

#### **Internship- (P1) Report**

#### Nikita Fatarpekar 176130014

Industrial Design
Industrial Design Centre
Indian Institute of Technology, Bombay
Powai Maharashtra- India, 400076

#### at Lok Biradari Prakalp

Hemalkasa, Post and Taluka: Bhamragad, District: Gadchiroli, Maharashtra - India, 442710

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## **Approval**

## P1 - Internship

Name: Nikita Fatarpekar

Roll no: 176130014

Department: M.Des in Industrial Design

Batch: 2017-2019

Is approved as a partial fulfillment of a requirement of a post graduate degree in Industrial design at IDC, IIT Bombay

5th June 19

Nikita Fatarpekar

This report consist of the works done during P1 internship for the academic work of part for provisionally degree of Master in Design in Industrial design. The report contains the processes, analysis and study of the topic of interest of the various projects. This work has been carried out in the month of may june 2018 at lok biradari prakalp, hemalkasa in the field of health related products. A detail work process of following projects: Delivery bed, Mobile Ambulance, Tuberculosis packaging, ANC/PNC medicine packaging, Rabbies cold box, Insulin cold box, Menstrual charts and book graphics of preganany phases, the process of design solution for different projects has been according to its necessity of area of study and the various projects might not follw a order of procedure.

## **Acknowledgement**

#### Internship Report

I would like to extend my gratitude and sincere thanks to Dr. Anagha Amte, M.B.B.S., M.D. for having given me this oppurtunity to work with such an organization and introduced various projects.

Dr. Prakash Amte, M.B.B.S., for his valuable inputs and time.

Dr. Digant Amte, M.B.B.S. for the resources and information provided during the project.

Dr. Sonu Meher, B.A.M.S., T.I.S.S., for the contextual studies and cultural relevance of the projects throughout.

Dr Lokesh Tamgire, B.A.M.S., T.I.S.S. for the standards and laws of the medicine.

Priyanka Samvanga, B.Pharm for her valuable information regarding various medicinal forms, medicine dispensary system and contextual consumption studies.

Jury , senior Nurse for the translation from Madia to Marathi throughout the course.

All the staff of Lok Biradari Prakalp for their utmost support and help.

### **Introduction**

#### Internship Report

Dr. Anagha Amte along with her team had introduced me to the context of their work and how it differes from the urban context and its product. our country's major population resides in village and these villages have their own ways of needs, survival and practices that differ from the rest of world in cities. introduction of anything in villages does not mean proving its need and scientific working instead means building faith and trust among the locals. the task of introducing a product to them over the religious practices and rituals is like asking a infant child not to go to fire, wherein child suffers of a burn and you have to get the burn cured. some of the modern technoological instrument dont suffice the traditional practices the tribals follow, follwed by a tug of war between the modern instrument and practices of tribals. understanding their beliefs, ways of converting those practices in modern science without hampering the trust in both at the same time.

- 1. Delivery bed -
- 2. Mobile Ambulance -
- 3. Tuberculosis packaging -
- 4. ANC/PNC medicine packaging, -
- 5. Menstrual charts -

6. book graphics of pregnancy phases -

Lok Biradari Prakalp was started at hemalkasa village of bhamragad taluka in the district of Gadchiroli on 23rd December 1973 by late Baba Amte in a view to help the tribals such Madia and Gond which are said to be the most backward of the prevailing regions. Late Baba's younger son Dr. Prakash and his wife Dr. Mandakini began by opening a free medical care in a thached roof bamboo hut, which serves for the people across the boundaries of the state Maharashtra, Chattisgad and Andhra Prdesh.

the Campus Houses a residential school, facility of training in bamboo craft, carpentry, smith work, stitching, computer operations and Amte's animal ark.









## **Understanding context**

It is being documented that about a 60% of the delivery in the nearby villages of hemalkasa happens at home by a experienced women. It usually involves the pregnant women, the mid wivfery and a couple of women if needed. The process involves the pregnant women either in squatting posture (majority) or lying downse ways on floor. In the squatting position, the pregnant women rests in squatting position holding on to a cloth rope tied around a bamboo on top. The labor is natural and in force of gravity. She pushes the baby while the midwife helps her by giving warm water shake and necessary things when required, mean while preparing for the delivery. The delivery usually happens in small room connecting to the house or in the sleeping room where a fire has been put in order to give warmth to pregnant women and the child. The baby when pushed out touches the ground and is then taken by the Dayi.

The umbilical cord left untouched until the placenta comes out so incase of emergency it gives necessary provisions to the child.



#### Delivery bed

Labor and birth: at the end of pregnancy, the mother begins the task of opening up which is called labor. the process of labor varries from person to person. it may vary from time duration. but it does have a known pattern:

- contractions (Labor pain), opening the cervix,
- the womb pushing through vagina
- baby is born
- placenta is born.

being ready for labor and birth: there is no particular time when the labor may begin, but some sign that may suggests its approaching.

- the baby may drop lower
- the mother feels more contractions
- or the different feeling
- other signs may happen a couple of days ago such as:
- mother's quality of stool may change
- little amount of mucus may come out of vagina called as 'Show'.
- sometimes water bag breaks.

