

**STUDY TO IDENTIFY UTILIZATION OF DIGITAL WEIGHING  
MACHINE AND TRAINING NEED ASSESSMENT AMONG  
ANGANWADI WORKERS IN DISTRICT BHARUCH, GUJARAT**

**Dissertation  
At  
ICDS Department, Bharuch, Gujarat  
(Integrated Child Development Services Society Bharuch)**

**By  
Tuhina Verma**

**Under the guidance of  
Dr. Barun Kanjilal**

**MBA Hospital & Health Management  
2013–15**

  
**Institute of Health Management Research  
Jaipur  
2015**

**TO WHOMSOEVER MAY CONCERN**

This is to certify that Dr. Tuhina Verma student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at Department of Women and Child Development, Gujarat from 9<sup>th</sup> March, 2015 to 10<sup>th</sup> May, 2015.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



Col. Dr. Ashok Kaushik  
Dean, Academics and Student Affairs  
The IIHMR University, Jaipur  
Jaipur



Prof. Barun Kanjilal  
Professor  
The IIHMR University,



**Mala H. Khimani**  
**Programme Officer ICDS**



સંકલિત બાળ વિકાસ સેવા યોજના  
મહિલા અને બાળ વિકાસ વિભાગ  
ગુજરાત સરકાર

ICDS Branch,  
District Panchayat Bharuch  
B/H State Bank of India,  
Station Road,  
Bharuch - 392001  
Phone : 02642 - 260966  
E-mail : dpcnutri.bharuch@gmail.com

The Certificate is awarded to

**Dr.Tuhina Verma**

In Recognition of having successfully completed her internship at

**I.C.D.S. Department, Bharuch, Gujarat**

And has successfully completed his project on

"A study to identify actual utilization of digital weighing machine in comparison to Salter Scale and assessment of Training Need to increase utilization of digital weighing machine in Bharuch District, Gujraat."

She came across as a committed, sincere and diligent person who has a strong drive and zeal for learning.

We wish her all the best for future endeavours.

**Date** 14/05/15

**Mala H. Khimani**  
**Programme Officer ICDS**  
**Distict Panchayat Bharuch**

**CERTIFICATE BY SCHOLAR**

This is to certify that the dissertation titled "A study to identify utilization of digital weighing machine and training need assessment among Anganwadi workers in District Bharuch, Gujarat" and submitted by Dr. Tuhina Verma, Enrollment No. IIHMR/PGDHM/2013-15/1518 under the supervision of Prof. Barun Kanjilal for award of MBA Hospital and Health Management of the university carried out during the period from 9<sup>th</sup> March, 2015 to 10<sup>th</sup> May, 2015 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

*Tuhina Verma.*

Signature

## **Abstract**

**Introduction:** Growth Monitoring is one of the most essential features of ICDS program. It is also backbone of the method of identifying mal nourished children. We follow WHO growth chart for monitoring of nutrition status of the child, but if recorded weight is not reliable or the weighing technique is faulty then the risk of missing malnourished children will be high. As DPC Nutrition, it is my responsibility to make sure that the weighing method and weighing instrument should be reliable. To confirm the knowledge of AWWs for weighing machine and to increase the utilization of the same by assessing training need, I am trying to accelerate the accuracy of identifying mal nourished child.

**Background of Study:** Weighing is the technique which plays critically essential role in the decision of nutrition status of the child. Now, in new era of technology we all are promoting digital weighing machines as the new tool for weighing. In a broad sense this study focuses on the actual utilization of distributed digital weighing scales and the problems occurring in its usage.

**Objectives of Study:** The key objective of the study was to identify the level of utilization of digital weighing machines, knowledge assessment of AWWs for the weighing scale utilization and assessment of training need of AWWs.

**Methods:** Descriptive Cross sectional study with convenient sampling was undertaken. Structured questionnaires were prepared addressing the objectives of the study and face-face interviews with AWWs and mothers were conducted.

**Results:** AWW's education level, only 19percent are graduates. Of the remaining workers, 15percent workers are 8<sup>th</sup> passed, 37percent are 10<sup>th</sup> passed and 25percent were 12<sup>th</sup> passed. Out of all, maximum 25.30 percent anganwadi workers had 5-10 years of experience, 17.30 percent workers had 30-35 years of experience. Around 1.5 percent of AWWs had experience of 35-45 year of experience. In spite of better availability of Digital Weighing Scale, Utilization of Salter scale was more. Because of lack of refresher training and guidance, AWWs were not using DWM as major tool to weigh child. As they don't use machine for long time, so they tend to forget proper method of weighing.

**Conclusion:** In Bharuch District, number of experience AWWs is high but at the same time there was more number of AWWs who were maximum secondary educated. It had been found that they find it difficult to work on DWM and they find Salter comparatively easy. Its maintenance was also very low as compare to DWM. Due to electricity problem in villages, they found it difficult to charge the machine at the time of use. By looking at their educational background and interest, a less complicated procedure is needed for better weight monitoring. As an alternative to Nutrition Counselor Volunteer can given the responsibility of weighing children by DWM.

**Key Words:** Anganwadi workers, Digital Weighing Machine, Salter Scale.

## **Acknowledgement**

**"Talent wins games, but teamwork and intelligence wins championships."**

I would express my gratitude and respectful regards to Prof. Barun Kanjilal, IHMR, Jaipur, my mentor for the summer dissertation program. He has been instrumental in helping me shape this study in a desirable way. I thank him for his able guidance and useful suggestions, which helped me in completing the project work. He was the biggest motivational factor behind my work.

I would like to express our gratitude to Mrs Malaben Khimani, Program Officer, ICDS Society, Jilla Panchayat Bharuch for giving me the opportunity to have this summer training experience and undergoing the process of learning at ICDS Gujraat. I thank her for all the trust and faith that she posed on me and I only hope that I have been able to live up to her expectations. Her guidance and support was helpful in enhancing my work.

I would like to thank CDPOs and Supervisors of Bharuch District for their constant support and guidance. I am thankful to the entire staff of ICDS department for their support and co-operation.

I wish to thank my Block Coordinators for making it possible to do the survey and fill questionnaires in really hectic schedule. It was a dream to complete

the project without support of them. I feel fortunate that I have team of hardworking individuals.

I would also like to thank my institution and faculty members for enlightening me with all the subjective knowledge so that I can apply it on my project.

Finally, I would like to thank almighty God for allowing me to complete my project. Last but most importantly my sincere gratitude to my beloved parents for their blessings.

# **Contents**

|    | Contents                       | Page Number |
|----|--------------------------------|-------------|
| 1  | List of tables                 | viii        |
| 2  | List of figures                | xi          |
| 3  | Abbreviations                  | x           |
| 4  | Title Of study                 | xi          |
| 5  | Introduction to the Study      | 1           |
| 6  | Background of District Bharuch | 4           |
| 7  | Review of literature           | 5           |
| 8  | Rationale for the Study        | 7           |
| 9  | Research Question              | 8           |
| 10 | Objectives                     | 8           |
| 11 | Methodology                    | 8           |
| 12 | Study Design                   | 8           |
| 13 | Study Area                     | 8           |
| 14 | Study Participants             | 8           |
| 15 | Tools applied                  | 9           |
| 16 | Data Collection                | 9           |
| 17 | Data Analysis                  | 9           |
| 18 | Ethical Consideration          | 9           |
| 19 | Finding and Analysis           | 10          |
| 20 | Conclusion                     | 19          |
| 21 | Suggestions                    | 21          |
| 22 | References                     | 22          |

|    |          |    |
|----|----------|----|
| 23 | Appendix | 23 |
|----|----------|----|

### **List of Tables**

| Sr No | Name of Table                                                     | Page Number |
|-------|-------------------------------------------------------------------|-------------|
| 2.1   | Demographic profile of Bhrauch                                    | 4           |
| 3.4   | Comparison of Salter, Balance Beam and Adult Bench Weighing Scale | 6           |
| 10.4  | AWWs Training History                                             | 13          |
| 10.7  | Knowledge of AWWs regarding Digital Weighing Scale                | 15          |

