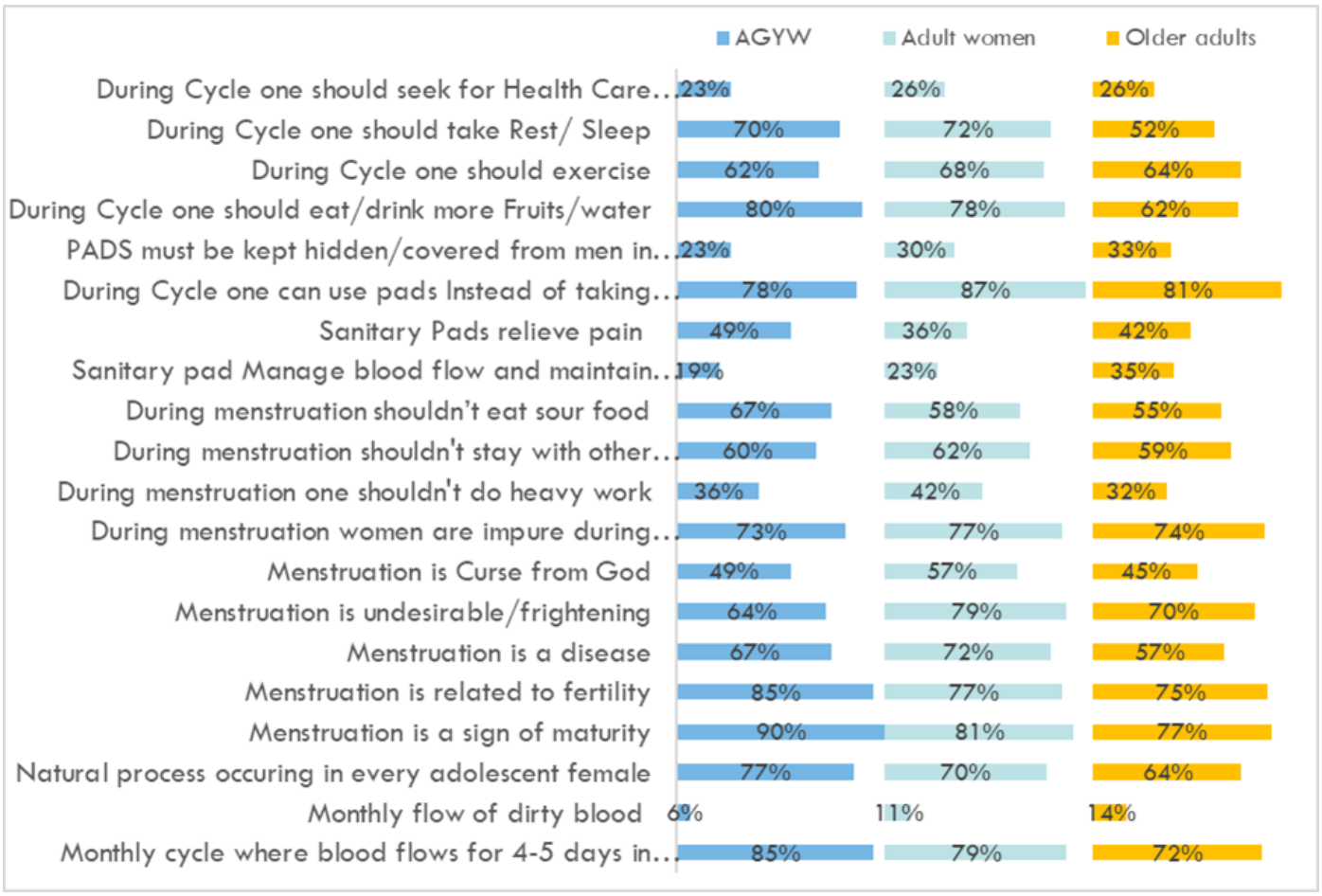

Figure 7: KAPA Levels in Women: Percentage of Women Who Answered Correctly by Age Group

Source: By author using primary data.

More than 90 per cent of women used safe products such as sanitary napkins (Figure 8). In older adults, this was slightly less at 76 per cent.

