

Role of Khushi Baby mHealth System on Maternal and Child Health (MCH) in Udaipur District



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PROBLEM



IN INDIA, 5 LAKH CHILDREN
DIE EVERY YEAR



60,000 MOTHERS
DIE EVERY YEAR

<https://www.unicef.org/india/what-we-do/maternal-health>

Maternal and Child Mortality (India, Rajasthan, Udaipur)

Indicators	India	Rajasthan	Udaipur
Maternal Mortality Ratio (<i>SRS Bulletin, 2019</i>)	130	199	210
Infant Mortality Rate (<i>NFHS-4, 2014-15</i>)	41	41	45

Preventative Health Services

Indicators	India	Rajasthan	Udaipur
Institutional Delivery (%) (<i>NFHS-4, 2014-15</i>)	79	84	74
Full immunization coverage (%) (<i>NFHS-4, 2014-15</i>)	62	55	44
Received Four or more ANC services (%) (<i>NFHS-4, 2014-15</i>)	51	39	46

Research Question

Is there any difference in terms of access to maternal and child health services in intervention and non-intervention areas in Udaipur?

Objectives

- To review Rajasthan's MCH system
- To review the role of Khushi Baby m-Health system in MCH services
- To study the full ANC coverage, institutional delivery and health awareness index (maternal and child immunization) between intervention and non-intervention areas

Initiatives for MCH (RAJ)

Scheme	Purpose
1. Janani Suraksha Yojana	To promote institutional deliveries
2. Kushal Mangal Karyakram	To provide special care to high risk pregnancies
3. Pradhanmantri Surakshit Matritva Abhiyan (PMSMA)	To provide comprehensive ANC services
4. Yashoda	To provide special care and support to mother and newborn
5. Pregnancy, Child Tracking and Health Service Management System	Online tracking of ANC, PNC and immunization, Promoting institutional deliveries, Identification of eligible couple, Identification of drop outs, Monitoring of health services
6. Janani Express	To promote Janani Suraksha Yojana
7. Swasthya Sandesh Sewa	Information given from ANM through SMS about the due services to the beneficiaries
8. Mission Indradhanush	To ensure full immunization among the children and pregnant women

Reasons for poor health indicators

- Delay in recognizing danger signs during pregnancy
- Delay in reaching appropriate facility
- Delay in receiving quality of care
- Incomplete documentation in RCH Registers
- Medical history not being collected/used
- Falsification of test results (blood pressure, blood sugar, urine albumin)
- Incomplete documentation on Mamta Cards
- Lack of community awareness

Source: *Maternal and Newborn Health toolkit*

http://164.100.130.11:8091/rch/MNH%20Toolkit_23_11_2013.pdf

Khushi Baby 3ie impact evaluation final report

<https://drive.google.com/file/d/1jQxHG9NJoCbXayxjv7-ADpQfYW48d9vp/view>

Khushi Baby System

Mission: to motivate and monitor the health care of mothers and children at the last mile

Tracking maternal and child health by a comprehensive platform consists of the following key elements:

- Near Field Communication (NFC) based health card for beneficiaries
- Mobile application for frontline health workers
- Analytics dashboard for health officials
- Targeted automated voice call reminders in the local dialect for beneficiaries

Khushi Baby Intervention Schematic



(Source: 3ie Impact Evaluation Report)

Khushi Baby Impact (3ie Study, 2016-18)



The 2-year, 3300-mother randomized controlled trial



Study area: 5 blocks of Udaipur district



Results: KB system improved full infant immunization by 12 percentage points and decreased infant malnutrition by 4 percentage points

METHODOLOGY

Study Type

- Descriptive in nature
- Based on the secondary data made available by the Khushi Baby m-Health system

Study Area

- Five blocks namely, Gogunda, Jhadol, Lasadiya, Salumber and Sarada of Udaipur District, Rajasthan
- As the previous 3ie study was conducted in these five blocks only comprising of intervention (treatment) and non-intervention (control) areas

Study Respondents

- Women who participated in Khushi Baby 3ie study in 2016 and delivered any baby between Sept 2018 to Dec 2019

Sample Size

- 1055 households (534 in control group and 521 in treatment group) of the five blocks and each block comprises of the participants from both control and treatment group.

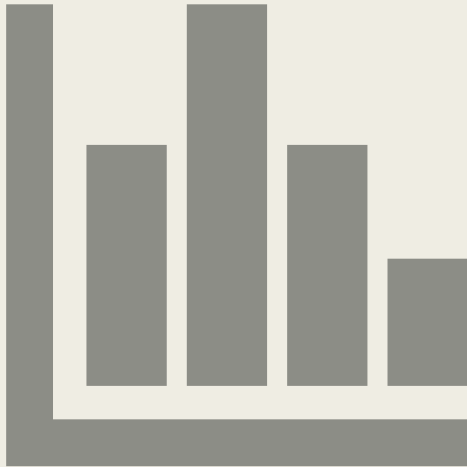
Study Population

Table: Number of HH visited

Study group	Total sample
Control	534
Treatment	521
Total	1055

Reasons for small study population

- Some households were closed
- Difficulty in finding the addresses
- Some women were not available during the visits.
- Only 300 women delivered baby within this period of time i.e., between Sept 2018 to Dec 2019 (criteria of the survey)