#### During labor and birth:

- 1. Opening is the first stage wherein the cervix opens wide enough for the baby to come out of womb.
- 2. Pushing once the cervix is open toits fullest, contractions allows the baby to come out through vagina.
- 3. Birth of Placenta: After the baby is born the womb and placenta seperates and comes out of vagina. even after the birth the placenta is still connected by cord. when the baby starts breathing the placenta can be removed.

#### Delivery bed



#### Delivery bed

Guide the labor and birth: Guiding the labor at different stages - drinking, rinates, rests and moves.

- the mother should drink at least one cup of water every hour to prevent dehydration which can make the labor hard and long.
- the mother should urinate atleast once 2 hours. If the bladder is full, her contractions get weaker and the labor is longer. a filled bladder may cause problems while pushing the placenta after birth.
- she must urinate, if incase she is unable to move, put: pan, extra pading, catheter(a sterile tube) is she does not urinate at all.

rests between contractions: is important to retain her strength which is (not during contractions0 should let her body relax by deep breathe: sitting or lying down.

Change position per hours: changing positions help her - squat, sit, kneel and other positions.

- standing and walking can facilitate the labor.
- swaying
- · rocking or
- dancing
- mother should not lie horizontally flat on her back as it squeezes the vessels that connects blood to the baby.

Changing bedding when wet or soiled: a lot of fluid or broken water comes out of body that is soaked by using a cotton pad.

Transportation to medical centre: some problems that are not solved at the particular centre or are more acute the mother needs to be transported.

Keeping records: of various aspects as:

- Eating
- drinks
- urinates
- pulses
- temperature
- blodd pressure
- labor charts.

#### Delivery bed

Opening: Stage 1 of labor:

- it is also known as dilation
- longest phase of labor
- less than an hour and day/noght

#### types of labor:

- 1. light labor mild short 30 seconds in every 15-20 minutes
- 2. Active labor: every3/5 minutes apart
- 3. late labor 1 minute (lasts) within 2/3 minutes in between.

#### Labor Patterns in Stage 1:

- starts with weak and get strong slowly over hours
- starts slowly and sudden speed
- start strong then becomes weak or stop again starts strong
- various patterns

when mother arrives; cleaning of hands, genital areas. relaxing in stage 1:

- 1. touch a firm touch on lower back or also a massage to feet or back , hot or cold water shower.
- 2. Sound sound making eases the labor.
- 3. breathing of kinds to make easy.
- i. Slow gentle
- ii. hee
- iii. panting-quick and shallow
- iv. strong blowing

Baby's position : directing it to pelvis Baby's herat beat : checking it everyhour

Bleeding during labor: blood more than 200 millimeter which is approximately 1 cup of blood is an indication of warning.

Bleeding without pain (placenta previa): which is when placenta is covering the cervix which can bleed to death hence there is need for shock on.

#### Delivery bed

Acupressure : on parts as :

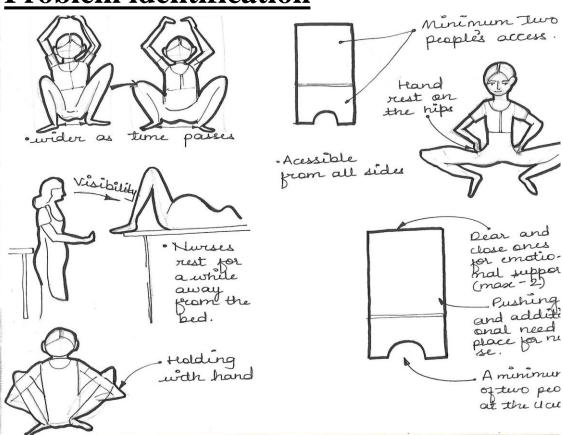
- 1. Inside legs, 4 fingers above the ankle
- 2. hand, between thumb and fingers
- 3. foot, near big toe
- 4. between eyes
- 5. top shoulder
- 6. below ankle bone
- 7. bottom of foot

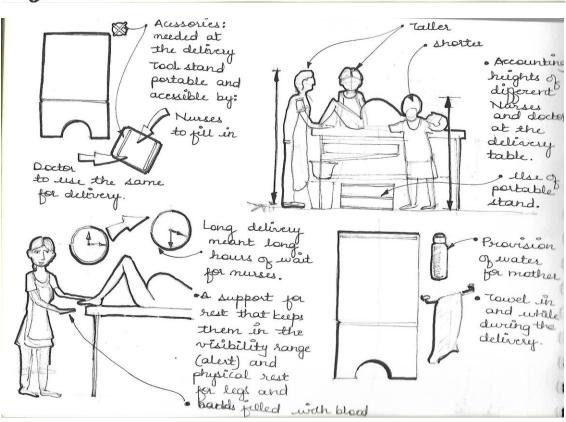
Pushing - S tage 2 of labor: Baby's physical signs; has to be measured and is difficult in between contractions, it is done.

Mother's pushing: Pushing happens naturally but some positions facilitate the pushing.