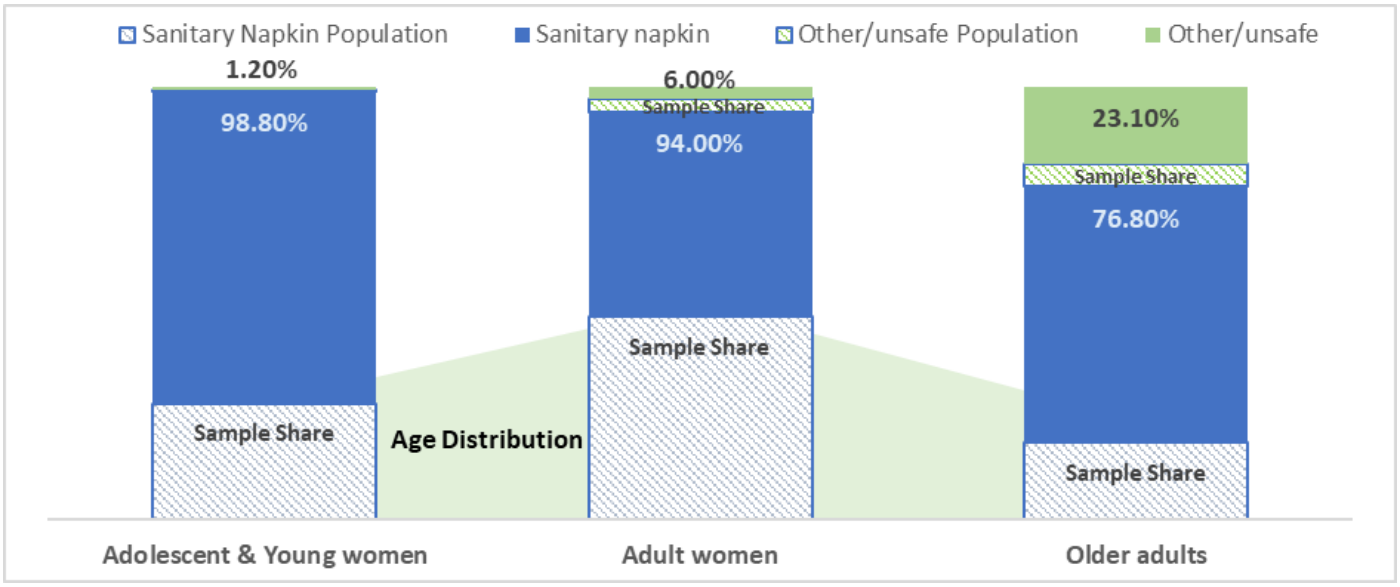

Figure 8: Primary Absorbent Type in Menstruating Women

Source: By author using primary data.

Approximately, 98 per cent of adolescents, 96 per cent of adults and 78 per cent of older adult women procured products from shops (Table 8).

Table 8: Menstrual Absorbent Source by Age Group

Primary Source	Adolescent & Young women	Adult women	Older adults	Total
Homemade	1.20%	4.00%	21.70%	7.40%
Shop	98.80%	96.00%	78.30%	92.60%
Secondary Source				
Homemade	1.20%	4.70%	20.30%	7.40%
Shop	97.50%	95.30%	79.70%	92.30%
School	1.20%	0.00%	0.00%	0.30%

Source: By author using primary data.

In the studied sample, 91 per cent used sanitary napkins, and around 9 per cent mainly in the older adult age groups, reported using other products. Around 30 per cent in any age group did not procure the product themselves (Figure 9).

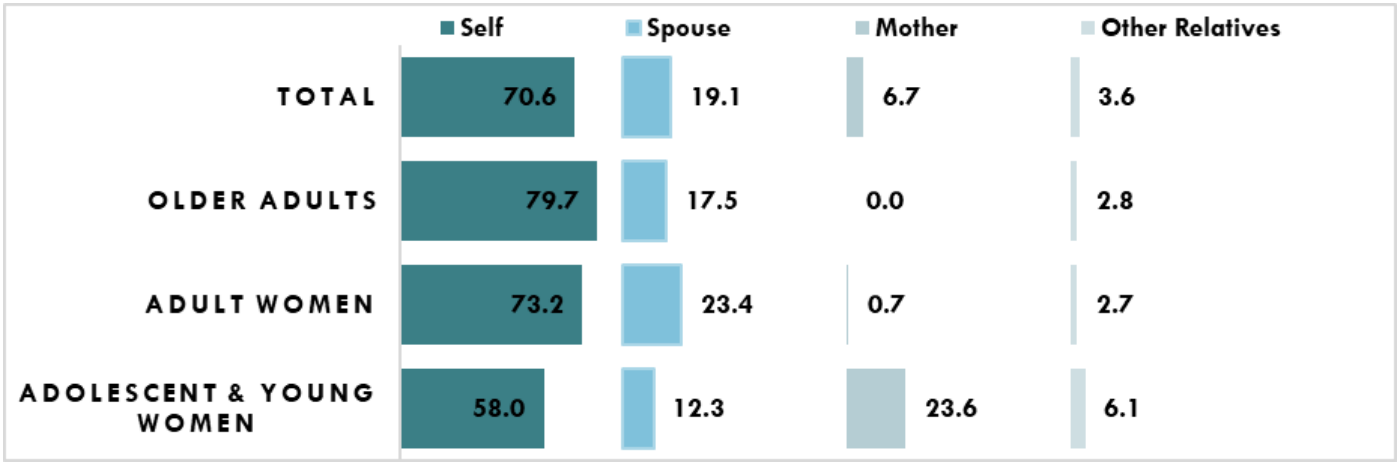

Figure 9: Primary Procurer of Absorbent

Source: By author using primary data.

In all age groups, more than 50 per cent of women recalled that expenditure on procuring the products had increased after the lockdown (Figure 10). The percentage of women who found expenditure increasing after the lockdown was highest in older adults, and lowest in adolescents and younger women.

