

Results Report | CSBC JEEViKA health and nutrition Facebook Pilot

In this experiment, we assess the effect of inviting JEEViKA cadres to join a closed JEEViKA Health and Nutrition Facebook group on knowledge about health and nutrition, extrinsic and intrinsic motivation, and job performance. We hypothesised that (1) training in a peer group based on specific knowledge collaterals leads to increased knowledge, (2) extrinsic motivation will be boosted by encouraging dialogue among cadres at all levels, (3) intrinsic motivation will increase through participating in work-related discussions and problem solving, and (4) increased ability and motivation from peers will result in improved job performance. We assessed whether the participants considered the Facebook group a viable problem-solving platform through vignettes.

An OLS regression was run for the primary outcomes with four models, adding different kinds of predictors sequentially. A linear probability model was run for the secondary outcomes modelling increase in specific types of motivation. The model with all predictors was:

$$\text{Outcome} \sim \text{Treatment} + \text{Cadre} + f(\text{Demographics}) + \text{BL Measure} + f(\text{Smartphone}) + \text{Block FE}$$

Cadre is of three levels - MRP, CNRP, and CM. Demographic features include dummies for age, Hindu or not, OBC or not, 10th pass or not, 12th pass or not, college graduate or not, household income below 5K, household income between 5-10K, household income more than 10K, and the number of household members. The Smartphone features include dummies for smartphone ownership, smartphone comfort and the number of apps used by the respondent. We also controlled for the different administrative blocks where the participants are residing.

Balance Check

All baseline indicators were balanced between treatment and control groups except for the demographic variable '% OBC', i.e. the percentage of participants belonging to Other Backward Classes (OBC), with the control group having 64.7% of participants belonging to OBC and the treatment group having 78.8% ($t_{285} = 2.68, p = 0.008$). All other outcome measures at baseline were balanced (Table 1).

Table 1: Balance checks between indicators and outcome measures at baseline

Indicators @ BL	Balance Checks		Outcome measures @ BL	Balance Checks	
	Control (N = 136)	Treatment (N = 151)		Control (N = 136)	Treatment (N = 151)
Age	32.2	32.3	Knowledge Score	10.9	11.1
% Hindu	99.3	96.7	Motivation Score	5.2	5.2
% OBC	64.7	78.8	Amotivation	1.4	1.5
% 10th Pass	26.5	32.5	External Motivation	0.824	0.815
% 12th Pass	37.5	31.1	Intrinsic Motivation	1.96	1.98
% College Graduate	30.1	27.2	Prosocial Motivation	0.978	0.967

% HH Income: Less than 5K	29.4	27.2		Performance: Q1	2.4	2.6
% HH Income: 5K-10K	46.3	43.0		Performance: Q2	15.1	12.8
% HH Income: More than 10K	22.8	29.1		Performance: Q3	4.5	4.8
# HH Members	6.23	6.23		Performance: Q4	6.23	6.23
% Own a smartphone	68.4	72.8		Performance: Q5	3.5	3.4
% Smartphone comfort	74.3	74.2				
# Apps used	1.79	1.92				

Attrition Check

Attrition checks were run for all demographic variables at Endline that showed attrition was balanced (Table 2) across all except for ‘% OBC’, percentage of participants belonging to Other Backward Classes ($t_{248} = 2.46$, $p = 0.015$); ‘% Owned a phone’, that is the percentage of participants that own a phone ($t_{134} = -2.62$, $p = 0.010$); and ‘# Apps used’, that is the number of apps used by the participants ($t_{134} = -1.70$, $p = 0.091$).

Table 2: Attrition checks of demographic features

Attrition Checks								
Indicators	Control Stayed (<i>N</i> = 119) (1)	Control Attrited (<i>N</i> = 17) (2)	Treatment Stayed (<i>N</i> = 131) (3)	Treatment Attrited (<i>N</i> = 20) (4)	(1) vs (2)	(3) vs (4)	(2) vs (4)	(1) vs (3)
Age	32.29	31.59	32.62	30.70	0.70	1.92	0.89	-0.33
% Hindu	99.2	100	96.9	95.0	-0.008	0.019	0.050	0.022
% OBC	63.9	70.6	77.9	85.0	-0.067	-0.071	-0.144	-0.140
% 10th Pass	25.2	35.3	32.8	30.0	-0.101	0.028	0.053	-0.076
% 12th Pass	37.0	41.2	31.3	30.0	-0.042	0.013	0.112	0.057
% College Graduate	31.9	17.6	26.7	30.0	0.143	-0.033	-0.124	0.052
% HH Income: Less than 5K	30.3	23.5	26.7	30.0	0.067	-0.033	-0.065	0.035
% HH Income: 5K-10K	45.4	52.9	41.2	55.0	-0.076	-0.138	-0.021	0.042
% HH Income: More than 10K	22.7	23.5	31.3	15.0	-0.008	0.163	0.085	-0.086

