A Study to Assess the Program Management Factors, Services and Level of Performance of Reproductive Maternal Newborn Child Health and Adolescent plus Program (RMNCH+A) in Selected Block Primary Health Centers and Rural Hospitals of 24 Parganas (North), West Bengal

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Abstract

Introduction: A descriptive survey was done on assessment of the program management factors, services and level of performance of Reproductive Maternal Newborn Child Health and Adolescent Plus Program (RMNCH+A) at selected block primary health centers and rural hospitals in North 24 Parganas, West Bengal. The conceptual framework was based on the Chen’ Program Theory for program evaluation.

Methods: The sample under the study consisted of eleven block primary health centers and rural hospitals of North 24 Parganas, West Bengal. A validated and reliable tool was used to collect data, e.g., the background data and data on the program management factor in terms of adequacy of human resources and their training status was collected by an interview schedule through interviewing health service providers, data on the program management factor in terms of infrastructural facilities, equipment, drugs, record maintenance and services of RMNCH+A Program was collected by observation checklist through observation by the investigator, and data on performance of services and referrals by block primary health centers and rural hospitals was collected by means of record analysis by Record Analysis Proforma.

Results: The result showed that most of the community health centers are block primary health centers (64%). There are shortfalls in human resources like general duty medical officers (24.68%), obstetricians and pediatricians (90.90%), surgeons (100%), staff nurses (29.13%), laboratory technicians (42.86%), pharmacists AYUSH (47.82%), drivers (66.67%), GDA (51.25%). Lowest training of medical officers is found in CEmOC, F-IMNCI, LSAS (2.70%) and of nurses in RBSK (2.58%). Major non-availability of infrastructural facilities is separate ANC ward (45.45%), observation room and eclampsia room (100%), laboratory facility (63.63%), NRC (100%), etc. Non-availability of IEC displays found like SBA protocol on APH (18.18%); adult resuscitation kit (90.90%), pulse oximetry (81.81%), wall suction machine (100%), etc. were not available. Inj. Insulin (100%), Tab. Mifepristone (36.36%), Tab. Nevirapine (72.72%), Inj. Gentamycin (27.27%) drugs were not available. E mOC (90.90%), CAC service (36.36%), SNSU (63.63%) were not provided by the

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selected facilities. 81.81% of the facilities had referral transport and 18.18% facilities did not have any referral transport. There was significant difference between the number of medical officers and number of OPD attendance (‘t’=6.07; df (9), p<0.05), The number of trained medical officers on RTI/STI and number of RTI/STI case management of adolescent (‘t’=-2.45; df (9), p<0.05), the number of trained doctors on NSV and the number of NSV cases. (‘t’=-2.27; df (9), p<0.05), the number of SBA-trained nurses and the number of institutional delivery cases (‘t’=-2.35; df (9), p<0.05). There is highly positive correlation among number of nurses, number of medical officers and postnatal checkup score of the facilities, which is statistically significant (‘r’=0.732; df (9), p<0.05).

Introduction

Maternal health is women’s right. Women’s right is a human right issue. In any community, mother and child constitute a priority group. In India, the total population of 1210.19 comprises 586.47 million (48.5%) females and 623.72 million (51.5%) males. The share of children by population in India’s total population is whopping 39%, which means that almost every third Indian is a child below the age of 18. India is home to more than 243 million adolescents who account for a quarter of the country’s population. At the ‘Global Child Survival Call to Action: A Promise to Keep in 2012’, it was assured that India would remain at the forefront of the global war against maternal and child mortality. On February 2013, ‘A Strategic Approach to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) in India’, was launched; focused to be implemented in second phase of National Health Mission (2012–2017). In bottleneck analysis of 2012, states and districts have implemented key processes and mechanisms to utilize the data collected and address key gaps in PIPs and DHAPs. Action plans are being updated and efforts are being made to improve service delivery and quality. Block primary health centers and rural hospitals are designated respectively as non-first referral unit and first referral unit. Block primary health centers are level 2 and rural hospitals are level 3 service delivery center for maternal neonatal health services, except that these block-level facilities are significant service corners, which establish connection between community-based and facility-based care for reproductive maternal newborn child and adolescent beneficiaries. Therefore, the investigator felt the need to study program management factors in terms of human resource, infrastructure, equipment, drugs, and service performance under RMNCH+A program at the selected block primary health centers and rural hospitals of 24 Parganas (North), West Bengal.

