Integration of Perinatal Mental Health in Maternal and Child Health services in Sonitpur district of Assam, India:

A Project Proposal

A Capstone Project submitted to

Johns Hopkins Bloomberg School of Public Health & IIHMR University

in partial fulfilment of the requirements for

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Master of Public Health

By

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List of abbreviations

WHO = World Health Organisation

DALY = Disability-adjusted life year

YLD = Years lived with disability

LMIC = Low Middle-Income Country

SDG = Sustainable Development Goal

MCH = Maternal and Child Health

ASHA = Accredited Social Health Activists

ANM = Auxiliary Nursing Midwifery

CHO = Community Health Officer

CMO = Community Medical Officer

MO = Medical Officer

NCD = Non- Communicable Disease

RMNCH+ = Reproductive, Maternal, Newborn Child plus Adolescent Health

NMHP = National Mental Health Programme

DMHP = District Mental Health Programme

MMR = Maternal Mortality Ratio

GMHAT = Global Mental Health Assessment Tool

Executive summary:

Background: Perinatal mental health pertains to the emotional well-being of women during her antenatal period and the initial year following childbirth. Addressing perinatal mental health requires comprehensive and empathetic care from healthcare systems and society at large. It involves reducing the stigma surrounding mental health, providing resources, and offering support to individuals and families during this critical life stage. This proposal aims to bridge the gap in mental healthcare delivery for expectant and postnatal mothers, recognizing the importance of their mental well-being during this transformative period.

Objective: The objectives of this proposal is to review the mental health and maternal and child health program guidelines and policies, to study the current implementation of the program in the same, to assess mental illness during perinatal period and to develop alternative strategies to integrate mental health into MCH and conduct feasibility analysis.

Methodology: A literature search was conducted for perinatal or maternal mental health worldwide and in India. A comprehensive search strategy was done from the year 2013 to 2023 on various electronic source databases namely PubMed, Scopus, and Google Scholar to find published studies. A review of all studies was done.

A longitudinal, mixed-method approach was taken. Multilevel sampling was done to select the desired population.

Background:

Health is a fundamental right of every human being. With the advancement of modern medicine and technology, humans have been able to prolong their lives as compared to back few decades ago. As a result, people's lifestyles have changed, which has also affected the trend of disease. In the present scenario, the cases of non-communicable diseases have increased as compared to infectious diseases although the number of cases varies from one country to the other. Mental health problems have become more common among non-communicable diseases.

According to the WHO definition, mental health is defined as “a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to the community” (WHO, 2022). Mental health issues can be caused or influenced by a combination of various causes which include biological, social, psychological, and environmental factors. It is essential to remember that a person’s mental health is complex and dynamic part of their well-being.

Globally, mental health issues were the seventh largest contributor to DALYs (Disability-adjusted life year) in 2019 whereas it was at thirteenth largest contributor in 1990 (Ferrari et al., 2022). It was also identified as second most common contributor to YLDs (Years lived with disability) worldwide in 2019 (Ferrari et al., 2022). The acknowledgment and awareness about mental health has gained importance and consequent inclusion in the sustainable development goals.