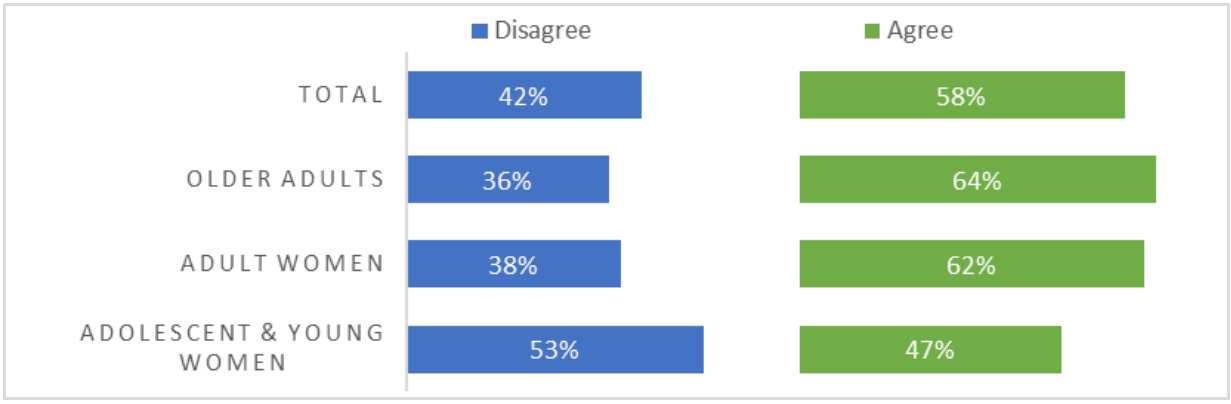

Figure 10: Expenditure Increased on Menstrual Products after Lockdown

Source: By author using primary data.

More than 70 per cent of women responded that garbage bins are the preferred disposal – however, for younger women, nearly 24 per cent reported 'flush' as the most used disposal mechanism.

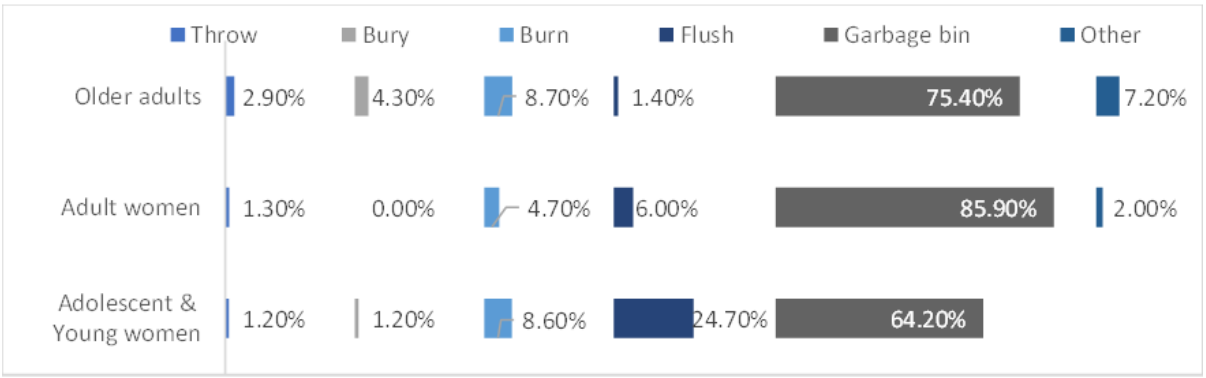

Figure 11: Disposal of Menstrual Products by Age Group

Source: By author using primary data.

Effectiveness of the Dweetiya Meetings

On the Attitude towards Gender Roles

The propensity score results were obtained for each indicator of gender attitudes. The distribution showed that the proportion of women with autonomy in decision, freedom from restrictions, and financial autonomy was higher in the treatment group than in the control group. The proportion with a non-accepting attitude towards violence (9 per cent), and autonomy of movement (by 1 per cent) were lower in the treatment than in the control group (Table 9).

The estimated propensity scores were statistically significant only for freedom from restriction. Regularly attending the 'dweetiya' meetings increased women's freedom from restrictive practices (can't eat certain food/can't shower, etc.) (See Table 1 for details of indicator construction) around menstruation by 0.049 points.

Table 9: Bivariate relation & Average treatment effect on treated (PSM-nearest neighbour match) of SERP 2nd Meeting and Positive Gender Attitude/Performance

Treatment	%	N	Propensity Score Results	Treated	Controls	Difference	S.E.	T-stat
Autonomy in decision making								
C	37.2	196	**Unmatched**	0.505	0.372	0.132	0.060	2.22
T	50.5	103	**ATT**	0.485	0.330	**0.155**	0.088	1.77
Non-acceptance to violence								
C	57.7	196	**Unmatched**	0.447	0.577	-0.130	0.060	2.15
T	44.7	103	**ATT**	0.474	0.608	**-0.134**	0.086	1.55
Freedom from restrictions								
C	35.2	196	**Unmatched**	0.049	0.005	0.043	0.017	2.56
T	54.4	103	**ATT**	0.049	0.000	**0.049****	**0.021**	2.28
Autonomy of movement								
C	55.6	196	**Unmatched**	0.049	0.056	-0.008	0.027	0.28
T	54.9	103	**ATT**	0.052	0.144	**-0.093**	**0.052**	1.77
Financial autonomy								
C	59.7	196	**Unmatched**	0.660	0.597	0.063	0.059	1.07
T	66.0	103	**ATT**	0.649	0.577	**0.072**	0.090	0.80

Source: By author using primary data.

For the gender outcomes other than freedom from restrictions, we examined the adjusted odd of positive gender attitude to the treatment. A statistically significant result was obtained for the decision-making of women. Women with exposure to the dweetiya meetings were 1.949 times more likely to make strategic decisions than women who did not attend the meetings (Table 10).