List of figures

| <b>Sr. No</b> | <b>Name of Figure</b>                                     | <b>Page Number</b> |
|---------------|-----------------------------------------------------------|--------------------|
| 10.1.1        | Age Distribution of AWWs                                  | 10                 |
| 10.1.2        | Education Level of AWWs                                   | 11                 |
| 10.1.2        | Experience of AWWs                                        | 11                 |
| 10.2          | Knowledge of AWWs regarding WHO growth Standards.         | 12                 |
| 10.3          | Availability and utilization of Various Weighing Machines | 12                 |
| 10.6          | Usage of DWM                                              | 14                 |
| 10.7          | Reasons behind underutilization of DWM                    | 14                 |
| 10.9          | Knowledge of AWWs regarding commands of DWM.              | 16                 |
| 10.10         | Reasons behind preference of particular weighing machine  | 17                 |

## **Abbreviations**

|        |                                          |
|--------|------------------------------------------|
| AWW    | Anganwadi worker                         |
| AWC    | Anganwadi Center                         |
| AWH    | Anganwadi Helper                         |
| DPC    | District Program Coordinator             |
| DWM    | Digital Weighing Machine                 |
| GM     | Growth Monitoring                        |
| ICDS   | Integrated Child Development Services    |
| ISI    | Indian Standard Institute                |
| NCV    | Nutrition Counseling Volunteer           |
| NFHS   | National Family Health Survey            |
| SNP    | Supplementary Nutrition Program          |
| WHO    | World Health Organization                |
| UNICEF | United Nations Children's Education Fund |

# **DISSERTATION**

## **Title of the study**

“A study to identify utilization of digital weighing machine and training need assessment among Anganwadi workers in District Bharuch, Gujarat.”

## **1. Introduction of the Study**

ICDS program is the most unique and largest program addressing Early Childhood Development. One of its objectives is “to improve the nutritional and health status of children in the age-group 0-6 years”. To target this objective of the program, strategy of growth monitoring is followed in which AWW consistently monitor the growth of the child. AWW is the most important pillar of ICDS program. She is in direct and regular touch with the community. She is also the connecting thread between government and the people.

To monitor the growth of children ICDS follows “WHO – Growth Chart”, in which weight for age of child is monitored. So, weight becomes one of the imperative factors. WHO growth chart is divided by 3 zones contains 3 colors. First zone is Green zone (healthy child), second is Yellow Zone (moderately mal nourished child) and third is Red zone (severely mal nourished child). A slight variation in actual weight of the child due to any reason can lead to gap in actual number of mal nourished children and identified number of mal nourished children.

ICDS services provide supplementary nutrition to the children age 0-6 years in Supplementary Nutrition Program. SNP for children of age 0-6 contains following schemes:

1. Balbhog Yojana: It is energy dense micronutrient fortified extruded blended food. It is provided as THR to the children of age 6 months to 6 years. Each packet weighs 500 gram. For the age group of 6 months to 3 years, Healthy Child receives 7 packets per month as Balbhog, while Mal nourished children receives 10 packets of bal bhog. For the age group of 3 years to 6 years underweight children are provided 4 packets of bal bhog per month.

2. **Demonstrative Feeding or Nidarshak Bhojan:** To increase consumption of SN among children Demonstrative feeding is given to the children of age group 6 months to 3 years at AWC by their parent/guardian in the morning. Children of age 6 months to 1 year are given “raab’ ( in semi liquid form) and children of age 1 to 3 years are given sukhdi which is prepared by mixing jaggry to THR – balbhog. This session also include counseling of mothers regarding nutritional requirements of child.
3. **Breakfast of SHGs:** Hot cooked breakfast in the morning is provided to the children of 3years to 6 years by “matru mandal” or “sakhi mandal” group in the village. This encourages community participation and maintains quality of food.
4. **Hot cooked afternoon meal:** Fresh hot cooked meal was prepared by AWW and AWHs and provided to 3-6 years children at AWCs. Meal with protein, tuver dal, chana dal, soya flakes is incorporated in cyclic menu of AWCs to make it more nutritious. Fund to buy ration is provided to AWW to buy spices and vegetables. Rice, oil and wheat is provided by government.
5. **Third Meal or Triju Bhojan :** Laddus are given as carry away meal to the severely under weight children of age 3 to 6 years. ( children of yellow and red zone as per WHO growth chart)
6. **Doodh Sanjivani Yojana:** 100 ml of flavored, double pasteurized milk is provide twice a week to the children of age 1-6 years living in tribal area.
7. **Fruits through Matru Mandal :** Twice a week ( Monday and thusday), fruits are provided to the children of age 3 to 6 years at AWCs. A provision of Rs.10/- per month per child is made under State budget.
8. **INCC:** Ghanisht Poshan Abhiyan

## 9. Gradation of AWCs

Types of SNP are as follows;

- 1) Children in age group of 0-6 months: Contains early initiation of breast feeding (within one hour of birth) and exclusive breast-feeding for children for the first 6 months.
- 2) Children in age group of 6 months - 3 years: Contains THR (take home ration).
- 3) Children in age group of 3 years – 6 years: contains serving of hot cooked meal in AWCs and mini AWCs. Child in this age group is not able to consume 500 cal in one sitting, so we appreciate more than one meal to child in the center. Also morning snack in form of milk/ banana/egg/seasonal fruits/micronutrient fortified food is also given.

ICDS provide food to children as per their health need. There is different food menu for a healthy children and different menu for malnourished children. So if we fail to identify that correct nutritional status of the child, s/he will not be able to get the right food for her/him.

Method and techniques are constantly improving with time to ensure the accuracy of weighing. The instruments commonly used in ICDS program for weighing of children are Round weighing scale, Salter weighing scale and Digital weighing scale. To guarantee the exact weight of child and to involve current technology in weighing, digital weighing machine was introduced in AWCs few years back. But it has been observed during my field visit that there are issues related to utilization and knowledge of digital weighing scale.

Hence, in this study I am checking the availability and condition of Digital Weighing Machine in AWCs. I will also assess knowledge level of AWWs regarding digital weighing scale and try to find out the current utilization of machine. During this study I will also try to find out the ways to increase utilization and efficiency of AWWs to use DWM.

## **2. District Profile: BHARUCH**

**Bharuch** is a district in the southern part of the Gujarat peninsula on the west coast of state of Gujarat.

### **Demographic Profile of the District**

| <b>Characteristic</b>                   | <b>Rural</b>        | <b>Urban</b>        |
|-----------------------------------------|---------------------|---------------------|
| <b>Actual Population</b>                | <b>1,551,019</b>    | <b>1,370,656</b>    |
| Male                                    | 805,707             | 713,676             |
| Female                                  | 745,312             | 656,980             |
| <b>Sex Ratio (Per 1000)</b>             | <b>925</b>          | <b>921</b>          |
| Child Sex Ratio (0-6 Age)               | 920                 | 918                 |
| <b>Average Literacy</b>                 | <b>81.51</b>        | <b>74.41</b>        |
| Male Literacy                           | 87.45               | 82.98               |
| Female Literacy                         | 75.09               | 65.11               |
| <b>Total Child Population (0-6 Age)</b> | <b>179,103</b>      | <b>194,025</b>      |
| Male Population (0-6 Age)               | 93,265              | 101,176             |
| Female Population (0-6 Age)             | 85,838              | 92,849              |
| <b>Literates</b>                        | <b>1,118,276</b>    | <b>875,519</b>      |
| Male Literates                          | 623,047             | 508,240             |
| Female Literates                        | 495,229             | 367,279             |
| <b>Child Proportion (0-6 Age)</b>       | <b>11.55percent</b> | <b>14.16percent</b> |
| Boys Proportion (0-6 Age)               | 11.58percent        | 14.18percent        |
| Girls Proportion (0-6 Age)              | 11.52percent        | 14.13percent        |

**Table 2.1:** Demographic Profile of District Bharuch.

### 3. Review of Literature

**3.1 Indian Journal of Paediatrics** has stated that "The development of the growth monitoring module and manual is a big step in improving the quality of training for ICDS workers." It was also mentioned in the journal that the AWWs positively affects the nutrition status of village or rural women. Growth monitoring provides them an easy method to monitor the growth of child and to identify the fault in growth.<sup>1</sup>