The approach is a conscious articulation of endeavor to tailor programs for sections of population, which till now have been underserved; for instance, urban slums, tribal areas, vulnerable population including scheduled castes, scheduled tribes, migrants, urban poor, adolescents and vulnerable groups of high-focus districts with relatively weak performance against RMNCH+A indicator. It makes liaison among adolescence, maternal-child health and other components like family planning, adolescent health, HIV, gender, and preconception and prenatal diagnostic techniques. The ‘Plus’ strategy denotes linkage between care including referrals, and counter-referrals among health facilities at primary (primary health center), secondary (community health center), and tertiary levels (district hospital). It is a convergence of community-based healthcare at family, home, outreach level and facility-based healthcare.

Total 184 high-priority districts in 29 states in the whole country were selected for intensified intervention with help of development partners like USAID, UNICEF, etc. To achieve the fulfillment of targets of reproductive, maternal, newborn, child health plus adolescent strategy, the guidelines have emphasized the provision of human resource, infrastructure, drugs, and equipment in all healthcare delivery institutions. Not only in direct service providing, strengthening of all technical components of reproductive, maternal, newborn, child health plus adolescent services including training, communication, planning and invariably community participation also have been stressed.

As per the Government of India norms, there should be one community health center (CHC), which is equivalent to the rural hospital and block primary health center of the state of West Bengal, for every one lakh to one lakh twenty thousand populations. So, RH/BPHC should serve as the referral center for every four primary health centers (which cover 30,000 populations in plain area and 20,000 populations in tribal, hilly and backward areas), first major curative service providers addressing 80% of all ailments requiring out-patient services or hospitalization. RMNCH+A is focused on implementation at block level facilities specially.

Objectives

- To assess program management factors in terms of sanctioned as well as deficient human resources and their training status, adequacy of infrastructural facilities and IEC displays, availability of equipment and drugs, and record maintenance at the block primary health centers and rural hospitals.
- To assess the extent of services under Reproductive Maternal Newborn Child Health and Adolescent plus Program (RMNCH+A) provided by the block primary health centers and rural hospitals.
• To assess the level of performance and number of referral of the selected block primary health centers and rural hospitals under Reproductive Maternal Newborn Child health and Adolescent plus Program (RMNCH+A).

Materials and Methods

A non-experimental survey research study was conducted at selected eleven block primary health centers and rural hospitals of 24 Parganas (North) district, West Bengal, India. The facilities where records were not available were excluded from the study. The study synopsis was approved by the Institutional Ethics Committee of Medical College and Hospital, Kolkata. Administrative permission was taken from Joint DHS (Nursing), CMOH of Barasat and Basirhat Health District of 24 Parganas (North) and BMOH of each selected BPHC and RHs. In the present study, sample size was seven block primary health centers and four rural hospitals, selected by simple random sampling technique using lottery method from 22 block-level facilities of 24 Parganas district, West Bengal. From each facility, data was collected in two days’ schedule. On the first day of visit, followed by prior appointment over phone, background data and data on adequacy and training status of human resources was collected and interview schedule was filled up by interviewing. record analysis proforma on service delivery and referral linkages was filled up checking the record with the help of data entry operators, on the second day of visit at each facility. By using observation technique, observation checklists were filled up on infrastructure, IEC display, equipment, drugs, service delivery and record maintenance at each facility. Data collection has been done from 1st October 2016 to 14th November, 2017 using approximately 24 working days.

Results

Among the selected facilities, 64% are block primary health center sand 34% rural hospitals. Any rural hospital has to fulfill the criteria of having blood storage facility, neonatal stabilization unit, Caesarean section facility and emergency obstetric care facility for being first referral unit in this study, only criteria of having sick neonatal stabilization unit is fulfilled at all rural hospitals for being first referral unit. Among the selected facilities, only second and eleventh facilities did not have allocated beds for mother and child. 30-bedded facilities were 55% among all selected facilities.

