

|   |  |   |
|---|--|---|
|  <p>ISSN NO. 2320-5407</p> | <p>Journal Homepage: - <a href="http://www.journalijar.com">www.journalijar.com</a></p> <p><b>INTERNATIONAL JOURNAL OF<br/>ADVANCED RESEARCH (IJAR)</b></p> <p>Article DOI: 10.21474/IJAR01/12051<br/>DOI URL: <a href="http://dx.doi.org/10.21474/IJAR01/12051">http://dx.doi.org/10.21474/IJAR01/12051</a></p> |  <p>INTERNATIONAL JOURNAL OF<br/>ADVANCED RESEARCH (IJAR)<br/>ISSN 2320-5407</p> <p>Journal Homepage: <a href="http://www.journalijar.com">http://www.journalijar.com</a><br/>Journal DOI: 10.21474/IJAR01</p> |
|---|--|---|

### RESEARCH ARTICLE

#### ESTIMATION OF WORKLOAD OF ANMS AND CALCULATING THE REQUIRED NUMBER OF ANMS IN IMPLEMENTING MOTHER CHILD TRACKING SYSTEM IN NORTHERN INDIA: WISN METHODOLOGY

Monika<sup>1</sup>, Sukhpal Kaur<sup>2</sup> and Amarjeet Singh<sup>3</sup>

1. Tutor, National Institute of Nursing Education, PGIMER, Chandigarh.
2. Lecturer, National Institute of Nursing Education, PGIMER, Chandigarh.
3. Professor and Head, School of Public Health, PGIMER, Chandigarh.

#### Manuscript Info

##### Manuscript History

Received: 15 September 2020  
Final Accepted: 18 October 2020  
Published: November 2020

##### Key words:-

MCTS(Mother Child Tracking System), ANM(Auxiliary Nurse Midwife), WISN(Workload indicators of staffing needs)

#### Abstract

Mother child tracking system(MCTS) is an information system for tracking maternal and child health beneficiaries in India's public health system, and improving service delivery planning and outcomes. Auxiliary nurse midwife(ANM) has broad spectrum of responsibilities to play in under National health mission. In the present study the workload of ANM was estimated using standard methodology WISN(Workload indicators of staffing needs) given by WHO. Quantitative research approach with time-motion research design was chosen for the study. Workload was estimated in 21 civil dispensaries of Chandigarh, India. The workload was found to be high in 9 dispensaries. It was very high in 4 dispensaries where ANMs spent their total annual working time in doing activities under MCTS and they are left with no time for doing activities under other national health programs.

Copy Right, IJAR, 2020,. All rights reserved.

#### Introduction:-

Government of India launched Mother Child Tracking System(MCTS) in 2009 and currently covers all states in India. MCTS is an information system for tracking maternal and child health beneficiaries in India's public health system, and improving service delivery planning and outcomes. In 2005, the National Rural Health Mission (NRHM) was launched, which focused on improvising primary health care in villages and further increased the importance of the ANM as a link between health services and the community<sup>1</sup>.

ANMs are auxiliary workers employed by the district administration to occupy the lowest rung of the public health care delivery system. It is through the activities of the ANMs that people perceive the health policies and strategies and health planners at upper level gain insights into the health problems and needs of rural people<sup>2</sup>. ANMs are either regular permanent staffs working directly under state government as first ANMs or contractual staffs (After the launch of NRHM) working as second ANMs<sup>3</sup>. Indian Public Health Standards (IPHS) was setup stating various essential and desirable services to be delivered at sub-centres in 2005<sup>4</sup>.

Over a period of time, different national health programmes have resulted in increased workload of ANMs. There are many studies on ANMs and their workload. But very few studies have been reported on workload calculation based on standardized methodology like WISN(Workload Indicators of Staffing Needs) toolkit<sup>5</sup>. With time, the workload of ANMs has gained attention of many researchers, who have taken efforts to assess the workload of ANMs with their

**Corresponding Author:- Dr Monika**

Address:- Tutor, National Institute of Nursing Education, PGIMER, Chandigarh.

methodologies. Different researchers have used different methods to assess the workload and performance of ANMs. As per literature time motion and work sampling have been widely used to calculate workload of health workers.

The present study was hence taken up to determine workload of ANM using standard methodology given by WHO and thereby calculating number of ANMs required in implementing mother child tracking system. None of the study has been reported from Northern India on workload calculation of ANMs based on standard methodology like WISN.

### **Objectives:-**

1. To estimate the annual workload of ANMs in implementing MCTS in Chandigarh.
2. To estimate the annual total time of ANMs spent in implementing MCTS and the annual total time left for other National health programs.
3. To calculate the required number of ANMs required in implementing MCTS.

### **Materials and Methods:-**

A quantitative approach was chosen to estimate the annual workload of ANMs with time-motion research design. The WISN toolkit by WHO was used for data collection. Various procedures related to ANMs work activities were for developing activity standards based on IPHS guidelines in English after extensive review of literature, personal experience, consultation with the peers, guides and nursing experts. The study was conducted in 21 allopathic civil dispensaries of Chandigarh. The permission to conduct study was sought from DFWO of Chandigarh. Calculations of Workload analysis was done according to WISN toolkit.