**3.2** In the article on "**Newly developed WHO growth standards: Implications for demographic surveys and child health programs**" they have calculated the level of underweight children by using WHO growth monitoring as well as National center for health statistics standards. They have found out that, in WHO growth monitoring number of severely malnourished was more and they suggested that in WHO standards must be used in all the nutrition-related indicators in demographic surveys like NFHS.<sup>2</sup>

**3.3** In contrast to the benefits of Growth Monitoring, I have found a study on "**Is routine growth monitoring effective? A systematic review of trials**". In this study in first trial they detected no difference in nutritional outcomes between the two groups of children. Another trial compared growth monitoring with and without a standard chart, measuring maternal knowledge of women about nutrition. It showed small numerical differences in test scores. So they concluded that there wasn't much difference in nutritional status if children with GM and without GM.<sup>3</sup>

**3.4** In the study of "**Weighing scales for young infants: a survey of relief workers**", Chole Angood differentiated various scales.<sup>4</sup>

| <b>Criteria</b> | <b>Hanging / Salter scale</b> | <b>Balance Beam</b> | <b>Adult Bench</b> |
|-----------------|-------------------------------|---------------------|--------------------|
| Precision       | Low                           | Medium              | Low                |
| Function        | Low                           | Medium              | Medium             |
| Portability     | High                          | High                | Medium             |
| Durability      | Medium                        | High                | High               |
| Cost            | Low                           | Medium              | Medium             |

**Table 3.4:** Comparison of Salter, Balance Beam and Adult Bench Weighing Scale

**3.5** The Digital weighing machines that are being used by AWWs of ICDS are supplied by Apple Weighinfra limited company. The model number is AT40 and it can weigh up to 40 kg. It has accuracy of class 3 and it is ISI marked.<sup>5</sup>

#### 4. Rationale

Mal nutrition among Indian children is like a black spot on the surface of India Health System. To deal with mal nutrition, it is very important that we know the level of nutrition in Children. Continuous Growth Monitoring provides us the opportunity to monitor the level of nutrition in children. In Integrated Child Development Services- Gujraat, WHO growth chart is used for the same purpose. Growth monitoring is one of the most essential functions of Integrated Child Development Program. For growth monitoring we use weight for age chart as per WHO standards. Weight is one of factors that decide the zone for the child - Green, Red and Yellow. If there is fault in the weighing of the child than it is very hazardous for the system because in that case we don't know the actual weight of child and his/her level of nutrition.

Few years back UNICEF distributed Salter scales in AWCs for better monitoring of child weight. But now Gujraat ICDS has adopted the Digital weighing machine for growth monitoring at AWCS. In order to get the accurate weight of child, digital weighing machine was distributed to the AWCs. Training of AWWs was also conducted to ensure correct and maximum utilization of the product, but I observed during my field visits that most of the AWCs are not utilizing the digital weighing machine. They are using the old Salter weighing machine to weigh the child. In spite of regular training and repairing of machines, observed utilization of digital weighing machine is very low.

So in this study I am trying to find out the actual level of utilization of digital and Salter weighing machines, the reason behind observed underutilization of digital weighing machine along with the training need analysis for digital weighing machine. Also this study can suggest the ways to increase the utilization of digital weighing machine as Digital weighing machine technologically offers a very accurate and sophisticated way of measuring weigh.

## **5. Research Questions**

1. What is the level of availability of Digital and Salter machines in AWCs?
2. What is the level of knowledge of AWW for usage of DWM?
3. What are the reasons behind observed underutilization and how can we increase the utilization of Digital weighing machine in AWCs?
4. What is the training need of AWWs in the district for DWM?

## **6. Objectives**

1. To evaluate the level of availability and condition of Digital and Salter machines in AWCs.
2. To assess knowledge level of AWWs for usage of DWM.
3. To find out the level of utilization and reasons behind observed underutilization of Digital weighing machine in AWCs.
4. To assess the Training Need for AWWs to increase utilization of Digital weighing machine.

## **7. Methodology:**

*8.1 Study Period:* Study period of the study was 9<sup>th</sup> march to 10<sup>th</sup> May.

*8.2 Study Design-* Design of the study was Descriptive cross sectional study.

*8.3 Study Area-* Area selected for the study was Bharuch district, Gujarat.

*8.4 Study Participants:* Anganwadi Workers and Mothers of children registered in Anganwadi Center.

### *8.5 Sampling Method – Non probability / Purposive Sampling*

From every block of District Bharuch 10percent AWCs were identified on the basis of reach and transportation availability. Total number of blocks was 10. Total number of anganwadi centers was 1374. Total anganwadi covered 138. Sample collected from 2 mothers from every AWC. That makes it total sample size of 138 AWWs and 276 mothers that was 414.

*8.6 Data collection Tool:* Semi Structured Questionnaire schedule was prepared for AWW and mothers. It contained questions regarding demographic profile and knowledge of AWW. Mother's questionnaire contained questions regarding demography and knowledge of weighing scale used to weigh their child.

*8.7 Data collection Method-* Semi-structured questionnaire through face to face interviews

*8.8 Data Analysis Plan -* Data collected was cross checked for any incomplete or partial filling. Using Excel collected data will then be edited, coded, tabulated, organized according to requirement of study. For qualitative data analysis key words were identified and analyzed.

## **9. Ethical Considerations**

Informed consent was taken before starting the interview. If anyone disagrees to become part of the data collection process they were be forced by any means. Prior information was given before visiting any health facility. Names of Interviewees were not taken in the research process and in the final presentation.

## 10. Finding and Analysis:

### 10.1 Demographic profile of AWWs

#### 10.1.1 Age and Education Level Of AWWs:

This section is presenting the age distribution and education level of AWWs in the sample population. In the figure 10.1.1 of age distribution of AWWs, 35 percent of selected AWWs fall in the age group of 40-50 years followed by 31 percent under the age group of 30-40 years. Only 13.7 percent AWWs are in age group of 20-30 years.

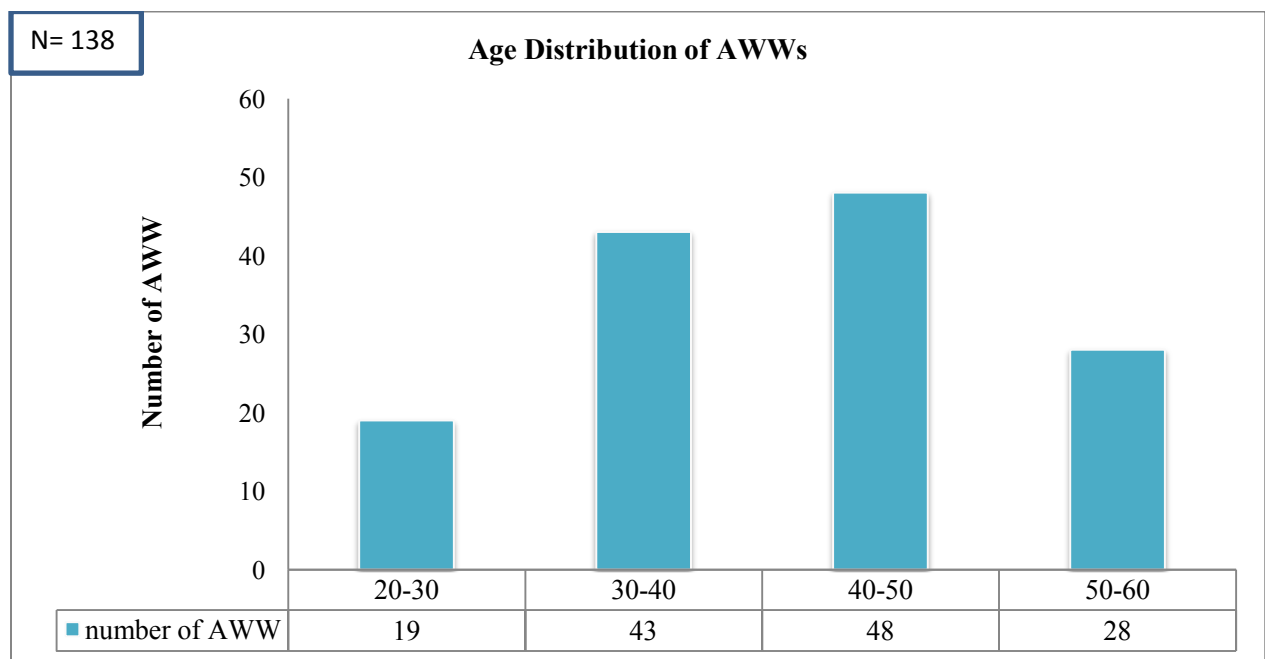


Figure 10.1.1: Age Distribution of AWWs

Education plays a very important role in technical abilities of the individual. So by collecting information on education level of AWWs, their technical approach to the DWM can be assessed.