Table 1. Frequency and Percentage Distribution of Strength of Human Resources out of Sanctioned Posts

| Name of Post                  | Number of Sanctioned Post | In Position Frequency (f) | Percentage (%) | Vacant Frequency (f) | Percentage (%) | Leave Percentage (%) |
|------------------------------|---------------------------|---------------------------|----------------|----------------------|----------------|---------------------|
| Block Medical Officer of Health (BMOH) | 11             | 11                      | 100            | -                    | -              | -                   |
| General Duty Medical Officer | 77             | 58                      | 75.32          | 19                   | 24.68          | -                   |
| Medical Officer AYUSH        | 44             | 41                      | 93.18          | 3                    | 6.82           | -                   |
| General Surgeon              | 0              | 0                       | 0              | 0                    | 0              | -                   |
| Obstetrician & Gynecologist  | 6              | 1                       | 16.66          | 5                    | 83.33          | -                   |
| Pediatric                    | 6              | 1                       | 16.66          | 5                    | 83.33          | -                   |
| Dental Surge                 | 11             | 7                       | 62.50          | 4                    | 37.50          | -                   |
| Sister-in-charge             | -              | 1                       | 27.27          | -                    | -              | -                   |
| Senior Public Health Nurse   | 11             | 9                       | 81.81          | 1                    | 9.09           | 9.09                |
| Public Health Nurse          | 11             | 10                      | 90.90          | 1                    | 9.09           | -                   |
| Staff Nurse                  | 127            | 86                      | 67.71          | 29.13                | 3.16           | -                   |
| Pharmacist                   | 21             | 19                      | 90.47          | 2                    | 9.52           | -                   |
| AYUSH Pharmacist             | 23             | 12                      | 52.17          | 11                   | 47.82          | -                   |
| Lady Counselor               | 11             | 11                      | 100            | -                    | -              | -                   |
| Block ASHA Facilitator       | 19             | 9                       | 47.36          | 10                   | 52.64          | -                   |
| Lab Technician               | 9              | 5                       | 57.14          | 4                    | 42.86          | -                   |
| Block Account Manager        | 11             | 10                      | 90.90          | 1                    | 9.09           | -                   |
| Data Entry Operator          | 24             | 24                      | 100            | 1                    | 0              | -                   |
| Upper Division Clerk         | 11             | 9                       | 81.18          | 2                    | 18.18          | -                   |
| Lower Division Clerk         | 11             | 9                       | 81.18          | 2                    | 18.18          | -                   |

The data presented in Table 1 depicts that highest and full occupancy is present in the post of BMOH and lady counsellor whereas highest vacancy is present at the post of pediatrician and obstetrician and gynecologist.
Table 2. Frequency and Percentage Distribution of Non-availability of Various Infrastructures at Selected Facilities

| Infrastructure of                    | Frequency (f) | Percentage (%) |
|--------------------------------------|---------------|----------------|
| **Building**                         |               |                |
| Building is in good condition.       | 4             | 36.36          |
| **Electricity and Light**            |               |                |
| Electricity with functional power back up. | 4          | 36.36          |
| **Service Wards and Rooms**          |               |                |
| Emergency room                       | 2             | 18.18          |
| Injection room                       | 6             | 54.54          |
| Dressing room                        | 4             | 36.36          |
| Minor O.T.                           | 1             | 9.09           |
| Clean utility room                   | 7             | 63.63          |
| Separate nurses station              | 6             | 54.54          |
| Generator room                       | 4             | 36.36          |
| Logistic room                        | 2             | 18.18          |
| Dirty utility room                   | 7             | 63.63          |
| **Mother & Child Care Service**      |               |                |
| Antenatal ward                       | 5             | 45.45          |
| Observation room                     | 11            | 100            |
| Fourth stage room                    | 4             | 36.36          |
| Postnatal Ward                       | 6             | 54.54          |
| Eclampsia room                       | 11            | 100            |
| **Various Special Services**         |               |                |
| F-ICTC facility                      | 2             | 18.18          |
| Ambulance facility                   | 2             | 18.18          |
| Functional fire safety facility      | 1             | 9.09           |
| Laboratory facility                  | 7             | 63.63          |
| Nutritional rehabilitation center    | 11            | 100            |
| Patient’s waiting area               | 2             | 18.18          |
| **Bio-medical Waste Management**     |               |                |
| Puncture-proof container to discard sharp instruments | 4 | 36.36 |
| BMWM done by 3 color-coded bins      | 3             | 27.27          |
| **Presence of Habitable Staff Quarters** |           |                |
| For medical officers                 | 2             | 18.18          |
| For staff nurse                      | 2             | 18.18          |
| For other categories                 | 2             | 18.18          |
| **Toilet**                           |               |                |
| Functional and clean toilet attached to labor room | 4 | 36.36 |