- 1. Half sitting comfortable and easier to guide the path of birth of child's head
- 2. lying on sides- relax and prevents tear of vagina
- 3. hands and knees is useful if the labor is felt at the back. also in the case when the shoulder is stuck
- 4. Standing
- 5. Squatting or sitting on a pillow
- 6. sitting on lap or birth chair: all 3 brings the baby down when the process has lowered speed.
- 7. Lying flat is possible when the baby comes out fast otherwise it causes squeezing of vessels.

## **Problem identification**



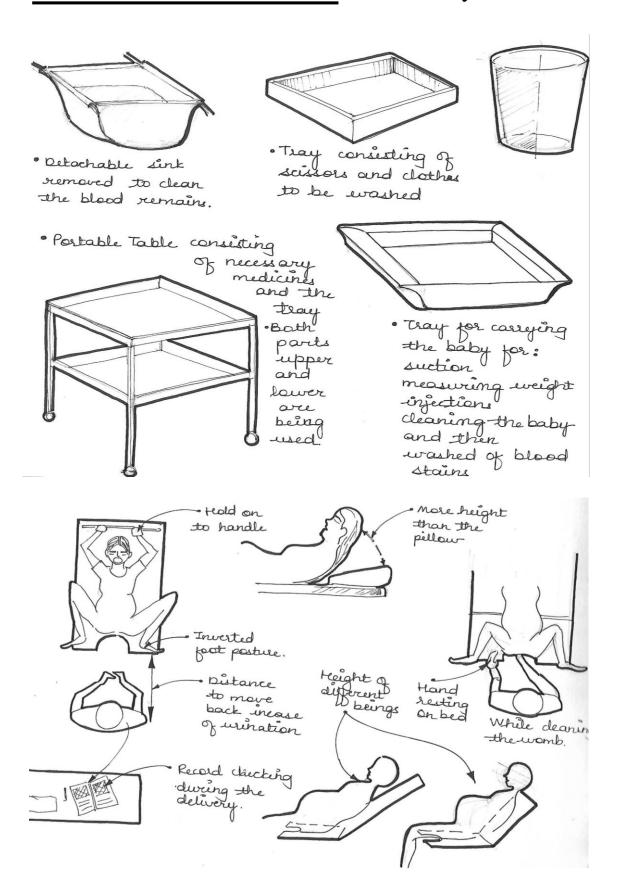


#### **Problem identification** Delivery table · Foot angular tilt more tilt of the head during delivery is machine Injection posture. . cloth stand movements to travel Destances to travel (horizontal vertical) Baby Jeaning station. · Breast reding evhile sticking · A provision that facilitate & help Support of close Center Neurose · Vaginal · sink bled blood hole point Support · Ell the three points should be as close so the removal of blood, placenta can be to move from done quickly. . Also cleaning of · Removal of blood. mattress Lotton while De arie dearing Blood blood collection

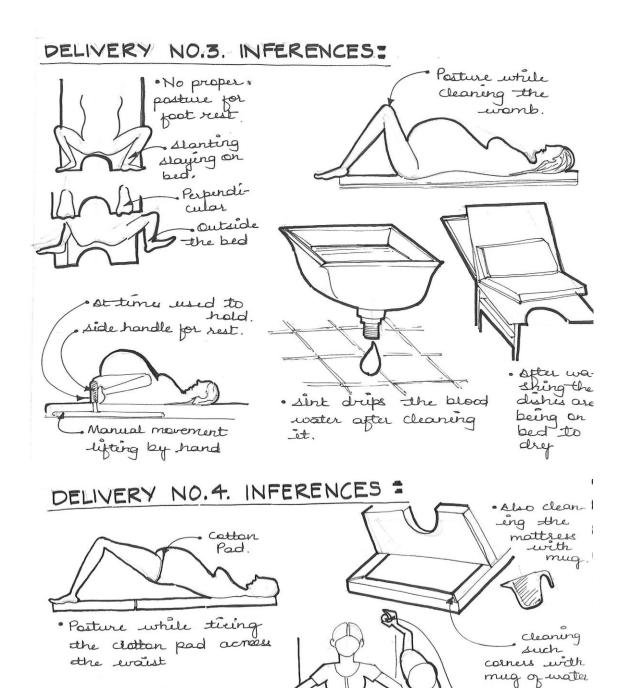
after delivery.