# HH Members	6.23	6.24	6.33	5.60		-0.008	0.728	0.635	-0.101
% Own a smartphone	72.3	41.2	72.5	75.0		0.311	-0.025	-0.338	-0.003
% Smartphone comfort	74.8	70.6	75.6	65.0		0.042	0.106	0.056	-0.008
# Apps used	1.85	1.41	1.95	1.75		0.437	0.197	-0.338	-0.098

Knowledge Score

Knowledge Score is a constructed variable that describes how many of the 14 knowledge questions cadres answered correctly regarding breastfeeding, child nutrition, balanced diet, nutrition and health during pregnancy, complementary feeding, disease prevention, growing vegetable gardens, ANC (Antenatal Care), and COVID-19. The mean score at the baseline (N=250) of knowledge score was 11.0 (range: 8-14). The knowledge score was found to be balanced ($t_{176} = -1.277$; $p = 0.203$) at baseline, with the mean score of the control group being 10.9 and the mean score of the treatment group being 11.1. The knowledge score had a positive but statistically insignificant effect of 0.179 (Cohen's $d = 0.034$).

Motivation Score

The Motivation Score is a constructed variable that describes how many questions the respondent rated herself as having a motivation score of 4 or more on a scale of 1-7. 9 Motivation questions were adapted from Deci & Ryan (2004). The questions assessed intrinsic motivation, identified motivation, integrated motivation, prosocial motivation, introjected motivation, external motivation and amotivation. The mean motivation score at baseline (N=250) was 5.24 (range: 3-7). At baseline, the motivation score was balanced ($t_{176} = 0.332$; $p = 0.740$), with the control group's mean score of 5.25 and the treatment group's mean score of 5.22. The effect of motivation was 0.038 (Cohen's $d = 0.022$), which was positive but statistically insignificant.

Job Performance Score

The job performance score is a sum of the five performance questions, with each question converted into a normalised score. The five job performance questions were different for each cadre and were based on the job description of these roles, vetted by the JEEViKA team. They were asked for three months: January, February, and March 2021 at baseline (to avoid the COVID lockdown period in India between April - June 2021); and December, January, and February 2022 at Endline. At baseline (N=250), the mean job performance score was 0.999 (range: 0 - 3.48). It was balanced at the baseline ($t_{146} = -0.203$; $p = 0.840$), with a mean score of 0.992 for the control group and a mean score of 1.006 for the treatment group. Job performance had a positive but statistically insignificant effect of 0.050 (Cohen's $d = 0.154$).

Vignette Score

The Vignette Score determined the number of hypothetical work-related questions where "Facebook" was selected as a way to handle the work situation; other responses were calling the supervisor directly or using WhatsApp. As the Facebook group was introduced during the treatment phase, these questions were only asked at Endline. It showed a positive but statistically insignificant effect of 0.059 (Cohen's $d = -0.065$), with a mean score of 0.420 for the control group and a mean score of 0.473 for the treatment group ($t_{177} = -0.520$; $p = 0.609$).

Improvement in Individual Motivation Types

Further, we tested whether the intervention changed amotivation, intrinsic, extrinsic and prosocial motivation. All these secondary outcomes were statistically insignificant, and the effect sizes (Cohen's d) for all outcomes are negligible (Table 3). Outcomes such as Intrinsic and Prosocial Motivations were already extremely high at the baseline (98% of respondents had reported high values for both at baseline). The minimal impact of the treatment is due mainly to the same.

Table 3: Treatment effects for improvement in individual motivation types

	Treatment Assigned (N = 250)	Effect Size (Cohen's d)
Amotivation* (Mean = 0.252)	0.030	0.000
Intrinsic Motivation (Mean = 0.016)	-0.008	0.140
External Motivation (Mean = 0.108)	-0.001	-0.044
Prosocial Motivation (Mean = 0.020)	0.000	-0.044

Observational Analysis

We conducted an observational analysis by running all the models on a subgroup of respondents who confirmed they got the treatment. The sample size of the subset equalled 133 (53% of Endline), with 72 in the control group and 61 in the treatment group. These were the people in both groups that confirmed their group status, i.e. the 61 people in treatment who said they were currently on the Facebook group and the 72 people in control who said they were not in the group. Low levels of confirmation of treatment status suggest significant levels of contamination and low uptake of the intervention in the sample.