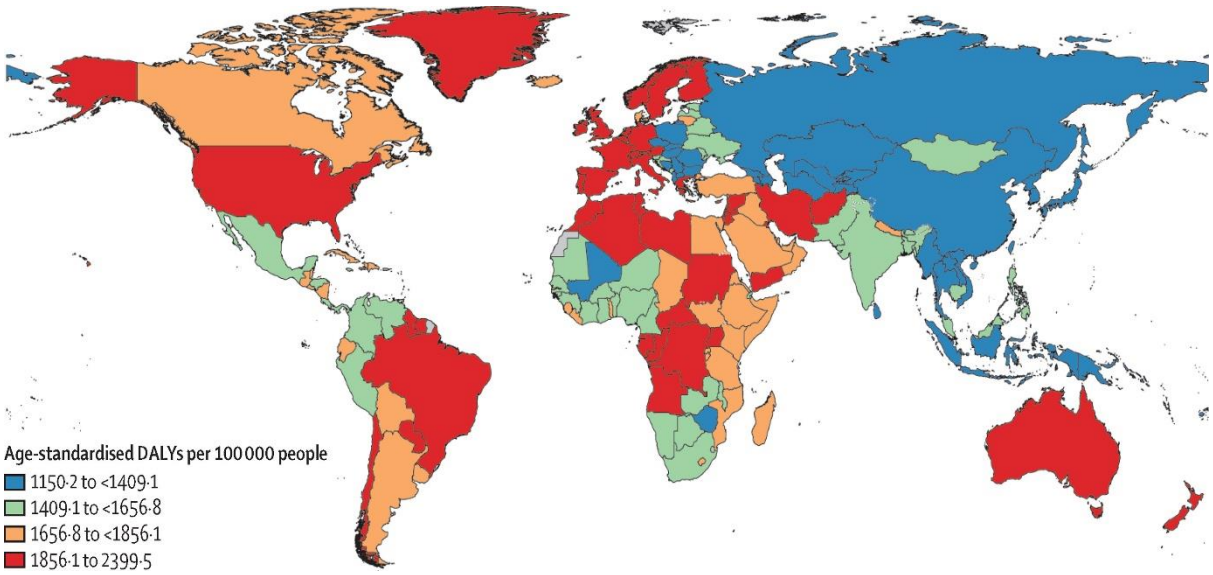

Figure showing : Age-standardised DALYs per 100 000 attributable to mental disorders, 2019

Image source: https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(21)00395-3/fulltext

From 25.5% in 1990 to 47.7% in 2017, mental health disorders in India accounted for a larger portion of all DALYs (Sagar et al., 2020). In 2017, it was estimated that 197.3 million people had mental disorders which comprises of 14.3% of the population in India (Sagar et al., 2020). According to WHO estimations, India has 2443 DALYs for every 10,000 people with mental health issues (World Health Organization, 2023) . Mental health diseases were identified as the most common cause of YLDs in India, accounting for 14.5% of the total YLDs in 2017 (Sagar et al., 2020). WHO estimates the economic loss due to mental health issues from 2012 to 2030 to be USD 1.03 trillion(World Health Organization, 2023). Recognizing the growing concern, the government has put forward programs and policies to address mental health issues. India was one of the first countries from LMICs to introduce National Mental Health program as early as 1982 by the Government of India with the objective of ensuring the availability and accessibility of mental healthcare to all, especially to the vulnerable and underprivileged sections of the population, to promote the integration of mental health

knowledge into general healthcare and social development, as well as foster community engagement in mental health service development and self-help initiative (Gupta & Sagar, 2018).

The contribution to DALYs in 2017 by depressive disorder, anxiety disorders, idiopathic developmental disability, bipolar disorder and conduct disorder were found to be 33.8%, 19.0%, 10.8%, 9.8%, 6.9% and 5.9%, respectively (Sagar et al., 2020).

Perinatal mental health has become a much-talked-about topic in the mental health field. Pregnancy is an unique and transformative experience for every women. It brings about sudden changes in a women's body and it involves a range of physiological, psychological and emotional changes within her. Such sudden changes can impact her psychological well-being.

The causes of perinatal mental health issues are multifaceted and can result from a combination of different factors which include hormonal fluctuations, genetic predisposition, personal history of mental health illness, social support, and other stressors. The symptoms of mental illness can vary individually and it can include the feelings of sadness, irritability, difficulty concentrating, anxiety, changes in sleep cycle and appetite, feelings of guilt, thoughts of harming oneself or the baby. There is studies which suggest that mental disorders in mothers can affect the outcome of their children's physical and cognitive development (TARABULSY et al., 2014). Timely detection and intervention are essential for effectively managing perinatal mental health conditions.