Disposal

## **Problem identification** Delivery table



## **Problem identification** Delivery table



to stand

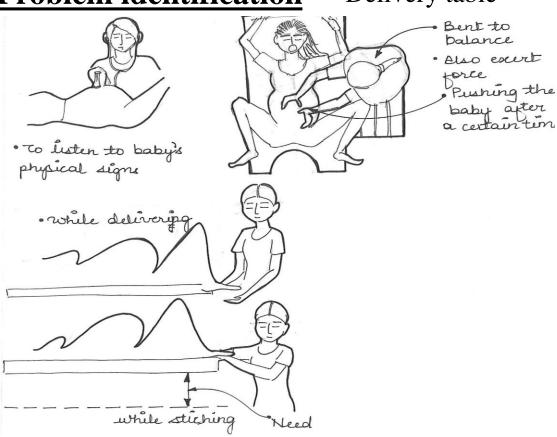
massaging the

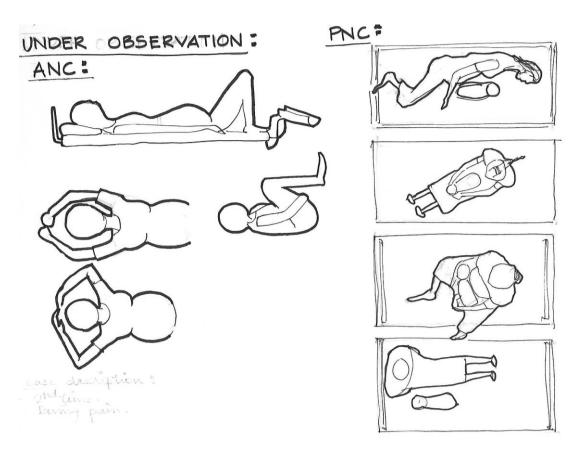
stomach during

labor.

· ofter delivery posture.

## **Problem identification** Delivery table





### **Design problem**

Delivery Bed

#### **Statement**:

the design problem is to design delivery table for the posture of squatting prevailing in the peolple of Madia.

#### **Objectives**:

the objectives of the delivery table has to be:

- 1. additional feature for squatting posture
- 2. delivery in the direction of gravity
- 3. also possible for other postures of delivery

#### **Brief**:

The task is to design a delivery table mainly for the posture of squatting that can also accumulate other ancient and modern postures. the delivery is most preffered in the direction of gravity.

The modern delivery tables do not accommodate the contextual postures. these contextual postures are preffered over the modren ways by the local people.

The product has to be feasible and feeble for all the postures. the table has to encompass a age group of 17 - 37 years of old.

Governed by the standards of medical association satisfying the technical needs of the stage of state of delivery.

The product has to meet the demand of the local context at the same time posses the universal needs in terms of postures.

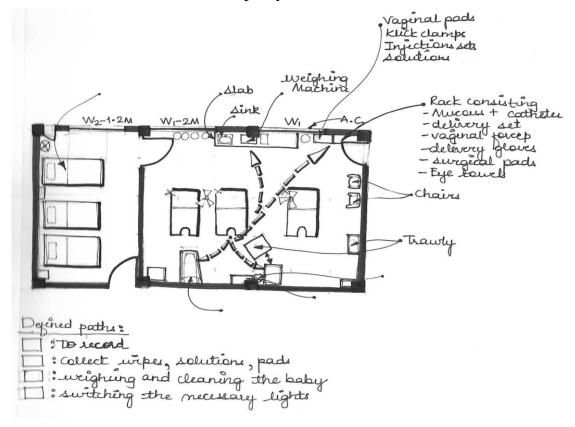
#### Delivery bed

Questions for the birth giving mothers:

- 1. number of pregnancy( timeth)
- 2. How do they feel before delivery
- 3. during delivery
- 4. after delivery
- 5. what do they prefer: hospital or home delivery and
- 6. why (reasons)
- 7. how do they feel the procedure in hospital is
- 8. How comfortable are they in the room (on bed)

#### Answers:

They should support after we grow old and should look after us. When the child moves, there is cuddling motion in stomach. Hospital because-they can help us and manage problems. 3 months starting, a lot of trouble and feel that they should not bear a child .next trimester they feel good. 3rd trimester the weight is more . There is always a question of how the procedure will be in the hospital , the methods the overall 'how' after delivery we like to keep the baby one side but at times when I sleep normal and suddenly remember that the baby is there beides, and then take care of it. Otherwise I sleep anyhow.



#### Mobile ambulance

Questions for the birth giving mothers:

- 1. In emergency ,do you approach a hospital or preffer to staying at home
- 2. If yes t hospital, at what stage do you: normal (1st stage), adverse or Emergency
- 3. how do you come to hospital
- 4. what problems do you face in that
- 5. what do you prefer
- 6. would you like to come on cycle strecher
- 7. would you let your child come on same?

#### Answers:

Yes, we would prefer to approach the hospital as if there is some emergency or adversity then furthurt treatment can be done. Initially we would feel that it is not that require but then in the adverse or emergency stituation we approach the hospital.

whatsoever possible source of transport as a bike or goods carrier or bed carried by the villagers. It usually involves long distance travel from distant places so the carriers find it difficult. At times it rains or its shivering night.

Anything is 'OK' with us provided we reach before time and comfortable.

Yes, my child can come too, if its adverse then I shall accompany him.

### TB/ANC/PNC Packaging

#### Questions for the birth giving mothers:

- 1. Do you preffer taking medicines at home
- 2. what do you feel about the present packaging
- 3. what problems do you face
- 4. what do you do then to tackle the the above problems
- 5. is it useful
- 6. what do you aspect a packaging to be like
- 7. Do you take your medicines everyday
- 8. What do you do to resolve it.

#### Answers:

No, we prefer taking medicines at hospital because it available we their knowlegde and is provided with food.

Its good packet. It (medicines) at times becomes damp due to moisture or rain humidity outside. No, at times we forget the medicines due to household work or just like that because we are not used to taking medicines. nothing happens to us if we dont take medicines. Any polythene bag is good to restore the medicines. If we forget then we forget it. The packaging should be long lasting and nice.