In this "treated" subsample, the job performance score at the Endline revealed a marginally significant (at the 10% level) rise. At baseline (N=133), the mean job performance score was 0.99 (range: 0 - 2.93). It was imbalanced at the baseline ($t_{132} = -2.043$; $p = 0.042$), with a mean score of 1.08 for the control group and a mean score of 0.93 for the treatment group. Job performance had a positive effect of 0.228 (Cohen's $d = 0.152$, $p = 0.088$). However, the sample size for the "treated" models may be insufficient to statistically assess the impact (observed power based on effect size and the sample size is 0.151). Being

"treated" also had a beneficial influence (statistically significant at the 1% level) on respondents' likelihood of using "Facebook" to raise issues (vignette score). All other results were statistically insignificant (Table 4).

Table 4: Treatment effects from the observational analysis

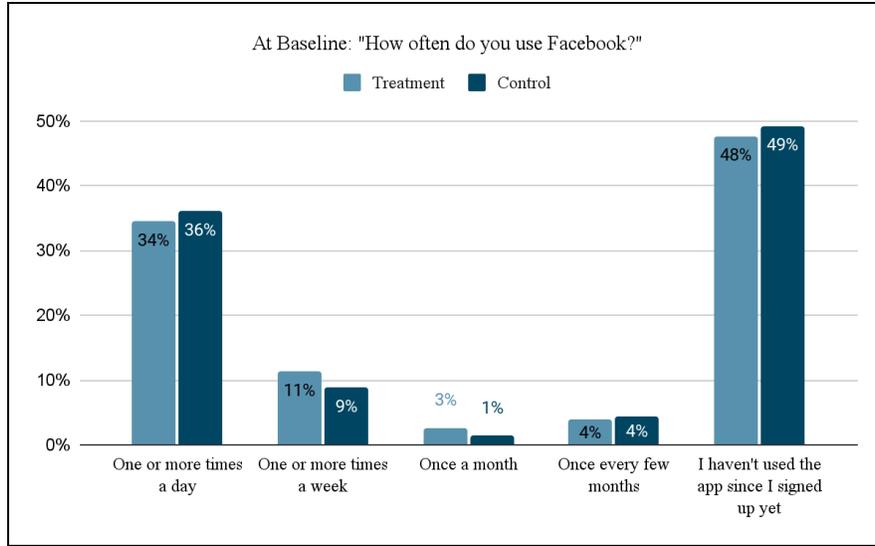
Treatment Assigned vs Treated: Treatment effect		
	Treatment Assigned (N = 250)	Treated (N = 133)
Knowledge Score	0.179	0.273
Motivation Score	0.038	-0.146
Performance Score	0.050	0.228*
Vignette Score	0.059	0.710***
Amotivation*	0.030	-0.036
Intrinsic Motivation	-0.008	0.008
External Motivation	-0.001	-0.001
Prosocial Motivation	0.000	0.000

(* = $p < 0.1$, *** = $p < 0.010$)

Intervention Uptake and Facebook Use

An important finding from the survey is that almost half of the treatment and control group participants had not used Facebook at Baseline (Figure 1). A significant proportion (37% of the treatment group) had never used Facebook at Endline, suggesting a low intervention uptake.

A.



B.

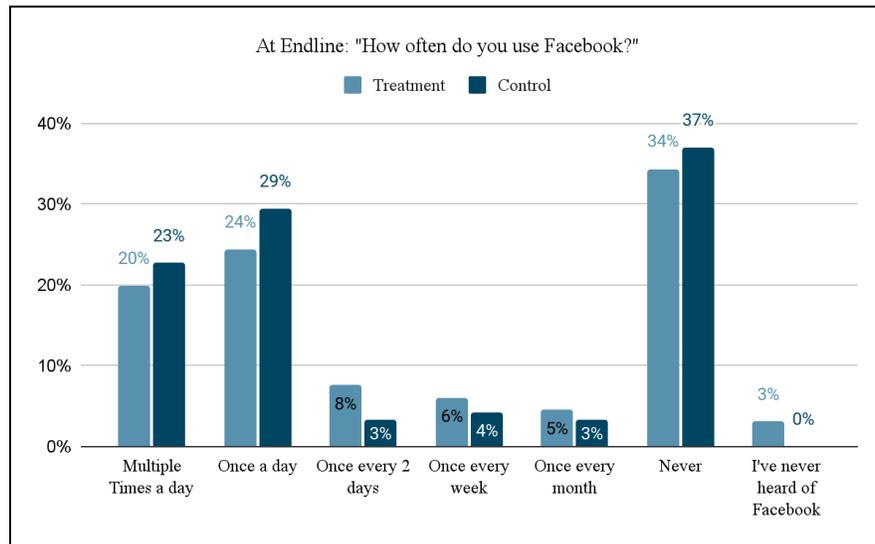
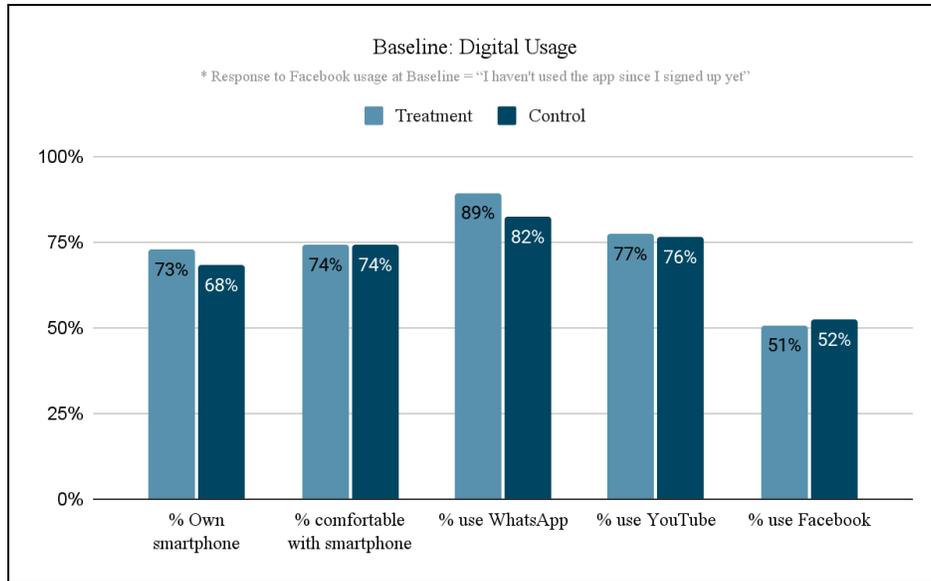