#### **Procedure of data collection**

The workload was determined using WISN toolkit. The WISN method calculates the number of health workers per cadre, based on health facility workload. The steps of WISN methodology are given as follows:

##### **1. Choosing the staff category:**

The first step in WISN methodology is choosing the staff category for WISN development. In the present study, the staff category was ANM working in dispensary of Dhanas, Chandigarh.

##### **2. Estimate available working time:**

The next step in WISN methodology is to estimate available working time, means how much time an ANM has available for doing her work. The available working time can be expressed in days or hours per year. To calculate the Available Working Time (AWT), the total days of off were added and that sum was deducted from total possible working days. The available working time of an ANM was found to be 1686 hours /year.

##### **3. Listing workload components of ANM:**

There are three workload components of ANMs as follows:

- i **Main health service activities of ANM:** Activities which are carried out by all the ANMs include ANC-I, II, III, IV, weight recording and height recording of adult, BP recording, TT vaccination of pregnant women, post natal care, neonatal care, weight recording and height recording of baby, immunization of child, Cu-T insertion and removal etc. Regular statistics regarding total ANC visits, post natal visit, immunization etc. in a year was collected from them on these activities.
- ii **Important support activities:** Activities carried out by all ANM but regular statistics are not collected on them such as record maintenance, anganwadi visit, home visit/survey, pulse polio immunization, travel time in the field and outreach immunization clinic,
- iii **Other activities:** Activities carried out by certain but not all ANMs such as monthly meeting, attending continuing education, reporting of data but regular statistics are not collected on them.

**4. Developing Activity Standards:** After that activity standard regarding procedures of ANMs' routine work was developed.

#### **Procedure of developing Activity Standards:**

Out of the three ANMs posted in Civil Dispensary Dhanas (Dispensary selected for Pilot study) one ANM was selected to develop activity standards using purposive sampling technique. An informed written consent was taken from selected ANM. She was well informed about purposes of study. All the procedures related to ANMs' routine

work based on IPHA standards were framed and content validity was established by taking opinions from experts from field of nursing and public health. The selected ANM was demonstrated each and every procedure. After that, three observations were made to record time in completing each procedure using stop watch. The average was taken from three values.

**5. Calculating Standard Workload:** For calculating standard workload the data related to MCTS of the year 2016-17 was obtained from each dispensary. The standard workload for each activity was calculated using formula given in WISN user's manual.

**6. Calculating Allowance factors:** The allowance factors were calculated using formula given in WISN user's manual.

**7. Calculating Required Number of ANMs at Dispensary:** After doing all the calculations, the required number of ANMs at each dispensary was calculated.

## Results:-

The workload of ANMs was calculated according to WISN methodology. The steps of calculation are as follows:

- 1. Choosing the staff category for WISN development:** The staff category is ANMs working in civil dispensaries of Chandigarh.
- 2. Estimating Available working Time**

The next step in WISN methodology is to determine how much time an ANM has available for doing her work. ANMs are entitled to avail annual leave and day off on public holidays(PH). This section deals with calculating the time which the ANM actually has available for doing her work. The available working time can be expressed in days or hours per year.

First, record the number of possible working days in a year. One calendar year consists of 52 weeks. The possible working days in a year are calculated by multiplying 52 weeks by the number of days in a week which an ANM works. Table-1 shows calculations of possible working days in a year for ANMs. ANM works six days a week has 312 possible annual working days.

Next, calculate the number of days in which the ANM does not work. ANM is entitled to avail 12 casual leaves(CL) and 2 restricted holidays(RH) per year. They also have 17 days' time off on public holidays as per Chandigarh administration.

To calculate the available working time (AWT), add together the total days of off and deduct that sum from total possible working days (Table 1).

**Table 1:-** Possible working days in a year for ANMs.

| Health worker | Weeks in a year | Working days in a week | Possible working days in a year | Day offs per year          | AWT (days/year)    | AWT (Hours/year)                     |
|---------------|-----------------|------------------------|---------------------------------|----------------------------|--------------------|--------------------------------------|
| ANM           | 52              | 6                      | 52X6 days per week=312days      | (12CL+2RH+17PH)=<br>31days | 312-31=<br>281days | 281x6hours per<br>day= 1686<br>hours |

## 3. Defining workload components and setting activity standards and standard workload

The various workload components of ANMs along with activity standards and standard workload are depicted in table 2. The average time needed to perform various procedures was 40 minutes per patient (Antenatal care procedure-I) and standard workload of 2554; 20 minutes per patient(Antenatal care procedure-II as well as Antenatal care procedure-III) and Standard workload of 5109 for both procedures; 3 minutes per patient (Weight recording of pregnant women) and standard workload of 33720; 2 minutes per patient (height recording of antenatal women) and standard workload of 56200; 6 minutes per patient (BP recording of antenatal women) was and standard workload of 16860; 7 minutes per patient (TT immunization of pregnant women) and standard workload of 15327; 25 minutes per patient (Postnatal care) and standard workload of 4014; 26 minutes per patient

(Neonatal care) and standard workload of 3920; 6 minutes per patient (Weight recording of baby) and standard workload of 16860; 3 minutes per patient (Length recording of baby) and standard workload of 33720; 8 minutes per patient (Immunization of child- Parental) and standard workload of 12969; 3 minutes per patient (Immunization of child- Oral) and standard workload of 33720; 10 minutes per patient (Cu-T insertion and FP counseling) and standard workload of 9917; 8 minutes per patient (Cu-T removal) and standard workload of 12969.