#### Menstrual chart

Questions for the birth giving mothers:

- 1. why is there a need of menstrual chart
- 2. what are the local beliefs
- 3. what problems arises because of that
- 4. how would a chart help in that problem
- 5. what all information should the chart posses
- 6. how should a chart look like

#### Answers:

Menstrual charts is needed because many villagers dont know their health cycle. this chart might help the infertile couple to percieve child. Also help the few parents to avoid pregnancy.

The chart should posses the basic information such as when do they menstruate, the fertile period, the next periodic cycle.

### **Book Graphics**

Questions for the birth giving mothers:

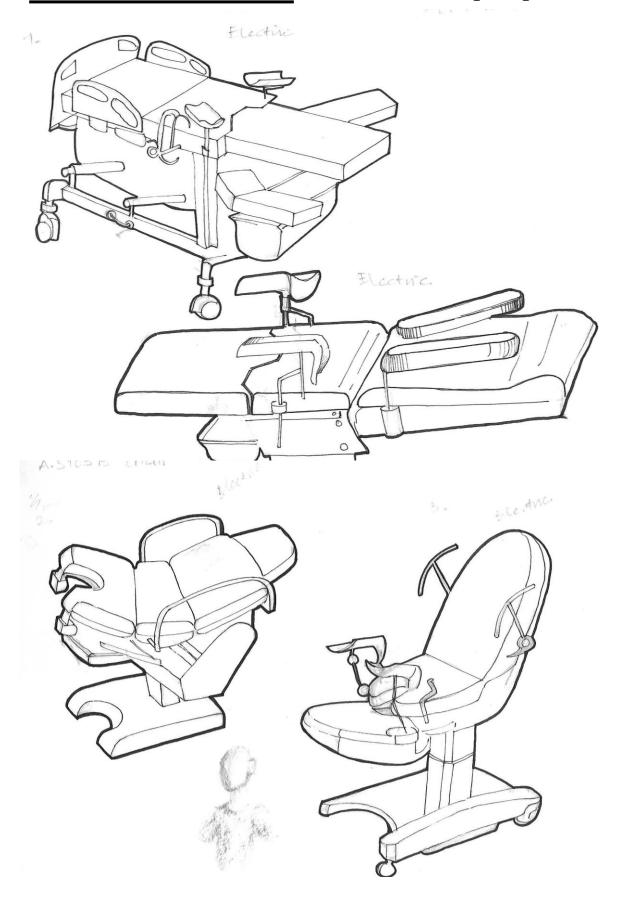
- 1. why is there a need for different graphics for a booklet
- 2. how does a local and present graphics varry
- 3. what problems arises because of that
- 4. how would different graphics help in the development
- 5. how shall the graphics varry
- 6. what should the overall view of the booklet be like

#### Answers:

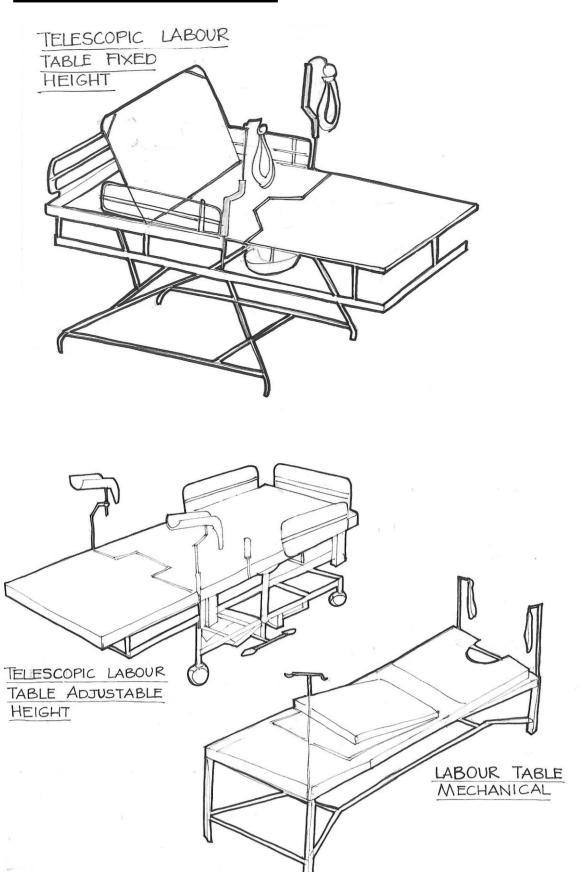
Most of the times when villagers are educated about the diseases and precautioner measure by visuals that used worldwide are not similarly understood by the people here. They interprete it as something else and at times wrong information may be transmitted.

Also they are not able to relate themselves to the graphics. Many a times they feel that these are not them and nothing as this might happen to them.