Figure 1: Facebook Usage at baseline and endline. A. The frequency of use of Facebook at Baseline separately for the control and treatment groups. B. The same at endline.

Another significant result pertains to the digital usage of the participants. We saw similar usage of different apps between control and treatment groups at Baseline and Endline (Figure 2). While the use of Facebook increased from about 52% to 63%, it was true for both control and treatment. Additionally, the usage of other apps, especially WhatsApp (> 90%), is much higher than Facebook, suggesting that as a better platform for this sample.

A.



B.

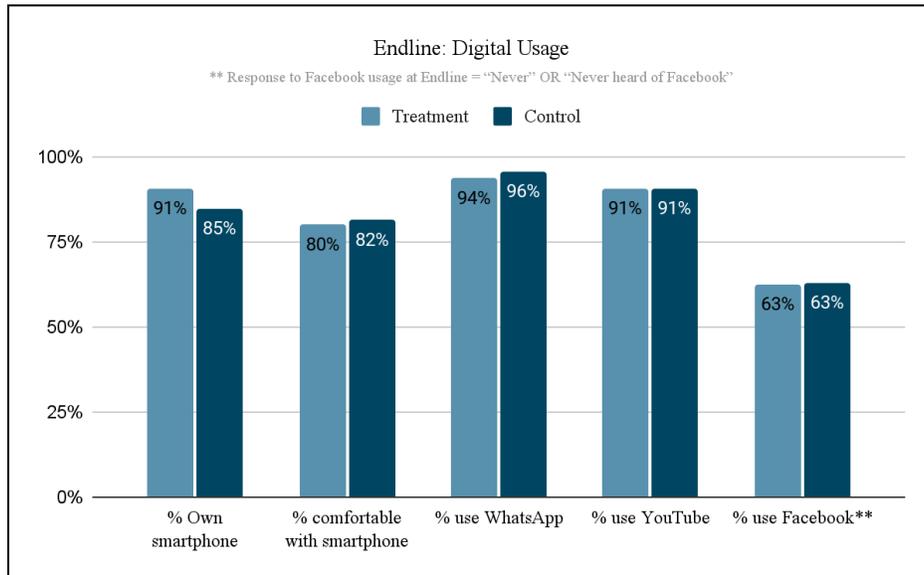


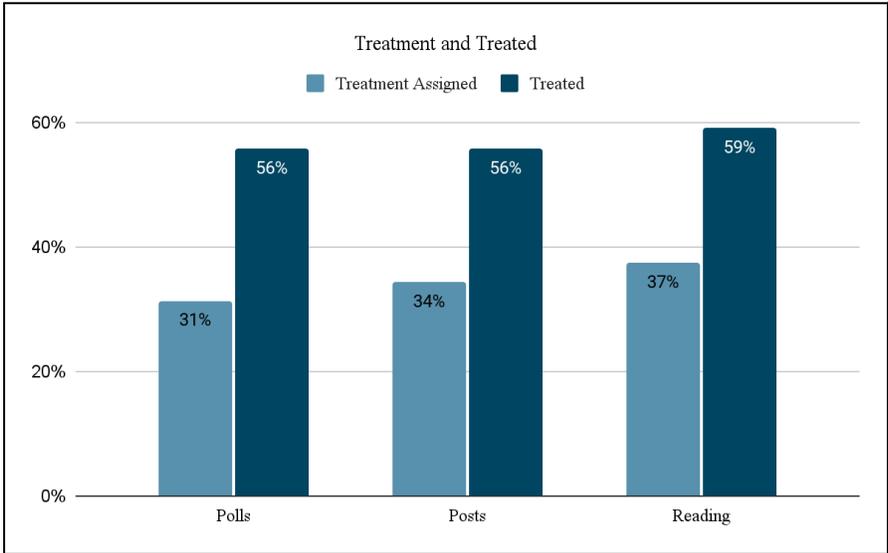
Figure 2: Digital Usage at baseline and endline. A. The proportion of participants that had a smartphone, how comfortable they were using it (a rating of 3 or higher was considered comfortable on a scale of 1-5), and if they used WhatsApp, YouTube and Facebook. B. Same for endline.