Table 10. Adjusted Odds of Positive Gender Attitude

Indicator	Decision Making	Confidence Interval	Autonomy to Move	Confidence Interval	Acceptance of Violence	Confidence Interval
Attended Dweetiya Meeting Regularly						
No						
Yes	1.949	[1.103-3.44]	0.316	[0.075-1.326]	0.457	[0.258-0.81]
Age Group						
Adolescent & Young women						
Adult women	1.075	[0.49-2.359]	0.415	[0.044-3.878]	0.697	[0.323-1.501]
Older adults	1.510	[0.579-3.933]	0.672	[0.055-8.187]	0.820	[0.316-2.124]
MHM Behaviour						
Low						
High	0.728	[0.394-1.343]	1.688	[0.358-7.954]	2.915	[1.579-5.379]

Contd...

Indicator	Decision Making	Confidence Interval	Autonomy to Move	Confidence Interval	Acceptance of Violence	Confidence Interval
Knowledge Attitude Practice Scores						
Low						
High	2.024	[1.037-3.949]	0.180	[0.018-1.771]	0.563	[0.285-1.11]
Autonomy to Move						
Low						
High	12.000	[2.458-58.572]			1.233	[0.402-3.781]
Decision-Making						
Low						
High			17.802	[2.939-107.804]	0.773	[0.444-1.345]
Access to Resource						
Low						
High	0.977	[0.559-1.708]	3.130	[0.713-13.733]	1.092	[0.629-1.894]
Age first pregnancy						
Below Teen						
Above Teenage	1.110	[0.625-1.968]	1.125	[0.241-5.246]	1.079	[0.606-1.919]
Education						
Literate no school						
Up to Middle	1.558	[0.636-3.814]	0.867	[0.109-6.854]	0.419	[0.169-1.035]
High school	0.824	[0.38-1.786]	0.417	[0.07-2.466]	0.893	[0.414-1.926]
Higher educated	0.715	[0.256-1.989]	0.967	[0.123-7.578]	0.891	[0.333-2.381]
Marital Status						
Ever married						
Never married	0.349	[0.119-1.017]	7.331	[0.693-77.519]	0.767	[0.302-1.944]
Employment						
Not employed						
Farm/labour	1.978	[0.913-4.286]	2.091	[0.259-16.865]	0.460	[0.206-1.024]
Business/salary	1.398	[0.714-2.736]	11.409	[1.632-79.712]	0.662	[0.332-1.316]
Social Identity						
Hindu SC/ST						
Hindu OBC	0.972	[0.492-1.917]	1.213	[0.178-8.231]	2.971	[1.512-5.838]
Hindu General	1.643	[0.474-5.691]	0.345	[0.011-10.273]	7.586	[1.817-31.669]
Muslim	0.447	[0.118-1.687]	2.616	[0.153-44.493]	1.834	[0.587-5.721]
Christian	1.529	[0.65-3.591]	1.955	[0.255-14.946]	1.147	[0.503-2.612]
Asset Level						
Low						
Medium	0.660	[0.299-1.454]	0.599	[0.054-6.553]	1.028	[0.479-2.202]
High	1.128	[0.555-2.292]	1.265	[0.226-7.072]	0.879	[0.435-1.772]
HH Size						
Large						
Small	1.815	[0.82-4.015]	1.334	[0.125-14.15]	0.947	[0.45-1.992]
Constant	0.263	[0.069-0.993]	0.001	[0-0.073]	0.843	[0.236-2.998]

Source: By author using primary data.

On the health/sanitation KAP

Our estimations show a higher percentage of women with high KAP scores in treatment than in the control group (by nearly 4 per cent). But the ATTs do not show a statistically significant effect on KAP levels.

Table 11: Bivariate relation & Average treatment effect on treated (PSM-nearest neighbour match) of SERP 2nd Meeting and KAPA>60%

Treatment	%	N	Sample	Treated	Controls	Difference	S.E.	T-Stat
C	18.9	196	**Unmatched**	0.223	0.189	0.035	0.049	0.710
T	22.3	103	**ATT**	**0.229**	**0.198**	**0.031**	**0.072**	**0.430**
Total	20.1	299						

Source: By author using primary data.

On the Menstrual Health Behaviour

Women procuring menstrual products themselves were taken as a proxy of agency over the menstrual process (see Chapter II for detailed discussion). A higher percentage of women procured the product themselves in the treatment than the control group (by 3 per cent). However, the ATTs did not show a significant difference statistically in procurement agency (Table 12).

Table 12: Average treatment effect on treated (PSM-nearest neighbour match) of SERP 2nd Meeting and Self-Procurement of Menstrual Products

Treatment	%	N	Sample	Treated	Controls	Difference	S.E.	T stat
C	69.4	196	Unmatched	0.728	0.694	0.034	0.056	0.620
T	72.8	103	ATT	0.711	0.649	**0.062**	**0.085**	0.730
Total	70.6	299						

Source: By author using primary data.

Estimated procurement agency by categories of selected predictors showed that adolescent and young women below 24 years were lowest in procuring own product, while older adults had the highest procurement. Self-procurement was also high in women with employment in the farm sector than in unemployed or non-farm labour, women with better decision-making power than those with low levels of decision-making (Table 13). Women who did not accept domestic violence against women in any circumstances had a higher percentage of self-procurement than their counterparts.

Compared to their counterparts, women with better menstrual hygiene behaviour and women with pregnancy in adult age did not have higher self-procurement agency. Never-married women also had low self-procurement behaviour than ever-married women (Table 13).