As observed in figure number 10.1.2, AWW's education level, only 19 percent were graduates. Of the remaining workers, 15percent workers were 8<sup>th</sup> passed, 37 percent were 10<sup>th</sup> passed and 25percent were 12<sup>th</sup> passed.

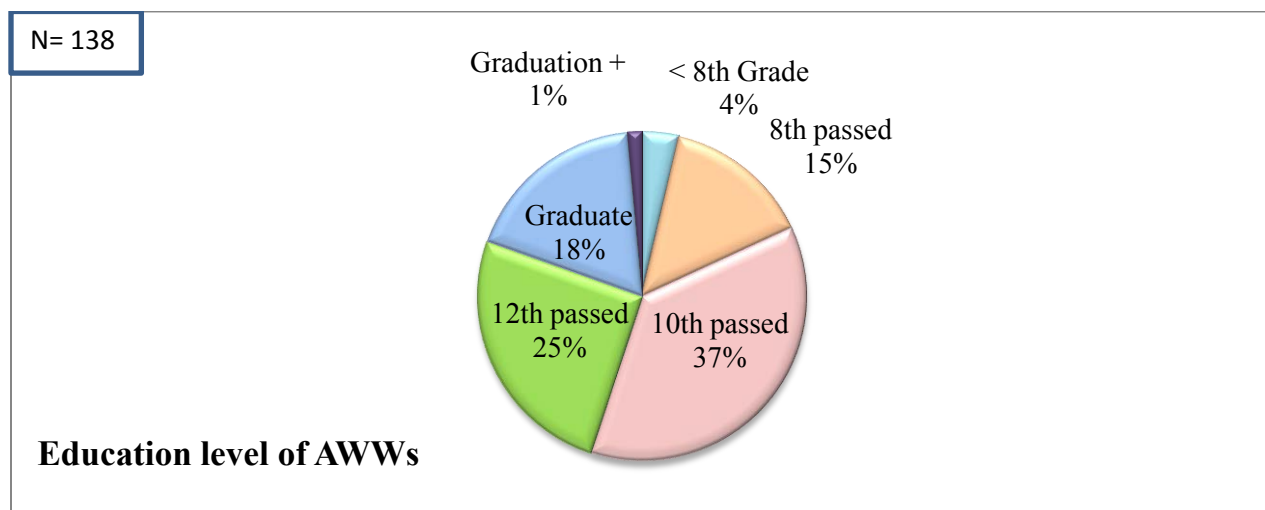


Figure 10.1.2: Education level of AWWs.

#### 10.1.2 Work Experience of AWWs

As explained in figure 10.3 out of all, maximum 25.30 percent anganwadi workers had 5-10 years of experience, 17.30 percent workers had 30-35 years of experience. Around 1.5 percent of AWWs had experience of 35-45 year of experience.

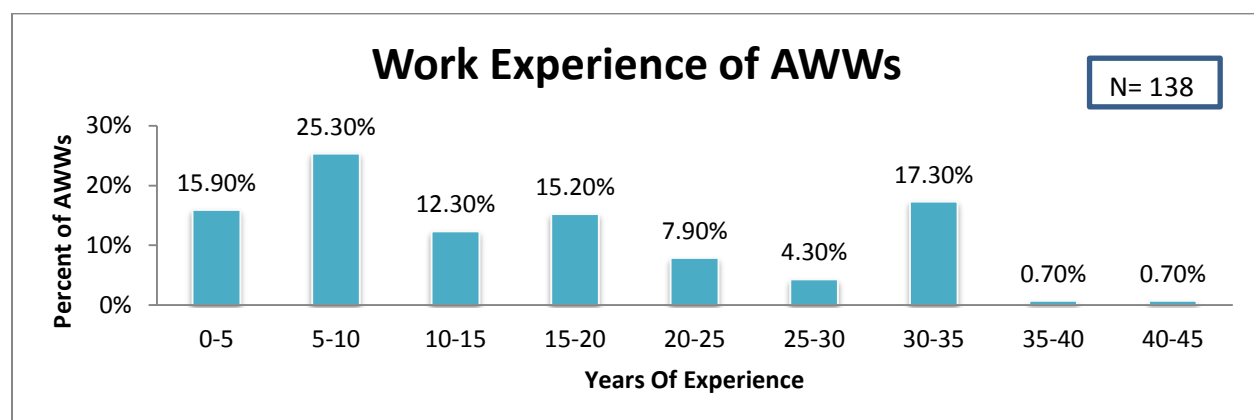


Figure 10.1.2: Work Experience of AWWs.

## 10.2 Knowledge of WHO Growth Standard in AWWs

Figure 10.4 presents, Out of all 86 percent of AWWs were well aware of weight for age standards of growth monitoring. When question regarding WHO growth monitoring is asked to AWWs, they were very well aware of it.

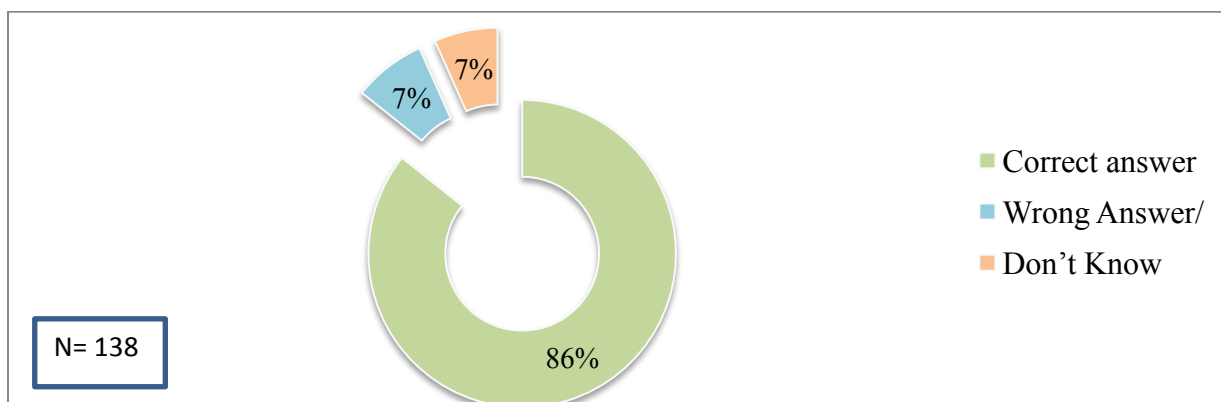


Figure 10.2: Knowledge of AWWs regarding WHO growth Standards.

## 10.3 Availability and Utilization of Weighing Scales in Chosen Population

Figure 10.3 represents status of availability and utilization of various scales.