Despite MCH being a global priority and its inclusion in the Millenium Developmental goals, the target to reduce maternal and child mortality has not been achieved in LMIC countries

and there has been evidences suggesting that maternal mental health could be an added factor contributing to the mortality rates (Rahman et al., 2013)

In India, mental health is taken care of under the Ayushman Bharat Health and Wellness Centre (AB-HWC). The expanded range of services included "Screening and Basic management of Mental health ailments". The Accredited Social Health Activists (ASHAs) are supposed to provide MCH services at the local level as the community health worker. In addition, she is also responsible for screening of non-communicable diseases (NCDs). However, the ASHAs and other frontline health functionaries are not trained to prioritize maternal mental health (Priyadarshini et al., 2023). Even in the RMNCH+ program, only the physical well-being of the women is taken care of, there is no inclusion of mental health (Priyadarshini et al., 2023). In southern states, Kerala was the first state to introduce universal screening for common psychiatric illness among perinatal women (Desai & Chandra, 2023) . The initiative was launched in 2017 by the Department of Health and Family Welfare, Government of Kerala and is called "Amma Manasu" which translates to

Table 1: Maternal Mortality Ratio (MMR), Maternal Mortality Rate and Life Time Risk; India, EAG & Assam, South and Other states, 2018-20

India & Major States	MMR	95% CI	Maternal Mortality Rate	Lifetime risk
INDIA	**97**	**(88 - 106)**	**6.0**	**0.21%**
Assam	195	(117 - 272)	12.1	0.42%
Bihar	118	(78 - 157)	11.2	0.39%
Jharkhand	56	(10 - 101)	4.2	0.15%
Madhya Pradesh	173	(126 - 220)	15.3	0.53%
Chhattisgarh	137	(54 - 219)	9.9	0.35%
Odisha	119	(71 - 167)	7.3	0.25%
Rajasthan	113	(71 - 155)	9.6	0.33%
Uttar Pradesh	167	(126 - 207)	14.3	0.50%
Uttarakhand	103	(52 - 154)	6.3	0.22%
EAG AND ASSAM SUBTOTAL	**137**	**(121 - 154)**	**11**	**0.38%**
Andhra Pradesh	45	(13 - 78)	2.4	0.08%
Telangana	43	(4 - 83)	2.3	0.08%
Karnataka	69	(35 - 103)	3.5	0.12%
Kerala	19	(0 - 42)	0.9	0.03%
Tamil Nadu	54	(24 - 85)	2.7	0.09%
SOUTH SUBTOTAL	**49**	**(35 - 64)**	**2**	**0.09%**
Gujarat	57	(28 - 86)	3.9	0.14%
Haryana	110	(58 - 162)	8.0	0.28%
Maharashtra	33	(10 - 56)	1.8	0.06%
Punjab	105	(40 - 170)	5.4	0.19%
West Bengal	103	(64 - 143)	5.0	0.18%
Other states	77	(55 - 98)	3.9	0.14%
OTHER SUBTOTAL	**76**	**(63 - 89)**	**4**	**0.15%**

Image source: https://cencusindia.gov.in//SRS MMR Bulletin 2018-2020

“Mother’s mind”. Under this scheme, all pregnant mothers and post-partum mothers will be assessed for psychiatric illness. Similarly, in Karnataka, an initiative by the government was launched and it included questions for screening depression in the “Thayi card”, an antenatal record for mothers (Desai & Chandra, 2023). NIMHAMS, a premiere institution for mental health in the country, has opened a perinatal psychiatry clinic aimed for postpartum mental illness.

Maternal health in India still remains as one of the major health issues. The latest figure for Maternal Mortality Ratio (MMR) is 97 deaths per 1 lakh live births according Sample Registration System 2018-2020 (SRS_MMR_Bulletin_2018_2020). The ratio however varies across the states in the country. Some have performed exceptionally well and achieved SDG indicator like Kerala with 19 deaths per 1 lakh live births, followed by Maharashtra (33), Telangana (43) and a few other states. There are some others states which although have decreased the MMR but they are yet to achieve SDG, for example Assam MMR is 195 per 1 lakh live births which is the highest among all the states of India and even higher than the national level (SRS_MMR_Bulletin_2018_2020).