The indicator of self-procurement did not show a statistically significant difference between categories of other predictors such as KAPA, education, social identity, wealth, etc.

Table 13. Distribution and Adjusted Odds of Self-Procurement of Menstrual Products

Indicator	N	% Self Procurer	Confidence Interval 95%	
			Lower Limit	Upper Limit
Attended Dweetiya Meeting Regularly				
No	196	69.4		
Yes	103	72.8	**0.696**	**2.007**
Age Group				
Adolescent & Young women	81	58.02		
Adult women	149	73.15	**1.114**	**3.489**
Older adults	69	79.71	**1.364**	**5.922**
Knowledge Attitude Practice Scores				
Low	133	67.7		
High	166	72.9	0.780	2.116
MHM Behaviour				
Low	75	80		
High	224	67.4	**0.275**	**0.972**
Age at first pregnancy				
Below Teen	99	79.8		
Above Teenage	200	66	**0.278**	**0.870**
Decision-Making				
Low	174	62.1		
High	125	82.4	**1.646**	**4.973**
Autonomy to Move				
Low	283	71		
High	16	62.5	0.239	1.932
Acceptance of Violence				
Acceptance	159	60.4		
Non-acceptance	140	82.1	**0.194**	**0.567**

Contd...

Indicator	N	% Self Procurer	Confidence Interval 95%	
			Lower Limit	Upper Limit
Access to Resource				
Low	114	68.4		
High	185	71.9	0.710	1.963
Free from Restriction				
Low	174	64.4		
High	125	79.2	**1.238**	**3.588**
Education				
Literate no school	64	79.7		
Up to Middle	50	72	0.275	1.560
High school	142	66.9	0.255	1.040
Higher educated	43	67.4	0.219	1.275
Marital Status				
Ever married	260	75		
Never married	39	41	**0.115**	**0.466**
Employment				
Not employed	169	65.1		
Farm/labour	54	92.6	**2.308**	**19.476**
Business/salary	76	67.1	0.617	1.942
Social Identity				
Hindu SC/ST	79	63.3		
Hindu OBC	139	71.9	0.826	2.679
Hindu General	16	75	0.513	5.897
Muslim	18	83.3	0.774	10.870
Christian	47	72.3	0.691	3.329
Asset Level				
Low	196	74		
Medium	44	63.6	0.308	1.230
High	59	64.4	0.342	1.184
HH Size				
Large	43	65.1		
Small	256	71.5	0.678	2.660
Total	**299**	**70.57**		
Constant				

Source: Computed by authors using primary data; **Note:** Columns 4 and 5 are CI Upper and Lower Limits from the Unadjusted Odds Ratio.

Adjusted odds of self-procurement controlling for socio-demographic attributes of the sampled women were plotted in a forest plot (Figure 12). Results revealed that exposure to the second meeting did not significantly affect self-procurement. Among other predictors, women who never married had 80 per cent lower odds of self-procurement compared to ever-married women (Figure 12). Among the autonomy factors, it was observed that women who had a high score in decision-

making, had higher odds of procuring menstrual products themselves compared to women with a low score in decision-making (AOR: 2.712; p<0.005). Also, women with lower acceptance of domestic violence had higher odds of procuring menstrual products than their counterparts who accepted violence of some form (AOR: 3.069, p<0.001) (Figure 12).