**Table 2:-** Work Components of ANMs along with Activity standards and Standard workload

| S.No. | Main health service activity of ANM                          | Time needed to perform the activity (Minutes/patient) | Standard workload = Available Working Time (Hours) in year/Unit time in hour for activity |
|-------|--|---|---|
| 1.    | Antenatal care(ANC)-I Including health education             | 40 minutes per patient (0.66hour)                     | 2554  |
| 2.    | Antenatal care(ANC)-II Including health education            | 20 minutes per patient(0.33hour)                      | 5109  |
| 3.    | Antenatal care(ANC)- III Including health education          | 20 minutes per patient(0.33hour)                      | 5109  |
| 4.    | Antenatal care(ANC)- IV Including health education           | 20 minutes per patient(0.33hour)                      | 5109  |
| 5.    | Weight recoding of antenatal women                           | 3 minutesper patient(0.05hour)                        | 33720   |
| 6.    | Height recording of antenatal women                          | 2 minutesper patient(0.03hour)                        | 56200   |
| 7.    | BP recording of antenatal women Including health education   | 6 minutesper patient(0.1hour)                         | 16860   |
| 8.    | TT immunization of pregnant women Including health education | 7 minutesper patient(0.11hour)                        | 15327   |
| 9.    | Postnatal care(PNC) Including health education               | 25 minutes per patient(0.42hours)                     | 4014  |
| 10.   | Neonatal care(NNC) Including health education                | 26 minutes per patient(0.43hour)                      | 3920  |
| 11.   | Weight recording of baby                                     | 6 minutesper patient(0.1hour)                         | 16860   |
| 12.   | Length recording of baby                                     | 3 minutesper patient(0.05hour)                        | 33720   |
| 13.   | Immunization of child- parental Including health education   | 8 minutesper patient(0.13hours)                       | 12969   |
| 14.   | Immunization of child- oral Including health education       | 3 minutesper patient(0.05hour)                        | 33720   |
| 15.   | Cu-T insertion and FP counselling                            | 10 minutes per patient(0.17hours)                     | 9917  |
| 16.   | Cu-T removal   | 8 minutesper patient(0.13hours)                       | 12969   |

#### 4.Calculation of Allowance standards of activities of ANMs

Table-3 depicts various important support activities of ANMs along with their allowance standards and % of total annual working time. ANMs spent maximum time in record maintenance with allowance standard of 1.5 hours/day which consumed 25% of their annual working time followed by Home visit/Survey- 6 hours

week(18.5% of annual working time), Travel time in the field-3hours/week(9.3% of annual working time), Polio- National round as well as Sub-National round - 54hours/year each(3.2% of annual working time for both), aanganwadi visit-1 hour/week (3% of their annual working time) and Out-reach immunization clinic- 9hours /year(0.5% of annual working time). ANMs spent 62.7 % of their annual working time in doing important support activities. For doing additional activities, ANMs spent 4 hours /week;1ANM for reporting of data (12.3% of annual working time), 5 hours/month;1 ANM in monthly meeting (3.6 % of annual working time), 2 hours/month;1ANM in indenting (1.4 % of annual working time), 12 hours /year; 3 ANMs in attending continuing education (0.7% of annual working time). ANMs spent 18% of total annual working time for doing additional activities.

**Table 3:-** Allowance standards of activities of ANM in Dispensary.

| S.No. | Important support activities of all ANMs                                       | Allowance standard  | % of total annual working time |
|-------|--|---|--------------------------------|
| 1.    | Record maintenance   | 1.5 hour/day  | 25                             |
| 2.    | Home visit/Survey  | 6hours/week   | 18.5                           |
| 3.    | Travel time in the field   | 3hours/week   | 9.3                            |
| 4.    | Polio(National round)-2 rounds in year each for 3 days (total 6 days/year)     | 54hours/year*   | 3.2                            |
| 5.    | Polio(Sub-National round)-3 rounds in year each for 2days((total 6 days/year)) | 54hours/year*   | 3.2                            |
| 6.    | Aanganwadi visit   | 1 hour/week   | 3                              |
| 7.    | Out-reach immunization clinic  | 3hours/clinic session<br>(3 sessions in year = 9hours/year) | 0.5%                           |
|       | % of total annual working time for important support activities of ANMs        |   | <b>62.7%</b>                   |
|       | Additional activities of ANMs in CD  | Allowance standard  | % of total annual working time |
| 1.    | Reporting of data  | 4 hours/week;1ANM   | 12.3                           |
| 2.    | Monthly meeting  | 5 hours/month;1 ANM   | 3.6                            |
| 3.    | Indenting  | 2 hours/month;1ANM  | 1.4                            |
| 4.    | Attending continuing education   | 12hours/year;3ANM   | 0.7                            |
|       | % of total annual working time for Other activities of ANM                     |   | <b>18%</b>                     |