With the introduction of Reproductive and Child Health- I (RCH-I) in 1997, MCH gained significance in the national health programme (Ghosh & Ghosh, 2020). Currently, the schemes like Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), Janani Suraksha Yojana (JSK), Janani Shishu Shuraksha Yojna (JSSK).

The PMSMA seeks to offer all pregnant women, on the ninth of every month, fre complete and high- quality antenatal care. The approved government health facilities will offer a minimal package of antenatal care services to expectant mothers in their second and third trimesters of pregnancy.

Under JSK, pregnant women receive financial assistance in the form of cash incentives for safe delivery at healthcare facilities including private and government facilities.

The goal of JSSK is to offer free antenatal services, including home-to-hospital transportation and post- natal care to mothers.

In Assam, other than the central schemes mentioned above, the state also has its own initiative called the Mamoni scheme where incentives are given to pregnant women and nursing mothers working in the tea garden workers to avail antenatal checkups and delivery in healthcare facilities.

The prevalence of mental morbidity in Assam is 8.1%, according to National Mental Health Survey of India 2015–2016 (Murthy, 2017) . For mental healthcare, the District Mental Health Programme (DMHP) is present and covers only 8 districts namely Nagaon, Goalpara, Tinsukia, Darrang, Nalbari, Morigaon, Karbi Anglong and Karimgang.

Rationale:

Screening for mental ailments is not commonly practiced except when the patient and family approaches for it. It's crucial to emphasize that mental health should receive the same level of importance as other related health conditions.

MCH services are the most commonly availed by the community, opportunity to frequent and repeated interaction during ANC, PNC, Child Immunization. The most used services by Indian households are maternal and child health. In general, most of the households have either pregnant women or children. During the antenatal period, pregnant individuals visit healthcare professionals to monitor their own well-being and the health of their developing foetus. Typically, the focus is primarily on physical health, with minimal attention given to

emotional and mental well-being. Throughout the antenatal period, pregnant women typically have at least four doctor's appointments, and post-delivery check-ups are also done 3 times at the minimum. MCH services cater to a large population of women and target the younger population, unlike the NCD programs.

The WHO report of 2022 states that 10% of the pregnant women and 13% of women who have given birth, in worldwide, have experienced mental health issues and the most common illness being depression (WHO, 2022). To maximize the reach and effectiveness of mental health support, it's imperative to incorporate mental health services into these routine visits. This approach has the potential to benefit a larger portion of the population and yield positive outcomes through the proposed program. As already mentioned previously, southern states of India like Kerala and Karnataka has already started the initiative of introducing perinatal mental health screening in the antenatal services. It is about time this initiative reaches a national level.

Research question:

How feasible will it be to integrate mental health with maternal and child health services?

Objectives:

1. To review the mental health and maternal and child health program guidelines and policies
2. To study the current implementation of the program
3. To assess mental illness during perinatal period
4. To develop alternative strategies to integrate mental health into MCH and conduct feasibility analysis.

Review of literature:

A literature search was conducted for perinatal or maternal mental health worldwide and in India. A comprehensive search strategy was done from the year 2013 to 2023 on various electronic source databases namely PubMed, Scopus, and Google Scholar to find published studies. A review of all studies was done.

Keywords used- mental health, pregnant woman, perinatal mental health, maternal mental health, India. Keywords were combined through Boolean operators 'AND' and 'OR'.

Review of the National Mental Health Policy of India, National Mental Health Programme (NMHP), Mental Healthcare Act 2017. Other documents including WHO's "Guide for Integration of Perinatal mental health in Maternal and Child health services" and "Addressing mental health in India" were also studied.