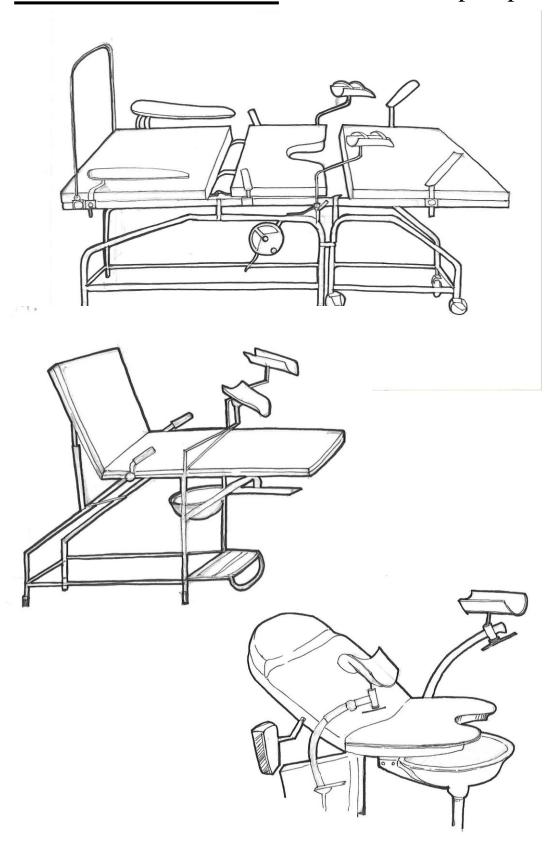
# **Products in market**



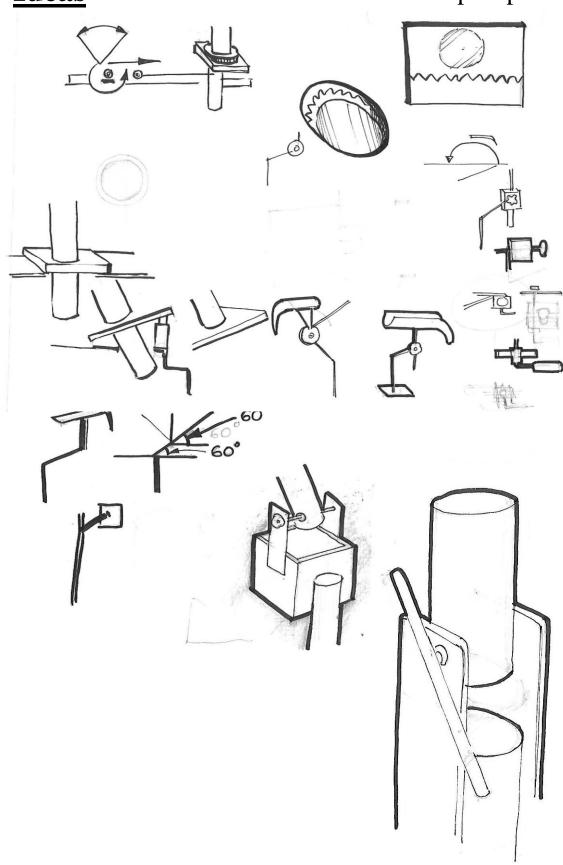
## **Products in market**



# **Products in market**



# <u>Ideas</u>



## **Understanding context**

People from villages of the states of Maharashtra, Chattisgarh and Andhra Pradesh travel to get emergency and general medicine to Lok Biradari from narrow roads, crossing rivers and terrains for miles. For years they have carrying the patient on portable palaquin bed and travels for days. in meanwhile the patient would become adverse or even die by the time he or she reached hospital.

Many villages have now brought motor vehicle on which they carry the patient to hospital. Even a pregnant woman or a unconscious patient is brought on a two wheeler motor vehicle where the driver drives ,in between is the patient and on back, a supporter. At times the patient might be fine but due to uncomfortable travelling his or hrs condition become adverse or in case of pregnancy the baby might die.

But during rainy season with flowing rivers high these areas are unaccessible. They have a boat made of made bamboo used to transport light weight goods across. A large number of people still dont posses their own vehicle.



### **Design problem**

#### Mobile Ambuance

#### **Statement**:

the design problem is to design a mobile abulance to carry patient for miles to the hospital.

#### **Objectives**:

the objectives of the delivery table has to be:

- 1. easily ridable b the locals
- 2. drived on narrow roads
- 3. for different seasons

#### **Brief**:

The task is to design a Mobile Ambulance that can carry isolated patients to the hospital. the ambulance has to run on narrow roads of minimum 10cm roads.

The ambulance has to travel undulating roads.

These shall prevail the undeveloped senes of the villages.

The product has to be feasible and friendly for all the people of different ages from a new born until death.

Governed by the standards of anthropometry and ergonomics the ambulance should carry the patient easily and comfortably.

the product has to meet the demand of the local context at the same time posses the universal needs.

## **Ideas Internship Report** 1.8 30cm 40 cm 1.8 1;5 1.1 Extension 60 cm 1.5 M 80 cm 1.07 cm Road Tyre - Attachment 2.9 M 0-8M 0.4M 1.5 M 116 SIKECHEN - DIZZINESS 45 cm 1.07 M Rain - polythemac Stynone. Winter - Rubber 50 cm

# Mock ups







# Mock ups





# **Final product**



# **Final product**



Patients of detected Tuberculosis and treated in two phase: Phase I: He/She is being treated at the hospital for a period of about a month or two based on the depth of sufferings. The medicine is being given by the nurse at fixed interval everyday.

Phase II: He/She is being sent home with a course of medicine to be taken at different timings of the day.