\*Polio round 9 hours per day(6daysX9=54hours)

#### 5.Calculation of Category Allowance factor and Individual Allowance factors

The category allowance factor(CAF) for important support activities of ANMs was calculated based on allowance standards (Calculations depicted in table-4)and the value of category allowance factor was 2.6 as depicted in Table 4

**Table 4:-** Calculation of Category Allowance factor.

| S. No. | Important support activities of all ANMs                                     | Allowance standard               | Category Allowance standard(CAS) in percentage % of total annual working time | Sum of all CAS percentages | Category Allowance factor(CAF)         |
|--------|--|----------------------------------|---|----------------------------|--|
| 1.     | Record maintenance   | 1.5 hour/day                     | 25  | 62.7                       | CAF=<br>1 divided by<br>1-62.7/100=2.6 |
| 2.     | Aanganwadi visit   | 1 hour/week                      | 3   |                            |  |
| 3.     | Home visit/survey  | 6hours/week                      | 18.5  |                            |  |
| 4.     | Polio(National round)-2 rounds in year each for 3 days (total 6 days/year)   | 54hours/year*                    | 3.2   |                            |  |
| 5.     | Polio(Sub-National round)-3 rounds in year each for 2days(total 6 days/year) | 54hours/year*                    | 3.2   |                            |  |
| 6.     | Travel time in the field   | 3hours/week                      | 9.3   |                            |  |
| 7.     | Out reach immunization clinics   | 3hours/clinic For 3times in year | 0.5   |                            |  |

Table 5 depicts the calculation of individual allowance factor (IAF) for the additional activities of ANMs. The value of IAF was found to be 0.19 (Calculations of IAF are given in table 5).

**Table 5:-** Calculation of Individual allowance factor.

| S.No. | Additional activities of Certain ANM in CD | Allowance standard  | Individual allowance factor(IAF)  | IAF as Whole time equivalent staff(WTE):ANMs |
|-------|--|---------------------|---|--|
| 1.    | Monthly meeting                            | 5hours/month;1 ANM  | 5hoursx12months=60hours/year<br>60 X 1ANM=60<br>60/1686= <b>0.04</b>    | 0.04+0.02+0.12+0.01=<br><b>0.19</b>          |
| 2.    | Attending continuing education             | 12 hours/year; 3ANM | 12hours/year X 3ANMs=36<br>36/1686= <b>0.02</b>                         |  |
| 3.    | Reporting of data                          | 4 hours/week;1ANM   | 4hoursx52weeks=208hours/year<br>208 X 1ANM=208<br>208/1686= <b>0.12</b> |  |
| 4.    | Indenting                                  | 2 hours/month;1ANM  | 2hoursx12months=24hours year<br>24X1ANM=24<br>24/1686= <b>0.01</b>      |  |

#### 6.Determining staff requirements based on WISN

After calculating Category allowance factor and Individual allowance factor, the ANMs required for dispensary was calculated. The number of ANMs required for dispensary was calculated separately for the three different types of activities.

For main service activities: Divide the annual workload of each activity by its respective standard workload. It will give the health workers required for that activity. Add the requirements of all activities together to get total staff requirement for all main service activities. ANMs required for main health service activities, the existing and required ANMs in implementing MCTS, WISN ratio and workload pressure of all the civil dispensaries of Chandigarh are given in table-6. The workload was found to be High in 9 dispensaries (CD-35, CD-33, CD-23, CD-19, CD- Ramdarbar, CD-Halo Majra, CD Sector-52 Kajheri, CD-Kaimbala and CD-Mauli Jagran) with workforce problem of staff shortage. The workload was found to be Normal in 7 dispensaries (CD-38, Dadu Majra Colony, Maloya, CD-42, CD-8, CD- 26, CD-29) and no workload was there in 5 dispensaries (CD-40, CD-56, CD-20, CD- 11 and CD CITCO Colony No.4).

**Table 6:-** Existing and Required Number of ANMs in implementing MCTS at dispensaries of Chandigarh.

| S . No . | Name of CD | ANMs required for main service activities | ANMs required for all service and important support activities= ANMs required for main | Total ANMs required in respective CDs= ANMs required for all service and important suppo | Required Number of ANMs by Rounding up or down of ANM as per WISN calculations | Current number of ANMs | Shortage or excess | Workforce problems | WISN ratio = Current no. of ANMs /Required ANMs | Workload Pressure |
|----------|------------|---|--|--|--|------------------------|--------------------|--------------------|---|-------------------|
|----------|------------|---|--|--|--|------------------------|--------------------|--------------------|---|-------------------|