In 2012, a systematic review was done by Jane Fisher et al to study the prevalence of mental health issues commonly seen in females during their perinatal period, in the developing countries having low and lower-middle-income economies. They found the presence of mental health issues in antenatal and postnatal to be 15.6% and 19.8% respectively (Fisher et al., 2012). The aggravating factors were identified as: unplanned pregnancy, single mother, issues with in-laws, intimate partner abuse, lack of partner support, and having little or no emotional and practical support, socioeconomic disadvantage (Fisher et al., 2012).

In another systematic review and meta-analysis on the prevalence of antenatal and postnatal anxiety in 34 countries done by Cindy Lee Dennis et al in 2018, it was reported that the anxiety symptoms, which were self-reported, were 18.2%, 19.1% and 24.6% in the first, second and the third trimester respectively. In the post-natal period, from first to twenty-

fourth week, the symptoms of anxiety were 15.0%. In the said post-natal period, the anxiety disorders and generalized anxiety issues were found to be prevalent up to 9.9% and 5.7% respectively, these rates were higher in low and middle-income regions (Dennis et al., 2017).

In India, a hospital-based study was done in Bengaluru city by Avita Rose et al in 2018, where mental health disorders screening was done among pregnant women who were seeking antenatal care at a government maternity hospital, and it was found that among 208 women 5.8% of them were screened positive for possible antenatal mental morbidity. Among all of the mental illness, depression was the most common followed by sleep or somatic symptoms. Some of the reasons for the illness stated by the women were poor relationships with their spouse and their family and the desire for a male child (Johnson et al., 2018).

It is to be noted that the cases of perinatal mental health have increased after the COVID-19 pandemic. In a cross-national study of 64 countries done by Archana Basu et al. (2021), it was found that there has been a significant number of pregnant and postpartum women who have reported increased incidence of post-traumatic stress, anxiety, depression, and loneliness during the pandemic. These women were engaged with information-seeking from various sources about the pandemic situation which elevated the stress and anxiety/depression symptoms. Factors like COVID-19 infection-related, delivery and child-related, and missing doctor appointments were linked with the risk of elevated mental health symptoms (Basu et al., 2021).

There have been studies that suggested that mothers' mental health illnesses like anxiety and depression can affect the early cognitive development of their children. In 2013, George M. Tarabulsy et al. conducted a meta-analysis that found a correlation between the prenatal

stress and anxiety experienced by mothers and the early cognitive outcomes of their offsprings. However, results have varied significantly across studies and therefore further studies in this area needs to be done with care (TARABULSY et al., 2014). In an another meta-analytic study was done in 2018 by Sheri Madigan et al. to synthesize studies that examined prenatal anxiety and depression in mothers and the socioemotional development of their children. The results are consistent with the previous study showing a correlation between the mothers' mental health issues with the cognitive development of children, especially for women who had prenatal depression or anxiety, it is more likely that their children have behavioural issues twice greater than the children of women who did not have such symptoms (Madigan et al., 2018).

Methodology:

Study area:

The study will be conducted in the Sonitpur district in Assam, India. Sonitpur is selected as the district of choice because, at the time this proposal is being made, there is no District Mental Health Programme (DMHP) in Sonitpur but there is a renowned mental health institute called the Lokopriyo Gopinath Bordoloi Regional Institution of Mental Health (LGBRIMH). Any severe mental illness cases can be referred to LGBRIMH. The institute is also a mental health research centre in the region.

Study Respondents:

The respondents will include-

Perinatal women- All perinatal women between the ages 15 to 49 years

Health functionaries (ASHA, ANM, CHO, MO)

State, District and Block level officials (SPM, NMHP nodal officer, SRCHO, CMO, RCHO, DPM)

Study design, Sampling and Sample size:

The study is longitudinal in nature because the pregnant women will be interviewed (along with the mental health assessment) throughout pregnancy: three trimesters and post-natal period. The duration of the study will be 2.5 years.

Mixed-method approach will be used along with multi-stage sampling.

There are 7 community development blocks in the district. There are a total of 1615 villages including 19 under Bodoland Territorial Area District (BTAD).

For this study, 4 blocks will be taken.