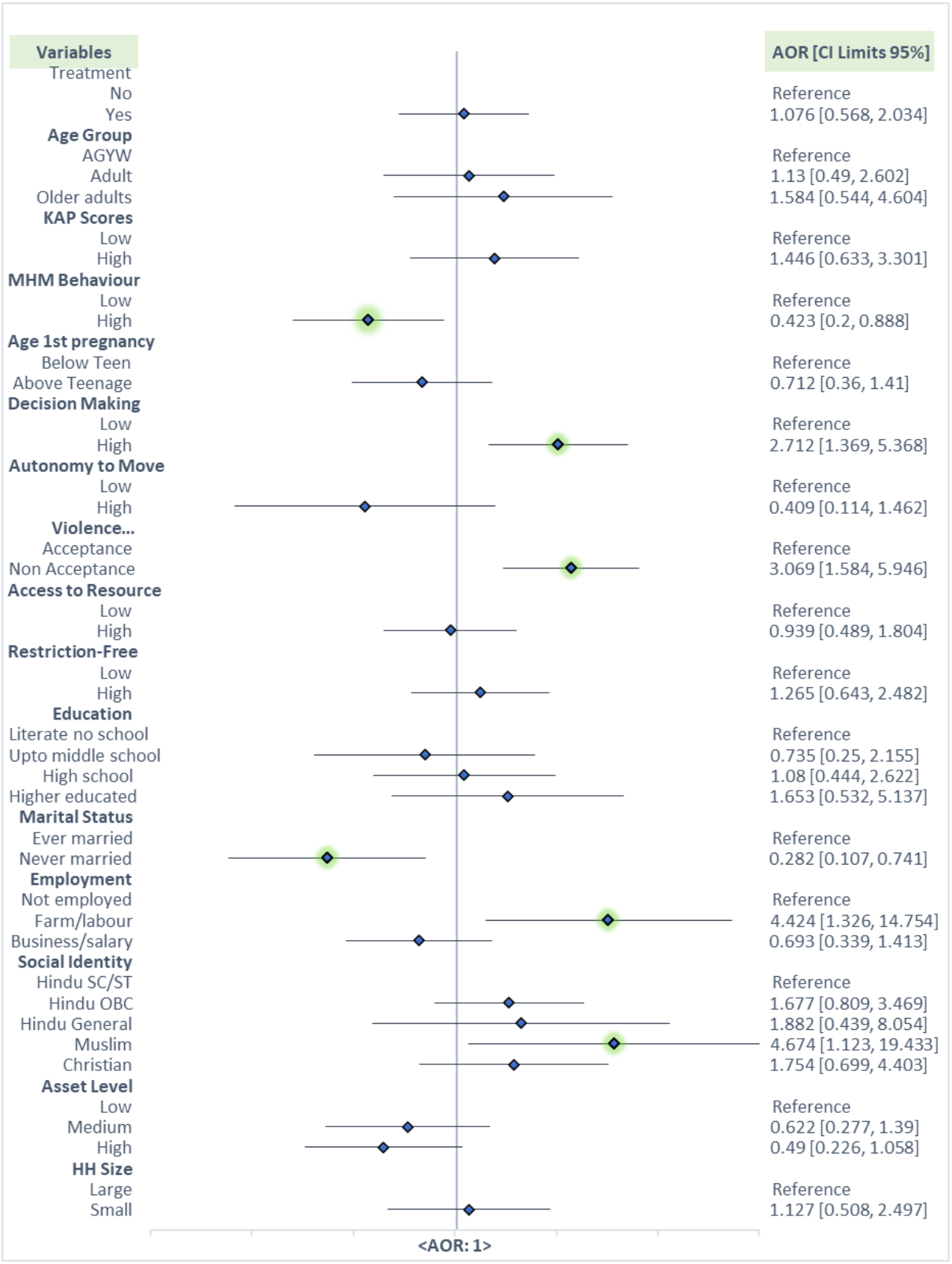

Figure 12: Adjusted Odds of Self-Procurement of Menstrual Products

Source: By author using primary data.

Although women in employment (farm) than unemployed women, and Muslim women compared to Hindu SC/ST women showed higher odds of procurement, the results were not significant at a 95 per cent level of confidence and should be read with caution.

Qualitative Study

The study concurrently conducted focus group discussions with structured quantitative data collection. Ten discussions were held with members of SERP, local service providers and adolescent daughters of SERP members across the study sites. Discussions were diarised by a field-research team and translated into English. The synopsis of the discussion is reported here.

Clockwise from top left: The study team explains the objectives to participating women of Tippaiguda village; women after the end of the discussion at Chilkoor; a group discussion in progress at Chilkoor village; a study team member engaged in face-to-face discussion with SERP SHG leadership at Manchal

Source: *By author at the study sites*

It was observed that the villages during the workdays were mostly habited by the old age cohort as the young and productive moved out to cities in search of work or were in the field during the day for farming. Accessing women from general caste groups was also difficult as many of them worked in the non-farm regular sector and lived in neighbouring urban areas having better services.

The time of rollout was before the lockdown. Due to the COVID-19-led lockdown, almost all women participating in the discussions admitted that their economic activities have been affected. The women in self-enterprises such as shopkeepers and small vendors were the worst affected in terms of drop in income. In fact, many of these women admitted that they could not pay the micro-credit loan in the past six months and are unlikely to be able to pay it back.

The discussions were steered towards education, health and nutrition behaviour change since the rollout of the modules. The education of children was also an added expenditure and domestic labour burden on these women. Almost every family had to buy a smartphone to continue their child's education. Few women recalled that as the family was at home, they were cooking more often at shorter durations, and were washing more utensils. Women also reported that the practice of washing food materials or washing hands before cooking/eating had increased after COVID-19. On the nutrition/sanitation front, it may be a gain, but there was a cost of women's reproductive labour and higher time-use than before.

Although there were no reported cases of COVID-19 in the focus group, women agreed that accessing normal health care was a challenge as community support was almost removed when there are even normal symptoms of any disease. Local institutions such as ASHA were busy with COVID-related work. Out-of-pocket expenditure for regular medicines shot up during this time.

The women also recalled that during the lockdown some young women and adolescent girls had to go without sanitary napkins as the shops were closed. They had to resort to clothes and other unsanitary products because of availability issues. As for the attitude towards menstruation, it was evident that younger women were shy to talk about it and adolescent girls were closely monitored by their mothers when they were being surveyed, whereas the older married women were open about their opinions on menstruation. Variation in health behaviour with women's age and marital status could have an impact on menstrual practice, knowledge and attitude levels. We validate the same from the quantitative data.

V. DISCUSSION

There is mixed evidence around the world regarding the effectiveness of collective-based interventions in changing social outcomes and behaviours. While interventions and behavioural change communications delivered intensively through self-help groups have been observed to make changes in certain outcomes, the same has not been sustained while scaling the programmes up (Díaz -Martin et al., 2022; Siwach et al., 2022). This study evaluated the effectiveness of the second meetings of a large-scale self-help group-based intervention (SERP Telangana) in changing knowledge, attitude and practice levels around gender, and health-related attitude and behaviour of beneficiary women.

The SERP programme rolled out a series of new modules through the second meetings on multiple verticals related to the quality of life such as gender attitude, health, sanitation, nutrition, wash behaviour, etc. Using a quasi-experimental method, the women attending the second meetings were compared with women not attending the same on various social and behavioural outcomes.