|             |                                 |                  | service<br>activities X<br>CAF | rt<br>activities +<br>IAF(0.<br>19)* * |   |   |    |                   |             |            |
|-------------|---------------------------------|------------------|--------------------------------|--|---|---|----|-------------------|-------------|------------|
| 1<br>.      | Secto<br>r 38                   | 0<br>.<br>8<br>8 | 2<br>.<br>3                    |  | 3 | 3 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 2<br>.      | Dadu<br>Majr<br>a<br>Colo<br>ny | 1<br>.<br>6      | 4<br>.<br>2                    |  | 4 | 4 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 3<br>.      | Malo<br>ya                      | 1                | 2<br>.<br>6                    |  | 3 | 3 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 4<br>.      | Secto<br>r 40                   | 0<br>.<br>8      | 2<br>.<br>1                    |  | 3 | 4 | +1 | Staff<br>surplus  | 1<br>.<br>3 | None       |
| 5<br>.      | Secto<br>r 42                   | 0<br>.<br>6      | 1<br>.<br>6                    |  | 2 | 2 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 6<br>.      | Secto<br>r 56                   | 1<br>.<br>3      | 3<br>.<br>4                    |  | 4 | 6 | +2 | Staff<br>surplus  | 1<br>.<br>5 | None       |
| 7<br>.      | Secto<br>r 20                   | 1<br>.<br>1      | 2<br>.<br>9                    |  | 3 | 4 | +1 | Staff<br>surplus  | 1<br>.<br>3 | None       |
| 8<br>.      | Secto<br>r 35                   | 0<br>.<br>4      | 1                              |  | 2 | 1 | -1 | Staff<br>Shortage | 0<br>.<br>5 | High       |
| 9<br>.      | Secto<br>r 33                   | 0<br>.<br>8      | 2<br>.<br>1                    |  | 3 | 2 | -1 | Staff<br>Shortage | 0<br>.<br>6 | High       |
| 1<br>0      | Secto<br>r 11                   | 0<br>.<br>4      | 1                              |  | 2 | 3 | +1 | Staff<br>surplus  | 1<br>.<br>5 | None       |
| 1<br>1<br>. | Secto<br>r 23                   | 0<br>.<br>4      | 1                              |  | 2 | 1 | -1 | Staff<br>Shortage | 0<br>.<br>5 | High       |
| 1<br>2<br>. | Secto<br>r 8                    | 0<br>.<br>4      | 1                              |  | 2 | 2 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 1<br>3<br>. | Secto<br>r 26                   | 1<br>.<br>5      | 4                              |  | 4 | 4 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 1<br>4<br>. | Secto<br>r 29                   | 1                | 2<br>.<br>6                    |  | 3 | 3 | 0  | Perfect<br>match  | 1<br>.<br>0 | Norma<br>l |
| 1<br>5<br>. | Secto<br>r 19                   | 0<br>.<br>4      | 1                              |  | 2 | 1 | -1 | Staff<br>Shortage | 0<br>.<br>5 | High       |
| 1<br>6<br>. | Ram<br>darba<br>r<br>Phas       | 2<br>.<br>5      | 6<br>.                         |  | 7 | 6 | -1 | Staff<br>Shortage | 0<br>.<br>8 | High       |

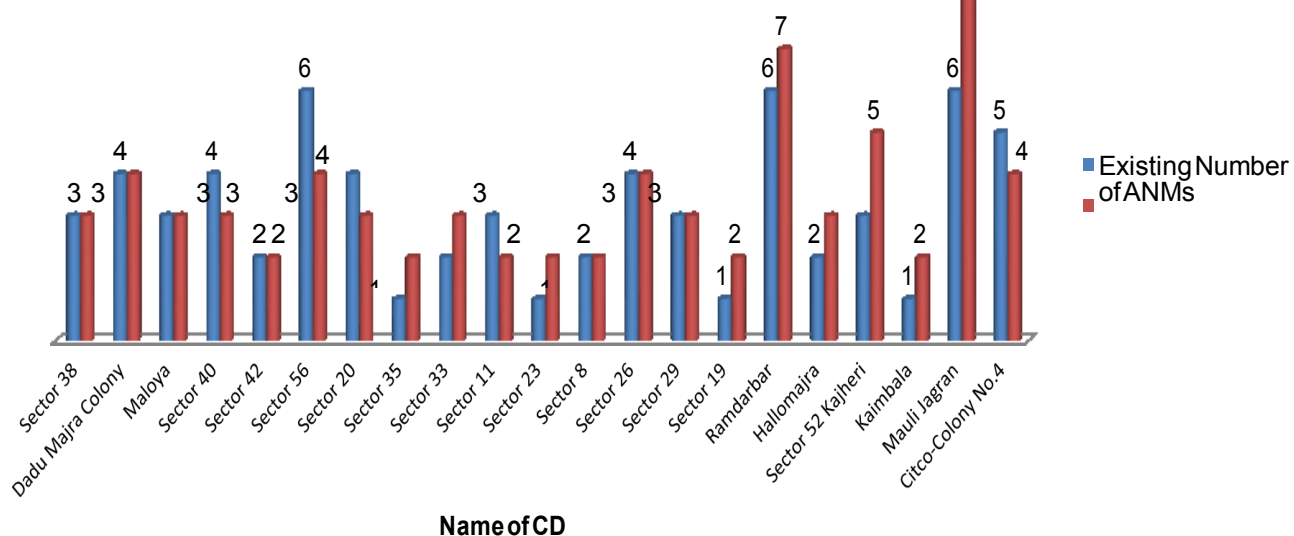
|             |                                 |             |                  |  |        |   |    |                   |             |      |
|-------------|---------------------------------|-------------|------------------|--|--------|---|----|-------------------|-------------|------|
|             | e-2                             |             | 5                |  |        |   |    |                   |             |      |
| 1<br>7<br>. | Hallo<br>Majr<br>a              | 1<br>.<br>2 | 3<br>.<br>1      |  | 3      | 2 | -1 | Staff<br>shortage | 0<br>.<br>6 | High |
| 1<br>8      | Secto<br>r 52<br>Kajh<br>eri    | 1<br>.<br>7 | 4<br>.<br>4      |  | 5      | 3 | -2 | Staff<br>shortage | 0<br>.<br>6 | High |
| 1<br>9      | Kaim<br>bala                    | 0<br>.<br>7 | 1<br>.<br>8      |  | 2      | 1 | -1 | Staff<br>shortage | 0<br>.<br>5 | High |
| 2<br>0<br>. | Maul<br>i<br>Jagra<br>n         | 4<br>.<br>1 | 1<br>0<br>.<br>7 |  | 1<br>1 | 6 | -5 | Staff<br>shortage | 0<br>.<br>5 | High |
| 2<br>1<br>. | CITC<br>O<br>Colo<br>ny<br>No.4 | 1<br>.<br>6 | 4<br>.<br>2      |  | 4      | 5 | +1 | Staff<br>surplus  | 1<br>.<br>2 | None |