Initially when the medicine was being given to them, they would'nt understand the course of different tablets when to be taken and what dosage per time. They would generally end up taking the whole pack of a month on first day and lay unconscious.

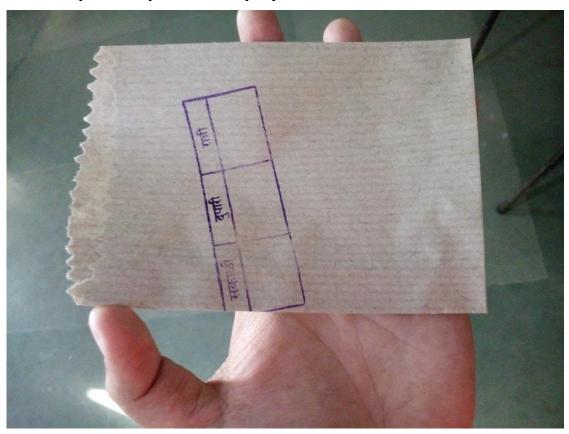


## **Understanding context**

Acute Natal Care (ANC) patients and Post Natal Care (PNC) patients are given a course of medicine to be taken on everyday basis. The present packaging of the medicines is in a single paper bag with a months or a trimester's duration medicines in it. This involves a dosage of Iron and Ferrous tablet, both per day. It is being packed in different bags and the information is written on it using pen.

It so happens that because of the moisture or dampness at home over a period of time the packs of medicines that are being stored on wall side stand in kitchen or on the floor of dinning area it tends to damp. Usually a polythene is then used to store the medicines.

Several times ANC patients tend to take the medicines twice or none. In this way either a double or no dosage goes to them. The tablets have been designed in a thought that 500gms of calcium (for the growing baby) is achieved by the tablet and the other half by the nutrients the mother takes. Because of their malnutrition and lack of calcium it is very necessary that they take it everyday.



## **Design problem** TB/ANC/PNC Packaging

#### **Statement**:

the design problem is to design a pakaging unit to carry the medicines of TB, ANC and PNC patients.

#### **Objectives**:

the objectives of the delivery table has to be:

- 1. understanding the dosage intake.
- 2. reusable
- 3. Friendly to the users

#### **Brief**:

The task is to design a packaging unit for the medicines of TB, ANC and PNC patients.

The packaging has to resuable and sustain varries seasons and shall prevail in the undeveloped senes of the villages.

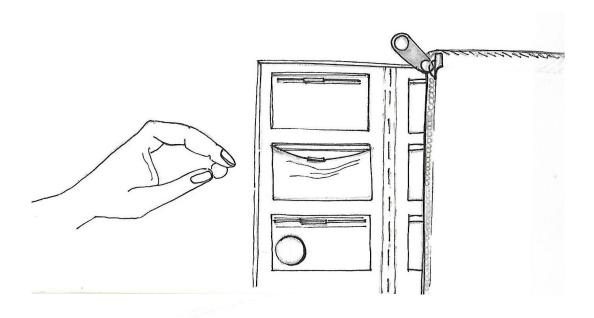
The product has to be feasible and friendly for all the people of different ages from 17 years and above.

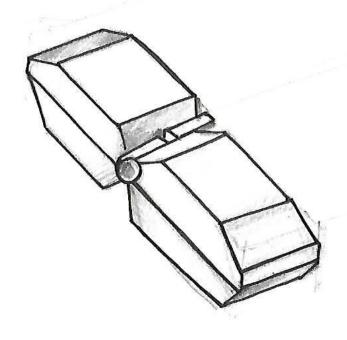
Governed by the standards of medical association

The packaging should be easy to operate.

The product has to meet the demand of the local context at the same time posses the universal needs.

# **Final product**





## **Understanding context**

**Menstrual Charts** 

Lok Biradari has initiated developement at social level by training a group of people from different villages about health. These people cannot understand the technical books and brochures. Acertain knowledge has to be imparted to them by preparing study aid with heir context. This shall varry from place to place. Also cultural aspects of the place has to be noted and only the information that is needed in no offensive way has to be communicated to them. It should not be complicated and calculative.

The knowlegde of reproduction has to be communicated to the villagers as more number of kids (above 5) and yet expecting a baby is a high risk mother. Safe period of coitus needs to be communicated to them for the safety of the mother.

They should be aware of their last menstrual cycle in the case of pregnancy.

## **Design problem**

#### Menstrual charts

#### **Statement**:

the design problem is to design a teaching aid for health workers and to explain to the patients as well.

#### **Objectives**:

the objectives of the delivery table has to be:

- 1. understanding the information of menstrual.
- 2. necessary information contextualy
- 3. Friendly to the users

#### **Brief**:

The task is to design ateaching aid for the health of the madia language.