Results from secondary data showed that the Mandals where modules of health/sanitation were delivered via the Dweetiya meetings had a nearly 100 per cent completion rate. However, a disaggregated look at the coverage of the modules revealed that till the 2nd phase of rollout, only 22 Mandals were covered. The average outreach in that sense was not highly intensive. Also, there was a variation in coverage by modules – while sanitation/hygiene modules saw a drop in the percentage of members covered from phase I to phase II completion, nutrition saw a sharp rise from 4 per cent of members covered in phase I to 12 per cent of members in phase II. This may be attributed to multiple reasons such as lack of training among the Project Managers conducting the training or district-specific targets which may have prioritised nutrition. More in-depth study is required to understand these variations.

The primary data reflected the complex relationship between gender roles and attitudes of women. It was observed that out of the sampled women, the highest insufficiency was in the indicator of mobility – that is agency to visit non-domestic spaces without permission or a companion. However, women had very high financial autonomy. The high percentage of financial autonomy in the sample was expected due to the direct intervention of SERP – which is focused on poverty reduction through financial inclusion, empowerment and livelihood provision. This reflects the direct nature of the impact of collective-based programmes. Our results corroborate the evidence that programmes usually make an impact on their intentional or core agenda (Díaz-Martin et al., 2022).

The health status of the women was studied with indicators of menstrual health. It was observed

that there were multiple restrictions and taboos at varying degrees around menstruation. While the highest restriction was around washing (not allowed to shower/wash hair during menstruation), there were also restrictions on mobility outside and even inside the house for women. Studies in similar social setting have observed that women's perception towards self-care and menstrual health usually becomes more restrictive when the trauma or discomfort attached to it are also high (Larki et al., 2022). In this sample, we observe that the physical discomforts around menstruation reduced with age. The restrictive attitude towards menstruation is also reduced for older adults. Part of the decrease in restriction can be explained by the higher decision-making power and autonomy of older women, but their self-perception towards menstruation also improves to a less restrictive nature - which can be linked to better physical comfort during menstruation for the older adult age groups.

The sample showed a varied degree of knowledge and attitude towards different messages and facts about menstruation. The general attitude towards menstruation reflected that it was a negative experience for women. However, few basic messages such as the process is natural and it is linked to the maturity of women's bodies were correct among a high proportion of women of all ages.

Effect of Second Meetings

Around Gender-related attitudes

The bivariate and multivariate analysis revealed that the second meetings had a statistically significant effect on women's freedom from restrictive behaviours.

The logistic results also revealed that women who attended the second meetings regularly were more likely to make strategic decisions than their counterparts who were not regular in these meetings. Although the second meetings did not show a significant impact on other gender indicators, these results were obtained despite the low coverage of the second meetings – reflecting that focused messages placed in group-based interventions can make a change in attitude even within a small coverage.

The percentage of restrictions and taboos in the sample were also very high in certain indicators. Evidence from a similar social environment shows that the effect of restrictive social attitude, or cultural norms around reproductive health, which is usually manifested in taboo and certain practices, can affect the impact of intervention (Hazra et al., 2023).

KAPA Around Menstrual Health

Bivariate and multivariate analyses revealed that the second meetings did not have a statistically significant effect on the KAP levels of women in SERP. Although the recorded data of SERP shows

near saturation in attendance and training coverage, our field discussions with local resource persons revealed that women are more regular in attending the first meeting due to the micro-finance initiatives, which are the primary mandate of SERP groups. The second meetings – due to its focus on social issues - were not met with the same enthusiasm and regularity. The modules were also not intensively delivered in the same manner as the training of trainers. Other quantitative studies reiterated that small unfocused discussion in training is ineffective in tackling KAP gaps. Our observations reflect the experience of studies which note that low group participation due to small cluster size or social taboos on women's participation, hindered the collectives to have an impact on health outcomes such as maternal mortality or even the opposite impact on child mortality outcomes (Colbourn et al., 2013; Huma and Hasan, 2017; More et al., 2012)

Menstrual Health Behaviour

Access to and uptake of sanitary and safe menstrual products is central to the question of menstrual health and hygiene. Shreds of evidence from developing and low-middle income countries show that the uptake of products is low and is often accompanied by taboo, lack of knowledge, gender-based discrimination and violence against women. In this study, the second meetings did not show an impact on the product procurement agency of women. This is contrary to the evidence that finds collective-based interventions to make an impact through direct behavioural changes and indirect changes such as improved access to service delivery through intensive coordination, networking and social capital (Ruducha et al., 2019). At the same time, these results find support in studies that find mixed results of SHG-led health interventions (Saha et al., 2015b). However, the result can be better understood in the social context of the study.

Bivariate results from this study showed that older women had higher odds of self-procurement compared to young women and adolescents. These results are supported by the evidence that girls usually receive information and other menstruation-related support from mothers (Chajhlana et al., 2019; Chandra-Mouli and Patel, 2017; Saghi et al., 2016). The focus group discussions also revealed that unmarried girls usually depend on their mothers to obtain the product. There was also little to no discussion about menstruation within the households. The second meetings, on the other hand, were not targeted at adolescent girls or young women.

The multivariate logistic analysis pointed to a significant association between the agency of product procurement and autonomy to make their own decisions and a perception of "unacceptance" towards domestic violence which reinforces the findings that relate women's autonomy with better menstrual hygiene practices (Singh et al., 2022; Vishwakarma et al., 2021).