\*CAF is kept standard as determined in CD Dhanas=2.6

\*\*IAF is kept standard as determined in CD Dhanas

### Comparison of Existing and Required Number of ANMs at Civil Dispensaries

N=21



**Figure 1:-** Comparison of Existing and Required Number of ANMs for Implementing MCTS in Civil Dispensaries.

Figure 1 depicts the existing and required number of ANMs for implementing MCTS in Civil Dispensaries. In 7 dispensaries, the existing and required number of ANMs was same. In 9 dispensaries, the existing number of ANMs



was less than required number of ANMs indicating high workload pressure. In 5 dispensaries, the existing number of ANMs was more than the required number indicating the surplus number of ANMs in implementing MCTS.

### Examining the result of WISN calculations

For examining the results, the WISN ratio (Table 7) was calculated. WISN ratio of 1 indicates that the number of staff and the workload of a health facility are in balance. The smaller the WISN ratio, the bigger the work pressure. A small WISN ratio shows that the current number of staff is smaller than what is required to cope with the workload. Conversely, a large WISN ratio is evidence of overstaffing in relation to the workload. The WISN ratios of all the dispensaries are given in table 6. The WISN ratio was more than 1 in 5 dispensaries indicating that the ANMs were surplus at dispensaries with workload pressure “None”, and less than 1 in 9 dispensaries indicating shortage of ANMs with workload pressure “High” and it was 1 in 7 dispensaries indicating perfect match of ANMs as required as well as calculated with workload pressure of normal.

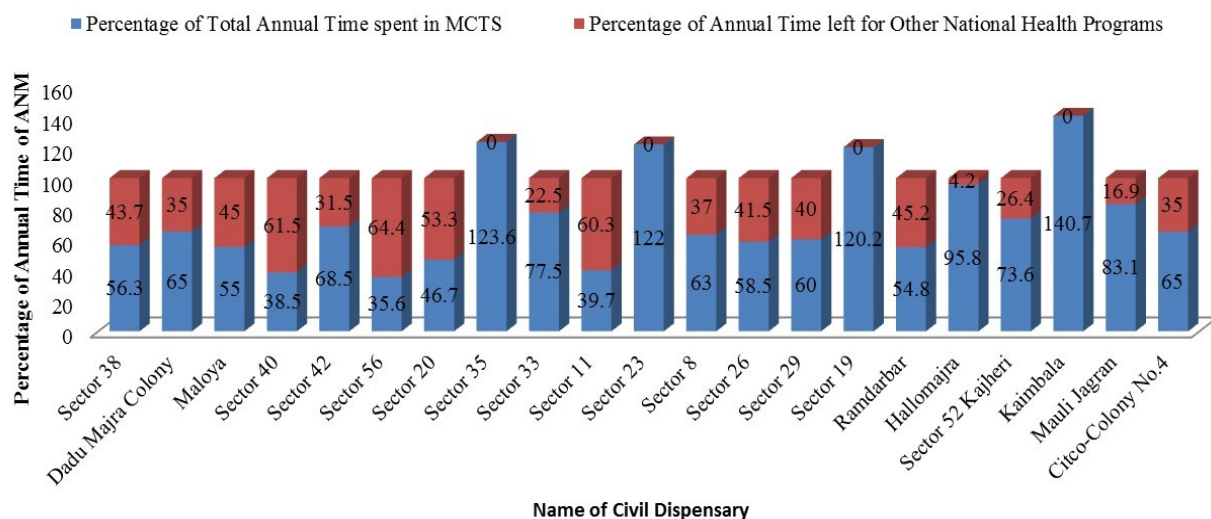
**Table 7:- WISN Ratio and its Interpretation.**

| WISN Ratio |     |       |         |   |
|------------|-----|-------|---------|---|
| 0.1        | 0.5 | 1     | 1.5     | 2 |
| Shortage   |     | Match | Surplus |   |