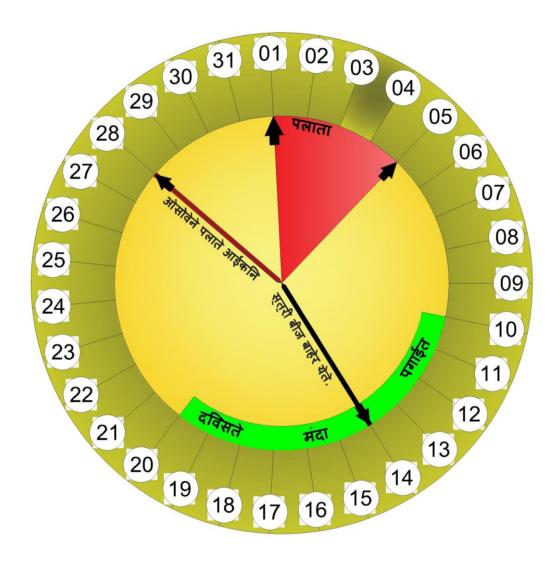
The aid shall be easy to use for the health worker.

The product has to be feasible to a large group in different villages.

Governed by the standards of medical association

The aid shall be contexrual to the local society.

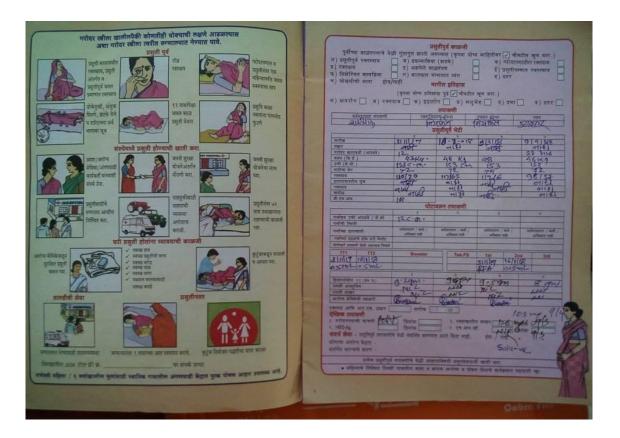
The product has to meet the demand of the local context at the same time posses the universal needs.



Lok Biradari has initiated developement at social level by training a group of people from different villages about health. These people cannot understand the technical books and brochures. Acertain knowledge has to be imparted to them by preparing study aid with heir context. This shall varry from place to place. Also cultural aspects of the place has to be noted and only the information that is needed in no offensive way has to be communicated to them. It should not be complicated and calculative.

The knowlegde of high risk mother, precaution and physical body changes during pregnancy has to be communicated in their context and logical ability. Several times the common language understood elsewhere may not be the same. For example: a picture of abortion mother bleeding and the child outside might be assumed to be the picture where the child is hurt, while a diagram depicting the context way of abortion (roots solution etc) might be more appropriate.

They should also feel that these pictures depict us and are likely diseases that we can suffer rather then alien.



## **Design problem**

#### Book graphics

#### **Statement**:

the design problem is to design graphics for a booklet for health worker and the patients, contextually.

#### **Objectives**:

the objectives of the delivery table has to be:

- 1. locals should be able to relate themselves to the graphics on the booklet.
- 2. should be able to understand the information
- 3. it has to create awarness and pecautions in the minds of people.

#### **Brief**:

The task is to design ateaching aid for the health of the madia language.

The aid shall be easy to use for the health worker.

The product has to be feasible to a large group in different villages.

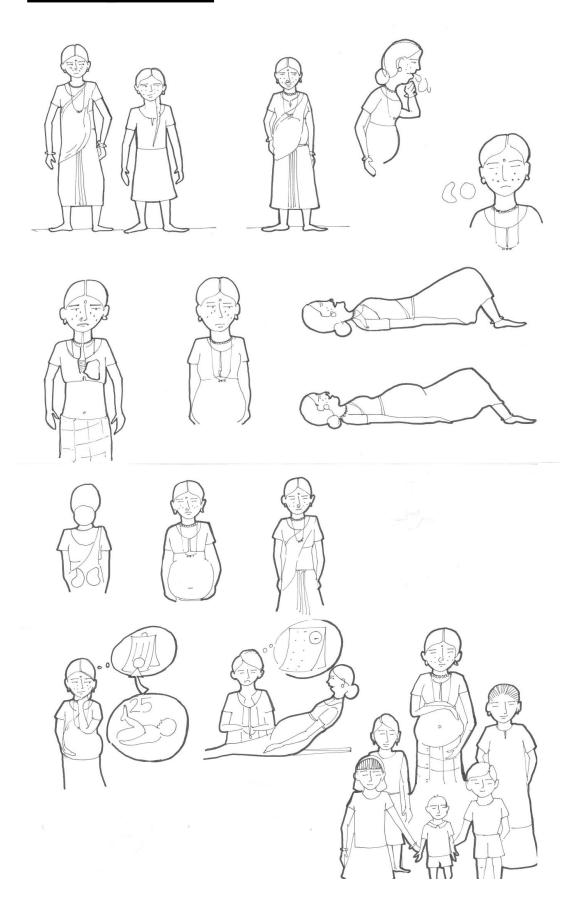
Governed by the standards of medical association.

The aid shall be contexrual to the local society.

The locals should be able to relate themselves to the graphics on the book.

The product has to meet the demand of the local context at the same time posses the universal needs.

# **Final product**



## References

- D.C. Dutta's textbook of obstetrics- Hiralala konal
- A Book for midwives