Selection of health facilities-

Assuming that one block has 3 PHCs and one PHC has 30 villages

One PHC covers 30,000 population

To calculate sample size,

$$n = z1\text{-}\alpha/22\ pq/\ d2$$

Taking p = prevalence of perinatal depression in India = 22%

Therefore, q = 1-p = 1-0.22 = 0.78

Now,

$$n = (1.96)2 \times 0.22 \times 0.78/(0.5)2$$

$$n = 263.57 = 263$$

If we take non-respondents as 10%, then the final sample size is 263 + 26 = 289

Keeping in view to calculate incidence rate of mental illness in each trimester and post natal period, adequate sample size will require up to 300-400. (5 pregnant and lactation women from each village, 60 villages are required)

To calculate the sample size for each trimester, we will take sample of eligible women from each block. The list of pregnant women will be collected from ASHA and ANMs of the area.

Methods of data collection:

- Review of the current guidelines and policies
- Household surveys
- Interview with pregnant women and with women who have delivered
- Mental health assessment with GMHAT tool
- Interview with health beneficiaries
- In-depth interviews with program managers.

Tools of Data collection:

- Checklist for reviewing the literature
- Household survey questionnaire
- Interview schedule for perinatal women (history, ANC, risk assessment, etc)
- Global Mental Health Assessment Tool (GMHAT): It is an electronic assessment tool that was developed to clinically assess and identify mental health problems in a primary care setting. Patient information and administration of the program are shown in the first screens. It starts with the instructions of giving the details on how one should use the tool and then rate the symptoms. The initial screens help in entering the inputs of the information in the following fields:

  a) The symptoms presented

b) Any relevant previous past or family history

c) Any personal issues (Sharma et al., 2013).

There is a sequence of questions that lead to a thorough yet rapid evaluation of one's mental state, with the symptoms or issues which include worries or concerns, panic and anxiety attacks, loss of focus, low/depressed mood including suicidal risk, sleep or eating disorders, hallucinations or delusions, memory impairment, alcohol or drug abuse, personality disorder etc (Sharma et al., 2013).

- Interview schedule for health beneficiaries
- In-depth interviews with program managers.
- Consent forms

The data collection tools will be translated in Assamese and Hindi. A pre-test of the translated tools will be conducted at the beginning of the project.

Ethics issues

The ethical approval will be obtained from the IRB at IIHMR University. Approval will be sought from the State and district health system of Assam as well.

During the data collection, the written consent form will be used for each category of the respondents. Voluntary participation will be ensured. The respondents will be informed about the aim of the survey, risks, benefits, maintaining privacy, confidentiality during and after the data collection process. Confidentiality of records will be ensured by keeping in lock and key or password-protected devices. Except for the research team, no other person will be able to access the data. Nobody will be able to identify the respondents as the records will be coded. Anonymized data analysis will be done. If any person is found with mental illness or any other problem, the respective ASHA and/or ANM will be informed for referral purposes. The data collection from women will be done by women field investigators only.

Consent will be taken from the respondents who have completed 18 years. Keeping in view early marriage is very common in Assam, written assent will be taken from the respondents along with consent from parents/ parent in-laws/ guardians.

Data Collection

Data collection will be done using the list of pregnant women from local health functionaries like AWWS and ASHAs. Interviews will be conducted at their house or at the AWC or health facility, VHND where immunization sessions are conducted.

Recruitment of on-field staff will be conducted beforehand. The following members will consist of the team:

Two female field investigators will cover one village in a day.

In addition, to conduct interview with ASHA, ANM and CHO in the respective area, one more person will be required. Therefore, a team consist of three persons: 2 women, and one man.

The field investigators will work for the whole study period to track perinatal women in first, second, third semester and postnatal period

The project coordinator will interview the block, district and state officials.

Recruitment of the field teams:

Based on the qualification criteria, experience of doing field surveys, knowledge about Computer Assisted Personal Interviewing or CAPI, able to use electronic devices after training.