To delineate the engagement in the Facebook Group, we asked via our survey how the participants engaged in the group: by answering polls, posting/commenting or reading posts/comments. Figure 3 below portrays how and what proportion of participants engaged with the Facebook group in the assigned and treated groups, respectively.

Responses to - 1. Did you participate in the JEEViKA Facebook group by answering polls ? 2. Did you participate in the JEEViKA Facebook group by posting something or commenting on the group? 3. Did you participate in the JEEViKA Facebook group by reading posts or comments on the group, and
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4. **How many posts did you read?**

A.



B.

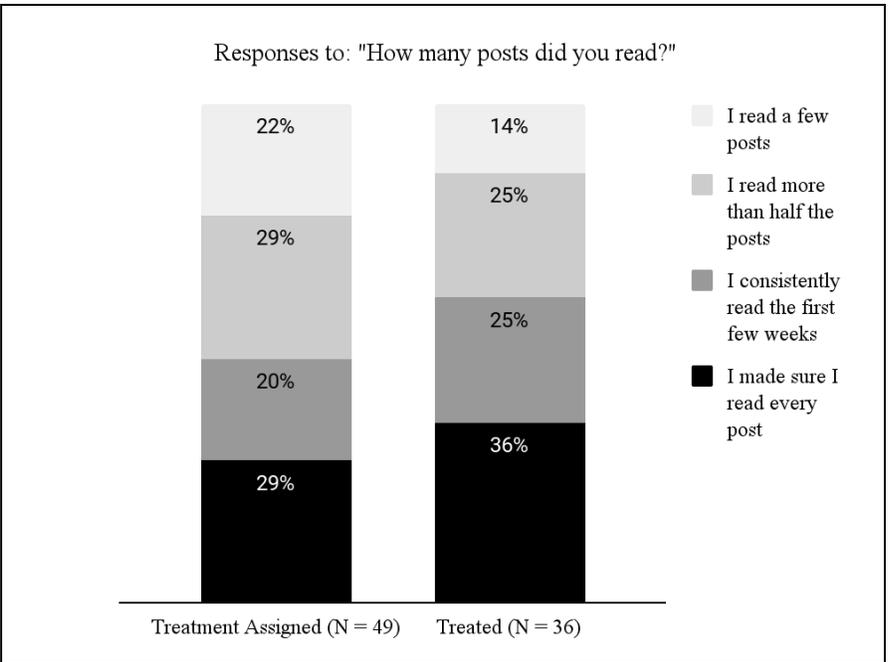


Figure 3: A. Responses about how participants engaged in the Facebook group by participating in polls, comments or reading posts. B. Self-reported responses of how many posts participants read

When asked about the ease of participation in the JEEViKA group on Facebook, a significant proportion (63% of the treatment assigned group and 93% of the treated group) answered that it was either easy or very easy to participate in the Facebook group (Figure 4). However, when specifically asked about problems faced during accessing Facebook, a large proportion of the sample mentioned internet challenges and a lack of time to interact with or participate in the group (Figure 5).