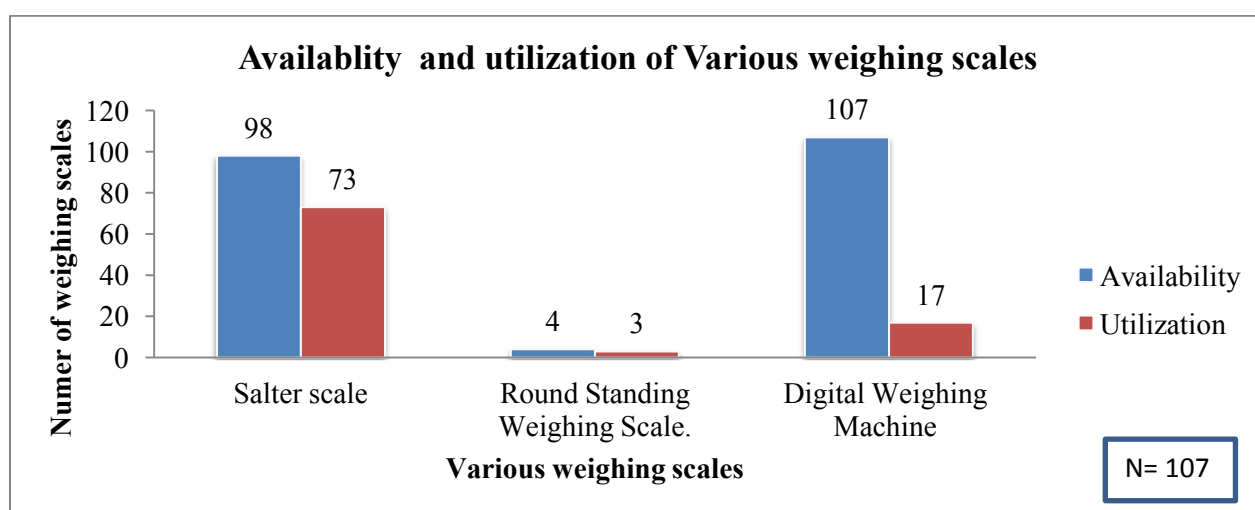


Figure 10.3: Availability and utilization of Various Weighing Machines

Figure 10.3 explains the maximum availability of Salter scale in the district, followed by the availability of Digital weighing scale. When we focus on the ratio of availability and utilization of the weighing scales, it is clear that the utilization of Salter scale was higher than digital weighing scale.

#### 10.4 Number of AWWs who received training previously

|   |                                                 |     |
|---|-------------------------------------------------|-----|
| 1 | Number of AWWs who received training previously | 107 |
| 2 | Number of AWWs who were not trained previously  | 31  |

Table 10.4: AWWs Training History.

As shown in table 10.4, majority of the AWWs had received training, but still there was less utilization of digital weighing machine. Out of trained AWWs only 49.5percent said that they know how to operate a DWM. Rest of the AWW either forgot how to use it or found it difficult to operate. Complaint on improper working of DWM was also found.

#### 10.5 Preference of Language for training

As expected, 100 percent of AWWs were comfortable in training in Gujarati language. This was the language they were comfortable with for reading, writing and listening. In previous training also they have got guideline for usage of DWM, and it was in Gujarati language. But the machine had English Font on it, which causes problem in reading to AWWs. They found it difficult and easily become disinterested in learning because of English language on the machine.

## 10.6 Frequency of usage of weighing machine

As shown in figure10.6, 13 percent of the total trained AWWs were using Digital weighing machine regularly. Rest of them did not use it regularly as main tool for weighing.

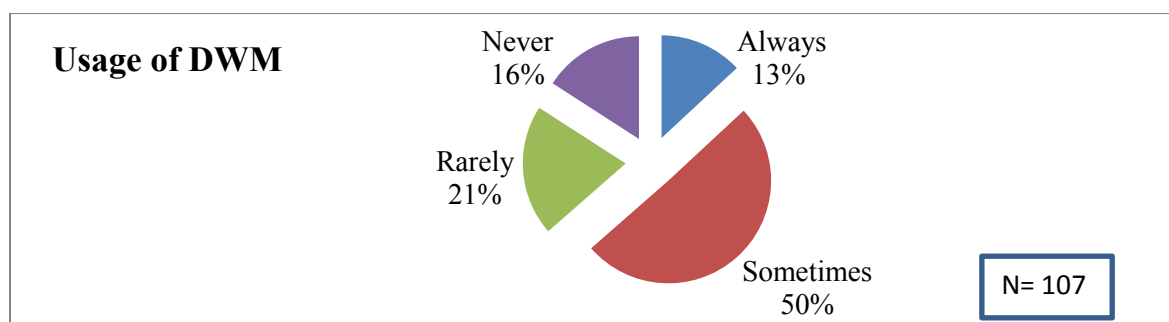


Figure 10.6: Usage of DWM

According to figure10.7, the most common reason given by 38 percent of the workers behind less use or infrequent use of weighing scale was that machine did not work properly. 22 percent and 18 percent responded that they did not know how to use and Salter scale was easy respectively. Around 14 percent said that training given to them was not sufficient. 8 percent AWWs said the reason was lack of charging facility.

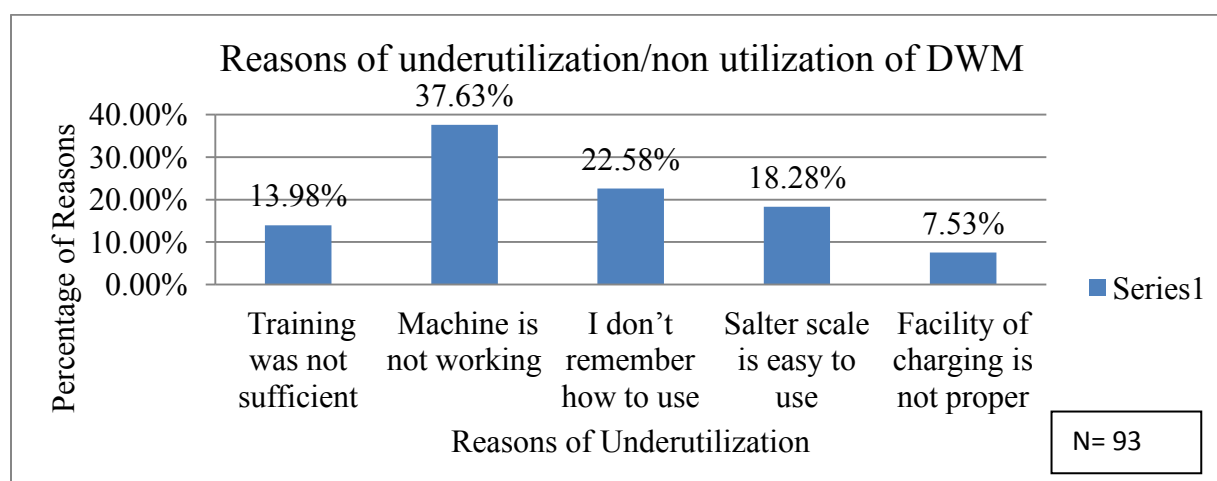


Figure 10.7: Reasons behind underutilization/non utilization of DWM.

Anganwadi Workers who said that training was not sufficient were asked for the ideas by which we can improve in the digital weighing machine training. As pointed by AWWs, training should be organized for sufficient time so that each worker can have an opportunity to learn the working of DWM. There should be less number of people in the batch and frequent refresher trainings were advised by workers.

#### 10.7 Knowledge of AWW regarding Digital Weighing Scale

| S. no | Questions                                                   | Correct Answer | Wrong Answer |
|-------|-------------------------------------------------------------|----------------|--------------|
| 1     | What is the highest limit of this digital weighing machine? | 56%            | 44%          |
| 2     | What are the 3 zones of growth monitoring?                  | 85%            | 15%          |
| 3     | In which side we put charger?                               | 77%            | 23%          |

**Table 10.7:** Knowledge of AWWs regarding Digital Weighing Scale

As presented in table number 10.7, Out of all, 44 percent of AWWs were not aware about the highest limit of digital weighing machine while 85 per cent of AWWs were aware about 3 zones of growth monitoring. When asked about the side in which we put charger 77 percent AWWs gave correct answer.

### 10.8 Knowledge of AWWs regarding Functions of DWM.

To assess the knowledge level of AWWs questions related to function of the buttons of DWM. Also questions related to functioning of machine were included in the questionnaire to know that if they were aware about the proper functioning of it or not.