Training of field staff

A 5-day training will be held for the field staff before starting the project. The first day will include the introduction of the project and the interview schedule. The second and third

days will include mock sessions on how to conduct the surveys and after that field practice in accordance with the ethical guidelines. The last 2 days will be held for the training of GMHAT

Data Analysis

Firstly, cross-checking will be done to find any missing input or incomplete forms or errors. Data collected will be entered in excel sheet in MS Excel.

Analysis for perinatal period will be categorized based on risks involved in ANC and/ or PNC that is high, low, or in no risk categories.

Mental health assessment will be done based on GMHAT tool: self-perception and GMHAT diagnosis

Alternative strategies will be developed based on the analysis of in-depth interviews with health functionaries and managers, and review of the literature.

Feasibility analysis will be done using SWOT analysis and situational analysis.

Measures of quality

The principal investigator will make sure that the data collected is accurate. They will check for any incompletion, errors, discrepancies, and outliners. They will also monitor that the data collected is in adherence with the ethical guidelines. There will also be checking the functionality of the software application.

The supervisor will ensure that the project will adhere to the planned schedule. They will measure the team's productivity by monitoring the number of tasks completed, team member utilization, and team performance.

Documentation and Dissemination

Documentation of records will start from the beginning of data collection. All records related to information, events, processes and activities related to the projects will be transferred and stored in digital medium in password-protected devices.

After data analysis, the results and activity reports will be compiled and shared with the Government of Assam.

Study Team

Position	**Qualification**	**Roles and responsibilities under the project**
Principal investigator	Master's or PhD with minimum 5 years of experience working in public health projects	Planning of the project, preparation of grants, interviews with senior officials, supervision over field investigators
Field Investigator	Graduate with minimum 2 years of experience working in related field	Collection of data on field, reporting to principal investigator
IT personnel	Graduate in IT/Computer sciences with knowledge of statistical software application	Data analysis, give technical IT support
Supervisor	MBBS with MPH	Oversees the progress of the projects, adherence to schedule,
Research Assistant	Undergraduate or graduate in public health	Assisting principal investigator in their work, prepare documents and presentations,
Administration staff	Graduate in management	Oversees the management part and human resources

Timeline for project: 2.5 years

Gantt Chart:

S/No	Activity	1st Year				2nd Year				3rd Year	
		Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2
1.A	Approval from Govt of Assam										
B	Review of guidelines										
C	Development of tools, translation, pretesting										
D	Getting GMHAT										
E	IRB approval										
2	Recruitment of field staff, IT person and 5-day Training										
3	**Data Collection**										
A	Collecting list of AWWs, ASHA, ANMs										
B	Collecting list of pregnant women from ASHA in the village										
C	Data collection										
D	Monitoring and supervision										
4	**Data analysis**										
A	Quantitative										
B	Qualitative										
C	GMHAT										
5	**Development of alternative strategies**										
6	**Feasibility analysis**										
7	**Documentation and dissemination**										

Budget

S/No	Particulars	Unit	Per unit cost (INR)	Aggregate cost (INR)
A	Human Resource			
1	Principal investigator	1	40,000	40,000
2	Research Assistant	1	30,000	30,000
3	IT personnel	1	25,000	25,000
4	Support staff (admin, accounts, etc)	1	30,000	30,000
B	Recruitment and Training			
1	Field investigators	12	20,000	240000
2	5-day training (venue, stationery, LCD, meals		10,000	10,000
C	Data collection		15,000	15,000
1	Travel for FIs		6000	6000
2	Travel for PI		6000	6000
3	Travel for RA		6000	6000
	Per diem			
	Tablets for CAPI and GMHAT App	12	15,000	180000
	GMHAT server	1	5,000	5,000
	Stationery, photocopy		10,000	10,000
D	Translation and transcribing		8000	8000
E	Data analysis		8000	8000
F	Documentation and dissemination		10,000	10,000
	Miscellaneous		10,000	10,000
	Total cost			639,000
	GST @ 18%			115,020
	Grand Total			**754,020**

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