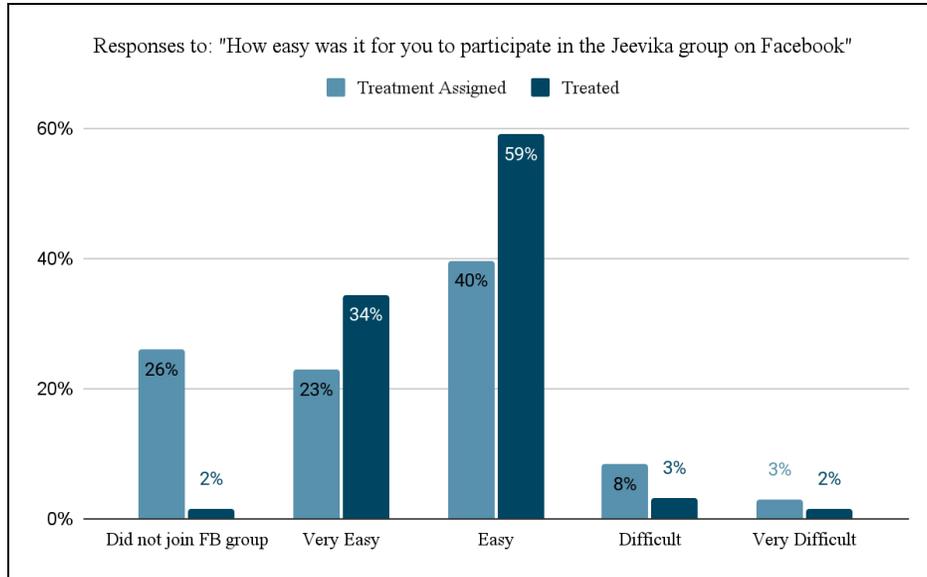


Figure 4: Ease of Participation in the JEEViKA group on Facebook. A majority of participants reported Facebook to be easy to use.

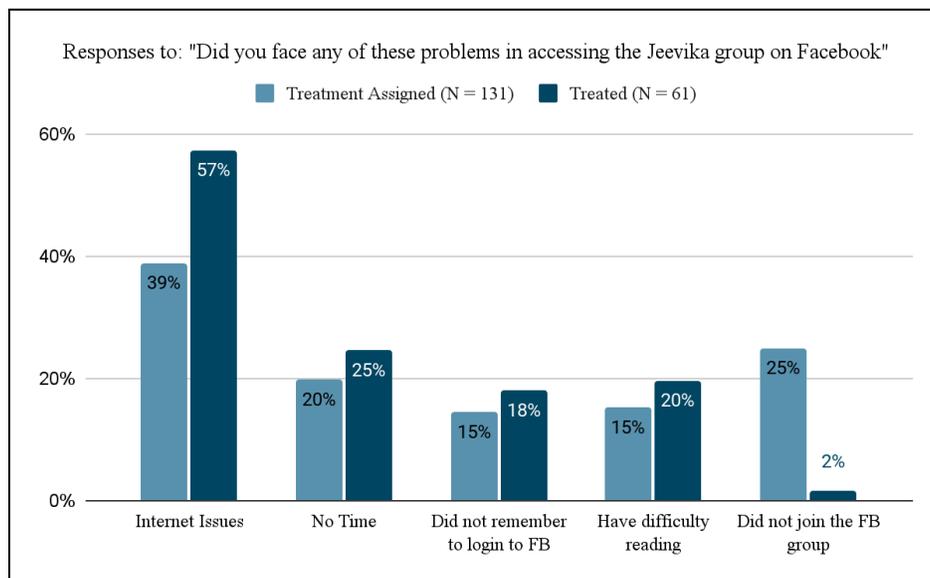


Figure 5: Difficulties faced by participants while accessing the JEEViKA group on Facebook. Internet issues were the most common problem encountered by participants.

Demographic Characteristics

The Cadres' ages ranged from 19 to 55 years, with an average of 32.28 years, and the reported average household size was 6.23 (range: 2-19). The majority of both the treatment group (88.7%) and control group (89%) were Community Mobilisers (Figure 6).