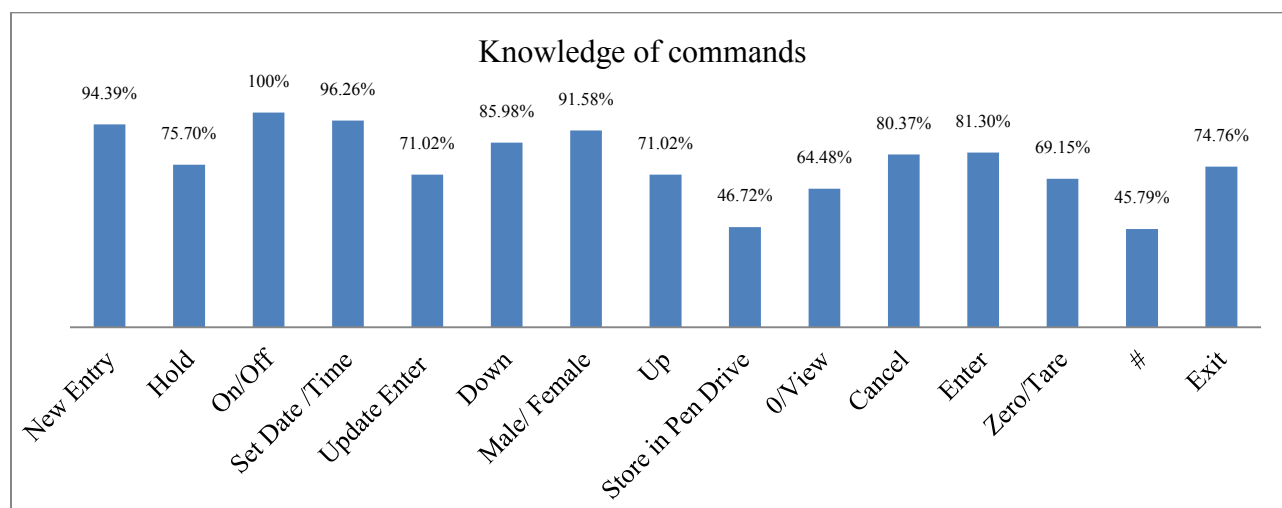


Figure 10.8.1: Knowledge of AWWs regarding commands of DWM.

In figure 10.8.1, most of the AWWs were not aware about the functioning of “store in pen drive”, also awareness about “#” sign was only 45.79 percent.

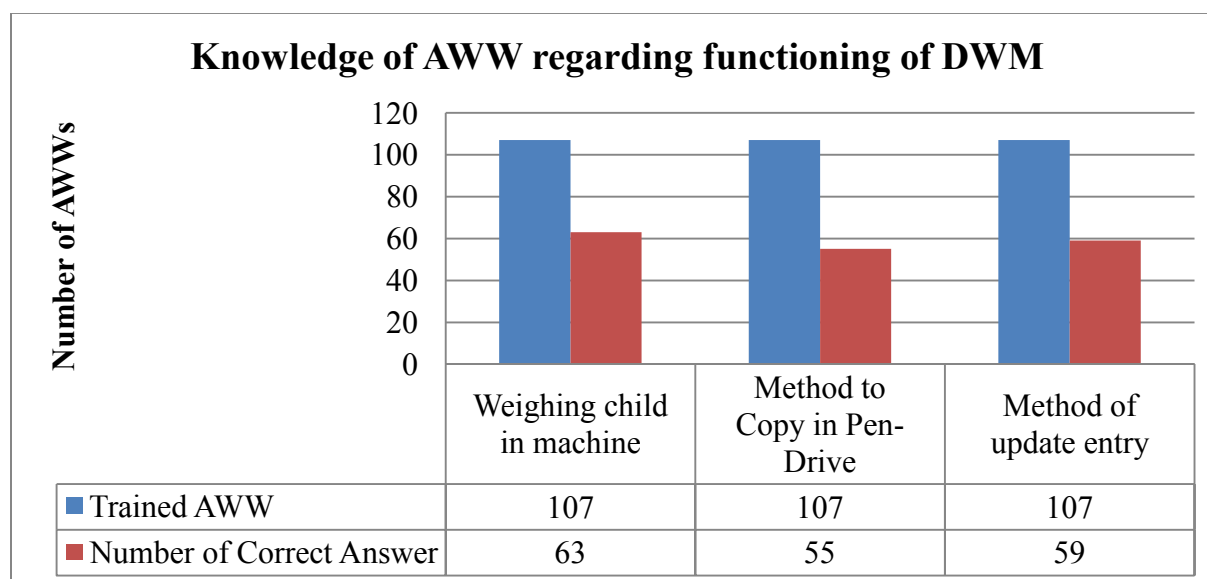
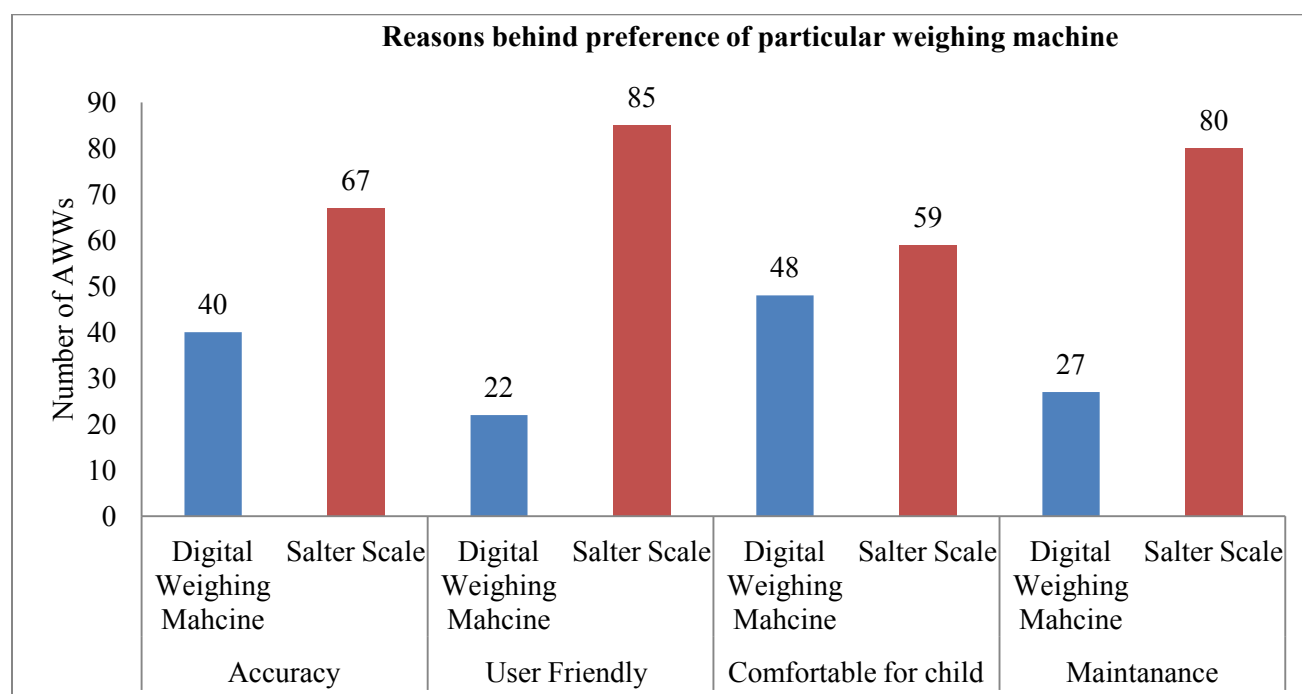


Figure: 1.8.2: Knowledge of AWWs regarding functioning of DWM

Figure 10.8.2 represents that when asked about functioning of DWM, around 60 percent of AWWs knew the correct method to weigh the child on digital weighing machine. Only 50percent of AWWs were aware about how to put information on pen drive while 55 percent of trained AWWs knew method to update the entry.

### 10.9 Preference between Salter and Digital Weighing Machine



**Figure 10.9:** Reasons behind preference of particular weighing machine

As per table 10.9 out of all, only 37percent of trained AWWs said that results of DWM are accurate while only 21 percent of AWWs find it user friendly. Forty Five per cent of AWWs said that it is comfortable for child and only 25 percent said that it is easy to maintain Digital weighing scale.

Seventy percent AWWs preferred Salter scale over Digital weighing machine.