### Workload Pressure in Dispensaries

The workload pressure in 21 dispensaries was calculated given in table 6. In 9 dispensaries the workload pressure was high whereas in 5 dispensaries no workload pressure was there, and in 7 dispensaries the workload was normal.

**Comparison of Percentage of Annual time of ANM spent in MCTS and percentage of Annual Time left for Other National Health Programs**



**Figure 2:- Workload Pressure in Dispensaries.**

Figure 2 depicts the comparison of Percentage of total annual time of ANM of various dispensaries spent on Main health services, Important support activities and Additional activities under MCTS. In all the dispensaries of Chandigarh, each ANM spent 62.7% of total annual time in doing important support activities under MCTS where as each ANM spent 18% of total annual time in doing additional activities under MCTS.

### Discussion:-

Chandigarh is union territory and capital of state Punjab and Haryana. There are sub centers, civil dispensaries offering allopathic, ayurveda and homeopathic OPD medical services, alternative medical

units, urban primary health centers, 50 bedded Community health centers, 100 bedded Civil hospital, 500 bedded Govt. multi-specialty hospital, Govt. medical college and hospital and one PGIMER<sup>6</sup>.

The civil dispensaries in Chandigarh are manned by Medical officer, pharmacist, ANM, malaria worker, DOTS provider, class IV staff. The civil dispensaries of Chandigarh provide the OPD services to patients from 8 AM to 2 PM. All the national health programmes are being implemented at dispensary level.

In urban areas, equivalent to the PHCs are the civil dispensaries. The ANM is main service provider at the civil dispensaries. **Auxiliary nurse midwife**, commonly known as **ANM**, is a village-level female health worker in India who is known as the first contact person between the community and the health services. ANMs are regarded as the grass-roots workers in the health organization pyramid. Their services are considered important to provide safe and effective care to village communities. The role may help communities achieve the targets of national health programmes<sup>1</sup>. According to IPHS standards, there should be 1ANM for every 5000 population in plain areas and 1 ANM for every 3000 population in hilly/tribal areas<sup>7</sup>. But the condition is worst in some states of India where ANMs is catering to 20000/30000 or more population. In Chandigarh, in some of the dispensaries the ANMs is catering to 13000/14000 population. This indicates the significant shortage of ANMs at the dispensaries.

In the present study, the WISN methodology was applied to determine the workload of ANM in implementing MCTS. WHO had given the guidance on how to analyze staff utilization at various levels of health care system. WISN method is used to improve the performance of their health system by identifying the workload of specific staff categories and establishing more balanced distribution of their human resources as a result of analyses performed<sup>8</sup>. It was found that the workload pressure was high in 9 dispensaries which indicate the shortage of ANMs at dispensaries. The results are significant because the ANMs in Chandigarh are better placed as compared to ANMs in other states where they have to look after sub-centers catering to around 20000/30000 population or more. The findings of the present study are locally specific. Chandigarh being the small city, the travel burden for ANM working in the field is also less than other states.

In the present study the percentage of annual time of ANMs spent on MCTS was also calculated in all the dispensaries. And it was found that workload was very high in 4 dispensaries (CD-Sector 35, CD-Sector 19, CD-Sector 23 and CD Kaimbala) where ANMs are not even left with any time to do activities under other national health programmes. The condition was also worst in 3 dispensaries where ANMs are not even left with 25% of annual working time to do the activities under other national health programmes. The results are consistent with the findings of a study conducted in Orissa using WISN method to calculate number of health workers required to achieve maternal and child health. The study findings revealed that significant numbers of new health works are required to deliver the services promised by NHM<sup>9</sup>.

Similar results were observed in a study conducted by McQuide<sup>10</sup> et al on applying the workload indicators of staffing need (WISN) method in Namibia. The WISN results for nurses showed that both intermediate and district hospitals are adequately or even slightly overstaffed relative to their workloads, with excesses of 121 and 148 nurses at intermediate and district hospitals, respectively. However, while 18 of the 29 district hospitals have more nurses than they require on the basis of their workload, but 10 district hospitals have a shortage. The health centers have only 85% of their required nursing staff, representing a gap of 63 nurses. In clinics, nursing staffing is only 77% of what is required, representing a gap (210 nurses) that is over three times larger than the gap for health centers.

WISN is more effective when combined with other relevant workforce planning methodologies. The WISN process is an important driving force for bringing together various stakeholders who have role in health workforce decisions in a complex decentralized health system<sup>8</sup>.