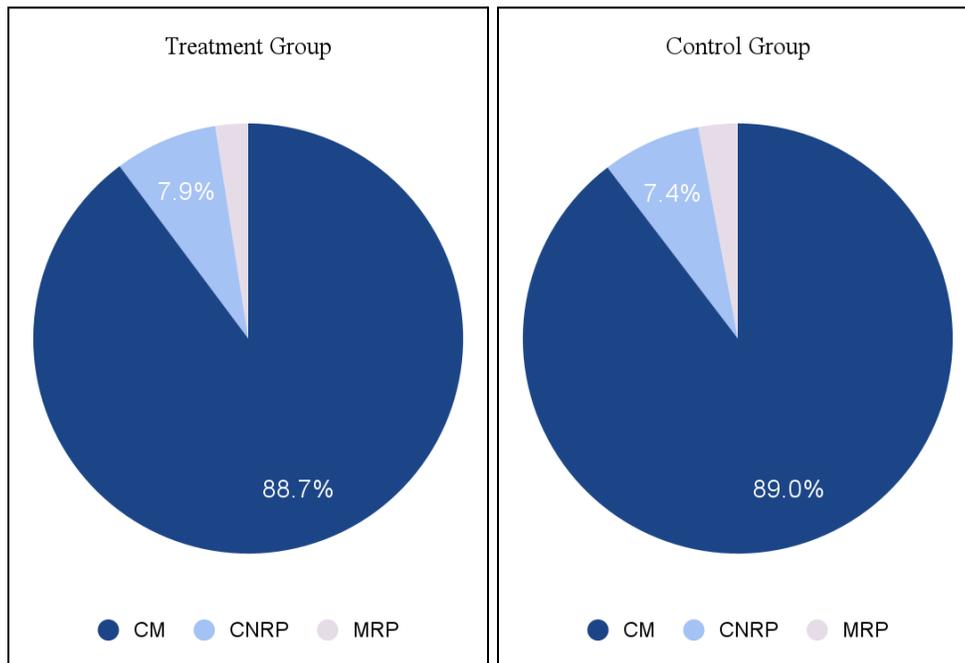
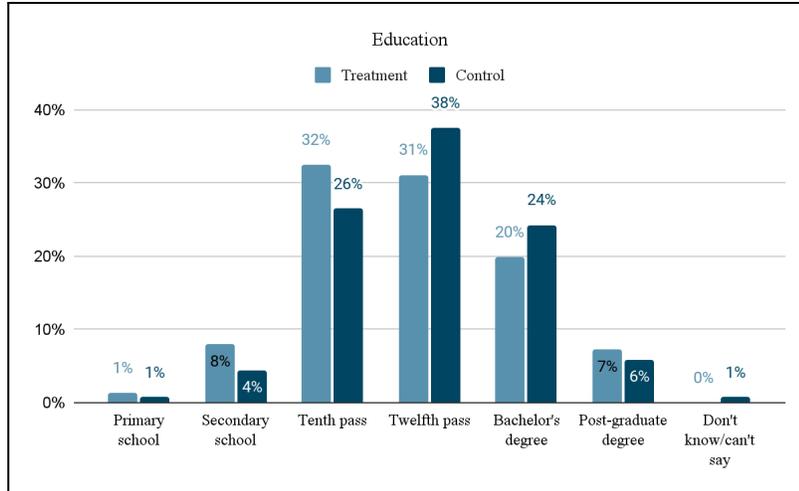


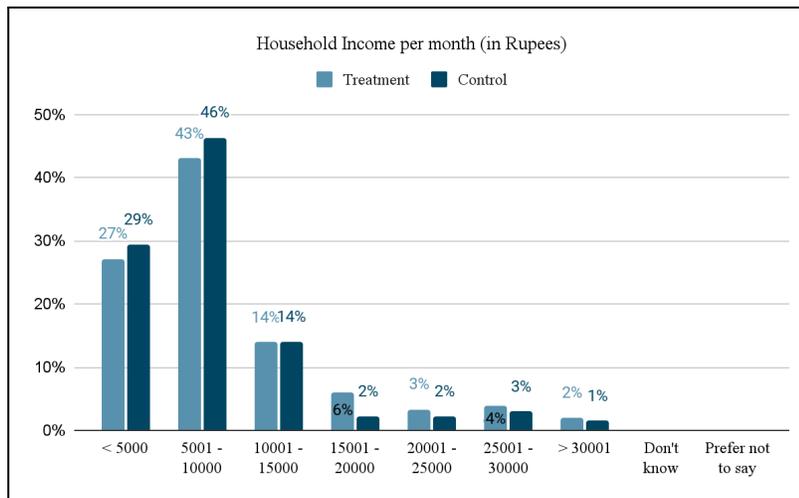
Figure 6: Shows the different cadres in treatment and control groups. CMs were the majority of both groups.

Other essential demographic features of education, livelihood and household income revealed that a preponderance of the participants was either tenth pass, twelfth pass or had a bachelor's degree (Figure 7A). Most participants belonged to households with an income of fewer than 10,000 Rs per month (Figure 7B). 53% of the treatment group and 46% of the control group, i.e., almost half of them, were engaged in agricultural work (apart from working for JEEViKA) (Figure 7C).

A.



B.



C.

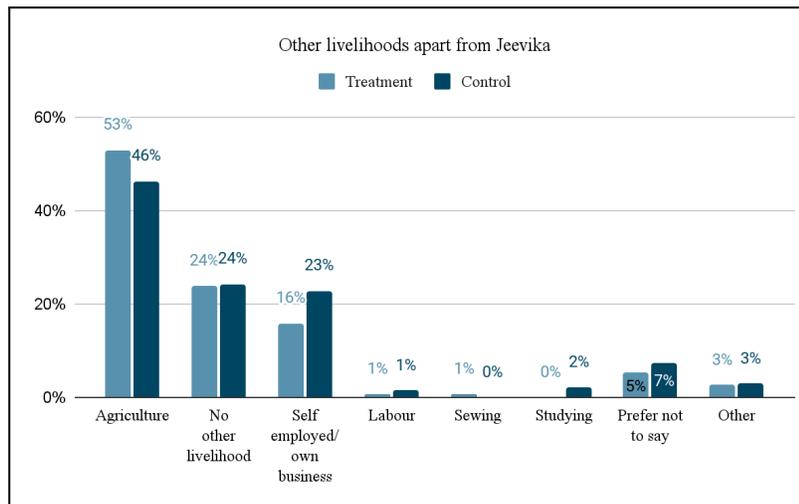


Figure 7 : Demographic Features. A: A histogram of the highest level of education of the participant. B. Shows the household income of the participants from all sources. C. Characterises the other livelihoods apart from JEEViKA of the cadres.