#### **10.10 Validation of usage of Digital Weighing Machine**

Validation of usage of DWM was done by asking questions to mothers of the beneficiaries. Every mother accepted that her child was weighted in the past. 93 percent of mother said that their child was weighted after birth. Seventy three per cent of mothers said that currently AWW is using Salter scale to weigh her child and only five percent were aware about digital weighing machine. Rests of the mothers were not aware about the type of weighing scale used for their children.

## **11 Conclusion:**

I started my study with the aim to improve in quality of weighing of children because it was incredibly important that each and every child was weighed properly and accurately. It was responsibility of AWW to weigh the child in regular interval. So it was my responsibility to monitor that weighing was accurate and easy as well.

Observing the age distribution of AWWs, Bharuch had AWWs of age 20 to 60 years. Most of the AWWs were in the loop of 30 to 50 years. Taking education level along with age of AWWs, it had seen that majority of the AWWs were educated till school level. Few AWWs attained education level of graduation or post graduation program. By clubbing information of years of experience with the age and education of AWWs, we can say that, young and less experienced AWWs were technically more sound and because of their education background, they were able to learn technical advancement of weighing scales while old AWWs were highly experienced but their education level was low. Also they were less receptive towards new technologies.

Comparing availability and utilization of digital and Salter scale, Digital weighing scale was present in selected AWCs, while Salter scale was unavailable in few centers. In spite of more number of availability of digital weighing scale, utilization of Salter scale was more. Reasons for such discrepancy was most of the DWM were non functional or the AWWs had forgotten how to use the machine. Other than in few cases AWWs were not satisfied with the training or there were problem of electricity in the village to charge the machine. Workers who said that previous training was not sufficient were asked for suggestions to improve training.

The common suggestions were batch should be small; everyone must get a chance to learn by practical etc.

While assessing the knowledge level of AWWs for DWM, most of them were not aware about the highest limit of the machine. They were not aware about technical aspects of the machine.

AWWs preferred Salter weighing scale over Digital Weighing Scale on the basis of Accuracy, user- friendliness, Easy Maintenance and comfort for child. Also after probing those AWWs to pin point the reasons for preference, most common reasons were – Salter is easy to understand, procedure of weighing is short and handy, Chances of error are very less and it is very cheap in maintenance. AWWs that prefer DWM over Salter were satisfied with the easy data entry, proper marking and recording of all the details and even find it very convenient.

## **12    Suggestions**

- 1) Change in Font of machine, from English to Gujarati fonts.
- 2) Continuous monitoring and follow up of AWWs for the weighing technique so that faults can be corrected on the spot.
- 3) For other workers, a less complicated model of Digital Weighing machine should be brought.
- 4) Proper re-orientation of Digital Weighing Machine at SEJA level or Block level of AWWs required. This can be done by providing training at each level, training of supervisors, block coordinators and CDPOs at block level who can further train the AWWs.
- 5) NCV worker who are highly educated and technology friendly as compared to AWWs can be given charge to weigh the child on DWM.
- 6) A safety box can be provided to the centers to keep the machine safe.

## 13   Reference

1. N. V. Lalitha, Judith Standley. Training workers and supervisors in growth monitoring: looking at ICDS. *The Indian Journal of Pediatrics* 1988; 55(1): .  
<http://link.springer.com/article/10.1007/BF02810389> (accessed 10 April 2015).
2. P. R. Deshmukh, A. R. Dongre, S.S. Gupta, B.S. Garg. Newly developed WHO growth standards: Implications for demographic surveys and child health programs. *The Indian Journal of Pediatrics* 2007; 74(11): . <http://link.springer.com/article/10.1007/s12098-007-0181-0> (accessed 8 April 2015).
3. Paul Garnera, Ratana Panpanich, Stuart Logan. Is routine growth monitoring effective? A systematic review of trials. *Archives of disease in childhood* 1999; (): .  
<http://adc.bmj.com/content/82/3/197.short> (accessed 10 april 2015).
4. Chloe Angood. *Weighing scales for young infants: a survey of relief workers.*  
<http://www.enonline.net/fex/29/weighingscales> (accessed 8 april 2015).
5. Reference text sheet from Apple Weighinfra Limited. Electronic Baby Weighing Scales With Child Growth Chart.

## **14 Annexure**

### **8.1 Questionnaire of AWWs:**

Questionnaire for AanganWadi Worker

Date

Block/ Sector / AWC:

General Instructions:

- Ask the question as per the sequence and instructions.
- Read the sectional instruction carefully and follow them.
- Use pencil to fill the form.
- Encircle the answer number and write the answer as it is AWW replies to the open ended questions.
- Do not overwrite.

#### **SECTION A: Introduction**

| s.no. | Questions                                                                                                              | Answers                                                                                                                                              |
|-------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1A    | What is your name?                                                                                                     |                                                                                                                                                      |
| 1B    | What is your age?                                                                                                      |                                                                                                                                                      |
| 2.    | What is your Qualification?                                                                                            | 1. >8 <sup>th</sup> Grade<br>2. 8 <sup>th</sup> passed<br>3. 10 <sup>th</sup> passed<br>4. 12 <sup>th</sup> passed<br>5. Graduate<br>6. Graduation + |
| 3.    | What is your joining Year?                                                                                             |                                                                                                                                                      |
| 4.    | What are the WHO standards for growth monitoring?<br>( Answer = weight for age<br>Put “tick” on the suitable option)   | 1. Correct Answer<br>2. Wrong Answer<br>3. Don’t know                                                                                                |
| 5.    | Which machine do you have for weighing?<br>(Instruction: More than one answer is allowed.)                             | 1. Salter scale<br>2. Round Standing Weighing Scale.<br>3. Digital Weighing Machine<br>4. others _____                                               |
| 6     | Have you attended the training for Digital Machine?                                                                    | 1. Yes<br>2. No ( End of Interview)                                                                                                                  |
| 7     | Which machine do you use regularly for weighing?<br>(Instruction: In case answer is only 3 skip to question number 12) | 1. Salter scale ( Go to section B)<br>2. Round Standing Weighing Scale. ( Go to section B)<br>3. Digital Weighing Machine                            |

|  |  |                                      |
|--|--|--------------------------------------|
|  |  | (Go to section C)<br>4. others _____ |
|--|--|--------------------------------------|

Section B: Assessment of usage of Salter/Round Weighing Machine

| s.no. | Questions                                                                                                                             | Answers         |
|-------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 8     | Do you know how to use digital weighing machine?                                                                                      | 1. Yes<br>2. No |
| 9     | Why do you use Salter/Round scale instead of being trained for digital weighing machine?<br><br>( Probe the AWW for maximum response) |                 |

SECTION C: Assessment of Training Need for AWWs

| s.no. | Questions                                                                                                                    | Answers                                                                                                                                                                     |
|-------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11    | Digital Machine Training was given in which language?                                                                        | 1. Gujrati<br>2. Hindi<br>3. English<br>4. Other                                                                                                                            |
| 12A   | Have you received any written or printed material after training for reference?                                              | 1. Yes ( Go to 12 B)<br>2. No ( Go to Q 13)                                                                                                                                 |
| 12B   | The received material was in which language)                                                                                 | 1. Gujrati<br>2. Hindi<br>3. English<br>4. Other                                                                                                                            |
| 13    | Which language is preferred by you?                                                                                          | 1. Gujrati<br>2. Hindi<br>3. English<br>4. Other                                                                                                                            |
| 14    | How often do you use Digital weighing machine for weighing?                                                                  | 1. Always ( go to section D)<br>2. Sometimes ( go to Q15 A)<br>3. Rarely ( go to Q 15 A)<br>4. Never ( go to Q 15 A)                                                        |
| 15A   | Why don't you use digital machine for monitoring always?<br>( Instruction : if answer is 1-----> 15 B<br>2,3,4,5,6 -----> 16 | 1. Training is not sufficient<br>2. Machine is not working<br>3. I don't know how to use<br>4. Salter scale is easy to use<br>5. It needs to get repaired<br>6. Other _____ |
| 15B   | What additions are required to improve training?                                                                             |                                                                                                                                                                             |

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

Section D: Assessment of Knowledge of AWW regarding Digital weighing machine:

16. Number of correct answers = / 3

(Instructions: Answers are mentioned with the questions. Ask questions and tick mark if AWW answer is right and cross if her answer is wrong.)

|   | Question                                                    | Answer                | Mark |
|---|-------------------------------------------------------------|-----------------------|------|
| A | What is the highest limit of this digital weighing machine? | 40 Kilogram           |      |
| B | What are the 3 zones of growth monitoring?                  | Green, Yellow and Red |      |
| C | In which side we put charger?                               | Dabi Baju             |      |

17. Tell the purpose of these signs:

(Instruction: Answer is mentioned just in front of the "sign"; do not disclose the answer to the interviewee. Put tick mark for correct answer and cross for wrong answer)

| Sr no | Sign               | Meaning                                                                                                                                                                                        | Tick/Cross |
|-------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1     | New Entry          | To make entry if new child in the list.                                                                                                                                                        |            |
| 2     | Hold               | After taking the weight of child hold key is used to stabilize the digits on the screen.<br>To release the hold, press the hold button one more time. Screen will show H if we press hold key. |            |
| 3     | On/Off             | To on/off weighing machine.                                                                                                                                                                    |            |
| 4     | Set Date /Time     | To set date and time.                                                                                                                                                                          |            |
| 5     | Update Enter       | To update the previously made ID of child                                                                                                                                                      |            |
| 6     | Down               | To go one digit back/down in order to make new entry or to correct entry or to set the date and time.                                                                                          |            |
| 7     | Male/ Female       | To fill gender of the child during new entry.                                                                                                                                                  |            |
| 8     | Up                 | To go one digit forward/up in order to make new entry or to correct entry or to set the date and time.                                                                                         |            |
| 9     | Store in Pen Drive | To store the data of weighing machine in the pen drive. If the pen drive is not detectable it will show error.                                                                                 |            |
| 10    | 0/View             | To view the saved data.                                                                                                                                                                        |            |
| 11    | Cancel             | To cancel the wrong entry.                                                                                                                                                                     |            |
| 12    | Enter              | To make entry/ to go from one step to other.                                                                                                                                                   |            |
| 13    | Zero/Tare          | To set the weight on Zero.                                                                                                                                                                     |            |

|    |      |                            |  |
|----|------|----------------------------|--|
| 14 | #    | No use                     |  |
| 15 | Exit | To come to the main window |  |

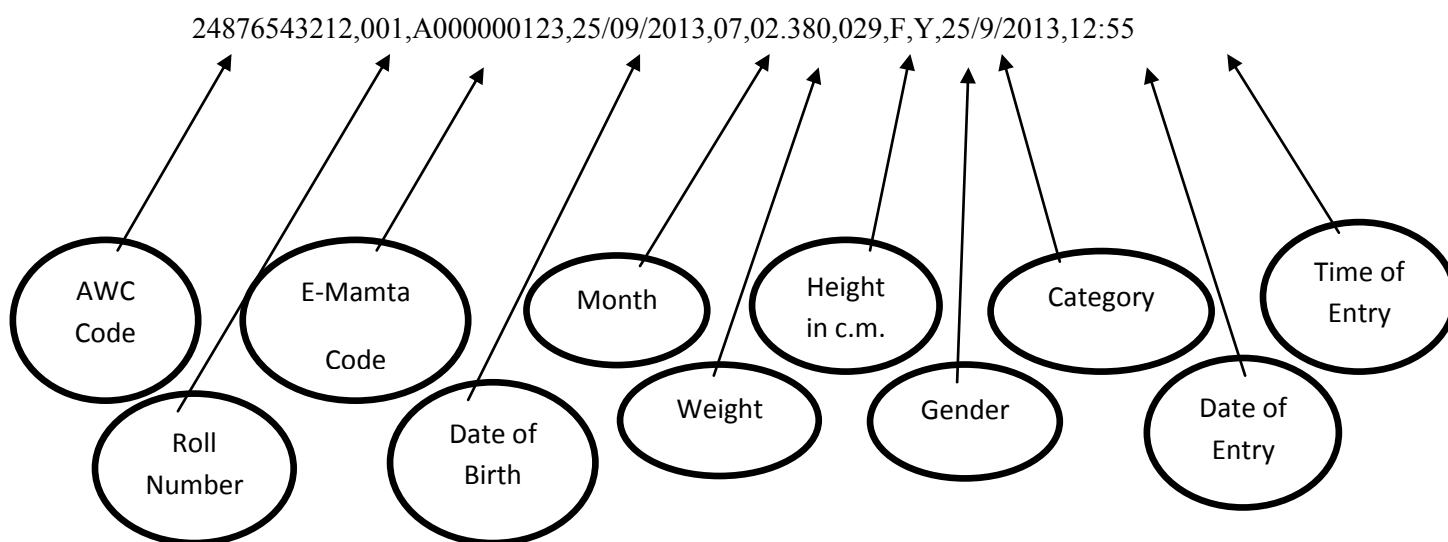
18. Steps known by AWW = / 3

Instruction: Put Tick mark on the steps AWW does.

|   | Facility                    | Instruction                                                        | Mark |
|---|-----------------------------|--------------------------------------------------------------------|------|
| A | Working of Weighing Machine | Make sure that the display is showing "0"                          |      |
|   |                             | Put the child on the Pan                                           |      |
|   |                             | When the weight is unaltered, press "hold" key                     |      |
|   |                             | Now put away the child from the Pan                                |      |
|   |                             | Fill the required details as Age, Gender and height                |      |
| B | Method to Copy in Pen-Drive | Put pen drive in the daabi (left) side portal.                     |      |
|   |                             | Press "store in Pen-Drive" key                                     |      |
|   |                             | If the pen drive is not detectable so it will show error           |      |
|   |                             | Put the duration for which you want the data copied                |      |
| C | Method of update entry      | Press the Update entry key                                         |      |
|   |                             | Fill 3 digit roll number of child using number 0-9                 |      |
|   |                             | Now press enter                                                    |      |
|   |                             | It will show 2 options, press enter to save and cancel to go back. |      |

19. What you understand by this:

Instruction: Hide the answers mentioned below in circles. After she answers correctly, put tick mark on the correct ones.



19. Number of meaning of digits known by AWW= / 11.

Section E: Assessment of Preference between Salter Scale and Digital Weighing Machine

**20.** Ask AWW to choose one machine which is better for each characteristic

|                 | Accuracy | User Friendly | Comfortable for child | Maintenance |
|-----------------|----------|---------------|-----------------------|-------------|
| Digital Machine |          |               |                       |             |
| Salter Scale    |          |               |                       |             |

**21.** Which weighing machine you prefer among the two?

( instructions: Put tick mark on preference and write the reasons of it)

|   | Weighing Machine                                                                                                                                              | Preference | Reasons                                                                                                                                                                                                                                                                                         |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <div style="border: 2px solid black; padding: 10px; width: fit-content; margin: 0 auto;">                     Digital Weighing Machine                 </div> |            | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| 2 | <div style="text-align: center;">  <p>Salter Scale</p> </div>                |            | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |

~~~~~ End Of Interview ~~~~~

## 8.2 Questionnaire for mother

A study to identify the actual utilization of digital weighing machine as compare to Salter Scale and assessment of Training Need to increase utilization of digital weighing machine in Bharuch District, Gujraat.

Questionnaire for Mother

Date

Block/ Sector / AWC :

### Introduction

| s.no. | Questions                                                                                                                           | Answers                                  |
|-------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1     | What is your name?                                                                                                                  |                                          |
| 2     | Have you child weighted any time?                                                                                                   | 1. Yes<br>2. No                          |
| 3     | Is S/he weighted after birth?                                                                                                       | 1. Yes<br>2. No                          |
| 4     | Which machine is utilized when your child weighed?<br>(Explain the machine to mother by means of action and description of machine) | 1. Digital<br>2. Salter<br>3. Other_____ |
| 5     | Do you know the weight of your child, if yes so what it is?                                                                         | 1. Yes (_____ kg)<br>2. No               |
| 6.    | Do you know your child is mal nourished or not?                                                                                     | 1. Yes<br>2. No                          |

~~~~~ End Of Interview ~~~~~