Data Analysis

- Data was downloaded from SurveyCTO application into Microsoft EXCEL and analyzed using Google Data Studio

Steps for calculating Health Awareness Index

1. A series of questions are asked with multiple options.
2. A discrete value is given to the options which should be the beneficiary/users response
3. The responses are then analyzed and only those options are considered who initially had a discrete value assigned to it
4. The “Total index score” for each respondent is calculated by adding up these assigned points for each question of the form
5. Take the average of the total index score of all the respondent which will be their overall awareness score

Example for calculating Health awareness index (for maternal awareness):

Question	Answer Options	Corresponding Value label in Survey	Weighting of Responses
1. Why do you go to the camp?	In order to ensure good health throughout their pregnancy and good health for their child	1	1
	The government says they have to go	2	0
	They see neighbors going	3	0
	To get materials for food	4	0
2. In your experience, how many antenatal care visits should you have, when you are pregnant?	3	3	0
	4	4	1
	5 or more	5	1
	1	1	0
	2	2	0
	other	777/888/999	If 0 then 0 If >5 then 1
3. Do you know if a camp exists?	Yes	1	1
	No	2	0
4. Does someone inform you about the need for this appointment?	Yes, ANM	1	2
	Yes, ASHA worker	2	2
	Yes, Other Health Worker	3	2
	Yes, Someone else	4	1
	No	5	0

Let, the respondents are A, B

	Ques	Responses	Weighting
A	1	1	1
	2	3	0
	3	1	1
	4	2	2
B	1	4	0
	2	4	1
	3	1	1
	4	2	2

For A Maternal Awareness Index= 4,
 For B Maternal Awareness Index= 4
 For both A and B the MAI will be 4

RESULTS

Attendance in MCHN Day for ANC

In the control group,
out of 157 women,
97 percent
attended MCHN day

In the treatment
group, out of 150
women, 94 percent
attended MCHN day

PERCENTAGE DISTRIBUTION OF ANC VISITS

Number of ANC's	Control (n=153)	Treatment (n=141)
1	5	4
2	22	28
3	42	33
4 and more	31	35

Ever received IFA tablets during pregnancy

In the control group,
out of 153 women, 92
percent women
received IFA tablets
during their pregnancy

In the treatment
group, out of 141
women, 94 percent
received IFA tablets
during their pregnancy

Number of IFA received	Control (n=153)	Treatment (n=141)
0	8	6
< 100	66	67
>= 100	26	27

**PERCENTAGE
DISTRIBUTION OF
WOMEN
RECEIVED
PRESCRIBED IFA
(100 NUMBER)
TABLETS**

Number of IFA tablets consumed	Control (n=138)	Treatment (n=128)
< 100	75	79
>= 100	25	21

**PERCENTAGE
DISTRIBUTION OF
WOMEN
CONSUMED IFA
TABLETS**

Ever received Tetanus Toxoid vaccine

Out of 153 women who attended MCHN day, 99 percent (152 women) in the control group received TT vaccine and

Out of 141 women 96 percent (136 women) received TT vaccine in the treatment group

Received TT injection	Control (n=152)	Treatment (n=136)
TT 1/ Booster	46.71	50.74
TT 2	53.29	49.26

**PERCENTAGE
DISTRIBUTION OF
WOMEN RECEIVED
TT 1ST DOSE/
BOOSTER AND TT
2ND DOSE**

Place of Delivery	Control (n=153)	Treatment (n=147)
Hospital	82	84
Home	17	16
Transit	0.65	0

**PERCENTAGE
DISTRIBUTION OF
THE WOMEN BY
PLACE OF
DELIVERY**

HEALTH AWARENESS INDEX

Study Groups	Control	Treatment
Maternal Awareness Index	5.66	5.62
Child Immunization Awareness Index	5.90	6.26

Normal range

Maternal Awareness Index is 0-13

Child Immunization Index is 0-19

Discussion

Comparison between the outcomes of the indicators of control and treatment

Indicators	Control (153)	Treatment (141)
4 or more ANC's (%)	31	35
Institutional delivery (%)	82	84
Maternal awareness index	5.7	5.6
Child Immunization awareness index	5.9	6.3

There were no significant influence of KB system seen in the study

- Small sample size/ Low response rate
- Low adaptability of using digital platform by end users
- Low involvement of government health system

Conclusion/ Recommendations

KB mHealth system can improve the coverage of MCH services, especially in the remote areas if there is

- adequate supportive supervision by government for eg; providing essential equipment to the frontline workers, implementing proper tracking system etc.
- change in management system
- adequate training to the end users
- take feedbacks from the ANM/end users, understanding their problems and making the technology user friendly

A top-down view of several Christmas gifts wrapped in various patterns like hearts, snowflakes, and trees, tied with red ribbons and bows. A pair of hands is shown unwrapping one of the gifts. The gifts are arranged on a light-colored wooden surface. The text 'THANK YOU' is centered in a large, bold, black font. There are black rectangular redaction marks on the left and right sides of the image.

THANK YOU