Discussion

The overall findings show a positive, albeit statistically insignificant effect of the health and JEEViKA Facebook group of different cadres on their knowledge, motivation and job performance. Additionally, this effect size is negligible across all primary and secondary outcome variables. The observational analysis showed that in the 'treated' subsample, the performance score at the endline revealed a marginally significant (at the 10% level) rise. Being in the 'treated' group also improved (statistically significant at the 1% level) the respondents' likelihood of using Facebook to raise issues (vignette score). However, the sample size is insufficient to gauge the intervention's impact. The responses to the survey helped us understand that a large portion of the treatment group did not receive treatment, and many control participants were exposed to the Facebook group. This contamination reduced the interpretability of the results significantly. Additionally, survey results showed that almost half of the treatment and control group participants had not used Facebook at the baseline. While at Endline, most participants in the treatment and control groups used smartphones and various applications, Facebook was not a commonly used app for this sample. Internet challenges and a lack of time to interact with or participate in the group were the most frequent issues reported by a significant proportion of the participants.

Appendix

Knowledge Questions

Know 1	At what age should exclusive breastfeeding stop for children?
Know 2	How many times in a day should a 9-11-month-old child be fed food?
Know 3	What is the appropriate consistency of the food that should be fed to a 6-8-month-old child?
Know 4	How many of the total 7 food groups should be included at the very least in a 6-23-month-old child's daily meals?
Know 5	What are the benefits of eating green leafy vegetables like spinach, bathua, fenugreek and what kind of nutrition does one get?
Know 6	What is the appropriate healthy drink that should be given to children suffering from diarrhoea?
Know 7	Which of these tablets should a pregnant woman consume for a healthy pregnancy?
Know 8	What is the recommended number of minimum antenatal care visits for a pregnant woman?
Know 9	Please select the correct components of an antenatal care visit that a pregnant woman should

	undergo
Know 10	Which one of these tasks does the ANM do that the ASHA and Anganwadi Workers do not?
Know 11	What are the details one needs to provide when registering for COVID-19 vaccination?
Know 12-1	What is the appropriate time lag between COVID vaccination doses? Covaxin
Know 12-2	What is the appropriate time lag between COVID vaccination doses? Covishield
Know 13	Which of these are the correct practices related to mask-wearing?
Know 14	Which of these is the correct way to do social distancing?

Motivation Questions

Motivation 1	Intrinsic motivation	"I do this work for the satisfaction I experience from taking on interesting challenges and doing difficult tasks"
Motivation 2	Intrinsic motivation	"I do this work because I derive much pleasure from learning new things"
Motivation 3	Identified motivation	"I chose this type of work to attain my career goals and certain objectives"
Motivation 4	Integrated motivation	"I do this work because this job has become a fundamental part of who I am"
Motivation 5	Amotivation	"I don't know why I'm doing this job, too much is expected of us"
Motivation 6	Prosocial motivation	"I care about benefiting others through my work"
Motivation 7	Introjected motivation	"I do this work because I want to succeed at this job, if not I would be very ashamed of myself"
Motivation 8	External motivation	"I do this job for the income it provides me"
Motivation 9	Amotivation	"I ask myself this question, I don't seem to be able to manage the important tasks related to this work"

Job Performance Questions

Job Performance Breakdown		
Note: All questions are asked for three months (January, February, March) separately		
MRP	CNRP	CM
Please state the number of VO monthly meetings you attended in these months: Please refer to your register for these numbers.	Please state the number of VO monthly meetings you attended in these months: Please refer to your register for these numbers.	Please state the number of VO monthly meetings you attended in these months: Please refer to your register for these numbers.
Number of CMs trained in these months	Please state the number of annaprashan/muhjhutti divas you attended in these months	Number of weekly meetings with SHGs in this month
Number of CLF meetings attended in these months	Please state the number of times you visited beneficiary children and mothers' homes in these months	Number of specialised training provided to the SHGs in this month
Number of block-level review meetings attended in these months	Please state the number of vaccination/health festivals attended in these months	Number of bank-related documents prepared for the SHGs in this month
Please state the number of days you worked for JEEViKA in these months	Please state the number of days you worked for JEEViKA in these months	Please state the number of days you worked for JEEViKA in these months