ANMs are the main service provider working under MCTS. As of now rather than relieving the burden, the IT (MCTS) has been a source of increased load on them. Rather, the utilization of IT in other sectors has reduced the workload as various sectors are relied only on online data entry related to their field. The written work has been vanished after the computer and internet connection has taken the lead. ANMs in the present study reported that their work has been increased after MCTS due to both written work as well as

online reporting of data. It may be due to the fact that the written work is as such after the arrival of MCTS. The dual system that is both the written data and online data reporting might have increased the workload of ANMs.

The present study findings revealed that ANMs spent 25% of their time in maintaining records the results are consistent with the findings of study conducted by Maji et al in which ANMs spent 24% of their time in documentation<sup>11</sup>. A study done by Mahalingashetty which was an observational cross-sectional field survey aimed at describing the work and duties of frontline workers in two rural districts: Mohanlalgunj and Mall of Lucknow, Uttar Pradesh. The study findings revealed that ANMs in Mall district spent more time on paperwork, supervision, and discussion with staff, phone call, and travel compared to ANM from Mohanlalgunj.<sup>12</sup>

### Conclusion:-

The workload of ANMs in implementing Mother Child Tracking System was high in 9 civil dispensaries. ANMs spend more time in maintenance of records, online data entry, attending official meetings. In most of the dispensaries, ANMs spent major part of their annual working time in doing activities under MCTS and they are left with very less time for doing activities under other national health programs. They are unable to do practical work in the field which compromises the quality of services given to clients.

### Conflict of Interest

None.

### References:-

1. Auxiliary nurse midwife from Wikipedia. [https://en.wikipedia.org/wiki/Auxiliary\\_nurse\\_midwife](https://en.wikipedia.org/wiki/Auxiliary_nurse_midwife). Accessed on 20 Jan 2019.
2. Srinivasan K, Sarma PS. Study on workload of Public health nurses and other women health workers: Work Component Plan. 2012. <https://mpira.ub.uni-muenchen.de/39520/>. Accessed on 27Aug 2013.
3. Sundararaman T, Prasad BM, Gupta G. Documenting the 2nd ANM training and deployment of W.B. [www.nhrscindia.org](http://www.nhrscindia.org). Accessed on 25 Nov 2014.
4. Ministry of Health and Family Welfare. Government of India. Indian Public Health Standards (IPHS) For Sub centres. (Revised Guidelines 2010). [http://www.mohfw.nic.in/NRHM/Documents/IPHS Revised Draft/Subcentre Revised Draft](http://www.mohfw.nic.in/NRHM/Documents/IPHS_Revised_Draft/Subcentre_Revised_Draft). Accessed on 24 March 2014.
5. Workload Indicators of Staffing Need (WISN) User's manual. World Health Organization. [https://www.who.int/hrh/resources/wisn\\_user\\_manual/en/](https://www.who.int/hrh/resources/wisn_user_manual/en/). Accessed on 20 April 2013.
6. Scaling up health care facilities in Chandigarh. 2015. file:///C:/Users/my/Desktop/analysis/healthcare%20facilities%20in%20Chandigarh,%20Health%20News,%20ET%20HealthWorld.htm. Accessed 15 May 2019.
7. Draft, Indian Public Health Standards (IPHS) for Subcentres Guidelines. (March 2006). Directorate General Of Health Services Ministry Of Health And Family Welfare, Government of India. [http://mohfw.nic.in/NRHM/Documents/IPHS for SUBCENTRES.pdf](http://mohfw.nic.in/NRHM/Documents/IPHS_for_SUBCENTRES.pdf). Accessed 12 July 2012].
8. WISN Workload indicators of staffing needs APPLYING THE WISN METHOD IN PRACTICE Case studies from Indonesia, Mozambique and Uganda. 2010. [https://apps.who.int/iris/bitstream/handle/10665/44415/9789241500203\\_eng.pdf;jsessionid=0A5D66B3F790B2E70EEA8361715DDAFE?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/44415/9789241500203_eng.pdf;jsessionid=0A5D66B3F790B2E70EEA8361715DDAFE?sequence=1). Accessed 14 June 2014.
9. Hagopian A, Mohanty MK, Das A and House PJ. Applying WHO's 'workforce indicators of staffing need' (WISN) method to calculate the health worker requirements for India's maternal and child health service guarantees in Orissa state. Health policy and planning. 2012;27:11-18.
10. McQuide PA, Aitken RLK, Forster N. Applying the Workload indicators of staffing Needs (WISN) method in Namibia: challenges & implications for human resources for health policy. Human Resource for Health. 2013;11(64).
11. Maji D, Hutin Y, Ramakrishnan R, Hossain S & De S. Strategies to improve the performance of female health workers in West Bengal: A cross-sectional survey. The National Medical Journal of India. 2010;23(3):137-42
12. Mahalingashetty AR, Sandhya YK, Freedman LP, Austin J. Work-time Analysis of ANM and ASHA: A Priority for strengthening health system 2012. <https://aditigondal.files.wordpress.com/2012/08/anuraga-mahalingashetty-capstone-may-2012.pdf>. Accessed 24 Feb. 2013.