The "decision" questions also related to a decision regarding finances, which was better for the treatment group. Earlier studies in Indian communities have observed a complicated empowerment-health relationship – women who exercise a higher autonomy face greater domestic violence (CH et al., 2009) or that empowerment dimensions have a complex health link based on reproductive health status (Davis et al., 2014). Our result also reiterated the findings that women with income and livelihood are more likely to buy their hygienic products (Singh 2022).

The complex link between changing menstrual health behaviour and gender attitude through group-based interventions

Our study found a significant association of procurement agency with women's decision-making, and unacceptability to violence but no such relation could be observed with other indicators of empowerment such as education, mobility, access to resources (financial) and freedom from restrictions.

Notably, the gender indicators that impacted procurement agency showed counter-intuitive relations with attendance in "second meetings." These indicators neither showed a statistically significant difference between control and treatment groups and, in fact, the percentage with non-accepting attitude towards domestic violence was lower in the treatment group. This could partly be because Dwitiya meetings didn't specifically include a module on domestic violence.

However, the complex nature of gender attitude's relation with social outcomes has been observed before. In the initial phases of SHG mobilisation, women who started attending meetings were subjected to higher domestic violence compared to their non-SHG counterparts mainly due to increasing conflict with spouses in patriarchal despotic families (Sato et al., 2021). The spur in violence against women was observed till the mid phases of the programmes and over time, society became accepting of women participating in micro-finance-related meetings and gaining financial benefits. The modules rolled out in SERP Telangana's second meetings on the other hand were relatively new initiatives, not about finances and were mostly on social development outcomes and behavioural training. Therefore, societal support towards these meetings is still maturing. Also, financial autonomy and decision-making power do not necessarily get reflected in exposure to domestic violence and may, in fact, be an outcome of new negotiations within patriarchal households (Hughes et al., 2015). Our results also capture this contradiction in women who more actively attend the second meetings having a higher accepting perception towards violence.

It was also observed that women farmers were more likely to procure the product themselves than their unemployed counterparts – again connecting the procurement behaviour to access to income. While the income linkage seems straightforward, it is also possible that the farmer-women,

with the autonomy to work outside the domestic environment, may have access to the product market and, therefore, better access to buying menstrual hygiene products themselves.

The study had a few limitations; for example, a limited sample size which is collected from a single location, simple statistical modelling to derive the results and very high confidence intervals in some of the odds such as social identity, and employment. It should also be noted that the gender and health indicators in this study are defined strictly – that is, desirable behaviour is defined as no restrictions or no taboo at all. The impact of the SERP programmes may come out to be higher if the definitions are relaxed. However, finding a robust definition and sensitivity analysis was beyond the scope of this current report. In-depth data analysis may be taken up in the future to examine the different results with varying definitions of desired results. To overcome the limitations, the study used a wide range of indicators and qualitative discussions to arrive at conclusions.

VI. CONCLUSION & POLICY RECOMMENDATIONS

The study evaluated SERP Telangana's health/nutrition/hygiene/sanitation modules delivered through the Dweetiya or second meetings of SERP in changing women's gender attitude, KAP around health and menstrual hygiene, and menstrual health behaviour. The results showed a mixed impact of the meeting. While the modules were not widely delivered yet, there was a statistically significant impact of these meetings on certain gender-based indicators such as lower restriction of women, higher decision-making and mobility. On the other hand, the meetings did not show a significant impact on menstrual health knowledge, attitude and practice and also an agency to procure its own product.

It is concluded that the module made a selective impact on the areas where intensive discussions were conducted in focus groups. There was no visible trickle-down of the gender-attitude from one dimension to the other. For the second meetings to have a direct impact on all gender indicators and menstrual health behaviours, focused and scalable intensive training and follow-ups must be developed.

The results lead to a few recommendations for the overall improvement in health behaviour and attitude. Combining the fact that women at a young age and unmarried do not have the agency to buy menstrual products, and that higher autonomy and a perception against domestic violence increases the odds of buying the product by self, it is recommended that menstrual hygiene training and awareness programmes have to spread their outreach to all relevant topics regarding the theme.

Training should be given to all age groups, including both the mothers and guardians and the actual young adolescent and new menstruators. The agency of choosing menstrual products should be with the menstruator for a transformative behavioural shift.

There is also a need to find more evidence to determine the right entry points for menstrual programmes – adolescents or mothers? Or both at the same time? A more focused experimental action research may be developed to understand how menstrual health programmes perform when delivered through different age cohorts.

Also, caution is needed in placing "Key Messages" for BCC on menstrual products so that an expansive set of facts are reinforced, and taboos are removed holistically. For the second SERP meetings to make a wider impact, the Dweetiya meetings need to incorporate more intensive and thematically detailed modules to be delivered to wider groups, with ensured attendance and focused discussions with intensive follow-up. To correct for low attendance in the second meetings, the

modules should be transformed into knowledge materials that can be distributed beyond the fixed meetings of SERP.

There needs to be a more in-depth and large-scale study to better understand the effect of SHG meetings on gender, health/nutrition, and sanitation outcomes. However, the transformative impact can be made only through intensive and topical discussions with women groups. In that, the SERP Telangana's Dweetiya meeting-based modules have a long path ahead.

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