The lack or non-availability of infrastructure is mentioned in Table 2. Significant non-availabilities are nutritional rehabilitation center (100%), clean utility room and dirty utility room (63.63%), observation room and eclampsia room (100%), separate antenatal ward (45.45%), separate postnatal ward (54.54%) and functional and clean toilet attached to labor room (36.36%). In Table 3, highest non-availability is seen of new immunization schedule and posters of anatomy and physiology of reproductive system.
Table 3. Frequency and Percentage Distribution of Non-availability of IEC Display at Selected Facilities

| IEC Display                                | Available but Not Displayed | Not Available |
|--------------------------------------------|-----------------------------|---------------|
|                                            | Frequency (f)               | Percentage (%)| Frequency (f) | Percentage (%)|
| General Display                            |                             |               |               |               |
| Approach road direction to facility        | -                           | -             | 7             | 63.63         |
| Citizen charter                            | -                           | -             | 6             | 54.54         |
| Clinic timings                             | -                           | -             | 4             | 36.36         |
| Infection Control IEC Display              |                             |               |               |               |
| Hand washing                               | 2                           | 18.18         | -             | -             |
| Instrument decontamination                 | 6                           | 54.54         | -             | -             |
| BMW                                        | 5                           | 45.45         | 1             | 9.09          |
| Bleaching solution preparation             | 7                           | 63.63         | 2             | 18.18         |
| SBA Protocol                               |                             |               |               |               |
| Abortion                                   | 3                           | 27.27         | 1             | 9.09          |
| Eclampsia                                  | 6                           | 54.54         | 3             | 27.27         |
| Kangaroo mother care                       | 4                           | 36.36         | 1             | 9.09          |
| Breast feeding                             | 2                           | 18.18         | 1             | 9.09          |
| Postnatal care                             | 6                           | 54.54         | 1             | 9.09          |
| Postpartum hemorrhage                      | 2                           | 18.18         | 1             | 9.09          |
| Antepartum hemorrhage                      | 3                           | 27.27         | 2             | 18.18         |
| Neonatal resuscitation                     | 2                           | 18.18         | 1             | 9.09          |
| Partograph                                 | 4                           | 36.36         | 1             | 9.09          |
| AMTSL                                      | 0                           | 0             | 1             | 9.09          |
| Antenatal palpation                        | 3                           | 27.27         | 1             | 9.09          |
| Antenatal examination                      | 3                           | 27.27         | 1             | 9.09          |
| Family Planning                            |                             |               |               |               |
| NSV                                        | 2                           | 18.18         | -             | -             |
| IUCD                                       | 2                           | 18.18         | -             | -             |
| CC, OCP, EC                                | 1                           | 9.09          | -             | -             |
| IEC Displays at ARSH Clinic                |                             |               |               |               |
| RTI/STI prevention                         | 4                           | 36.36         | -             | -             |
| Contraception                              | 6                           | 54.54         | 1             | 9.09          |
| Anemia and deworming                       | 3                           | 27.27         | 1             | 9.09          |
| Mental and social growth                   | 4                           | 36.36         | 7             | 63.63         |
| Nutrition                                  | 5                           | 45.45         | -             | -             |
| Personal hygiene                           | -                           | -             | 6             | 54.54         |
| Anatomy and physiology                     | -                           | -             | 11            | 100           |
| reproductive tract                         | -                           | -             |               |               |
| New immunization schedule                  | -                           | -             | 11            | 100           |
| RMNCH+A matrix                             | 6                           | 54.54         | -             | -             |
| IYCF flipchart                             | 2                           | 18.18         | -             | -             |
Table 4. Frequency and Percentage Distribution of Non-availability of Equipment in Selected Facilities

| Equipment                              | Not Available | Incomplete/Condemned/Expired |
|----------------------------------------|---------------|-----------------------------|
|                                        | Frequency (f) | Percentage (%)              | Frequency (f) | Percentage (%) |
| Height measuring scale                 | 3             | 27.27                       | 0             | 0              |
| Oxygen humidifier                      | 6             | 54.54                       | 0             | 0              |
| Nasal cannula                          | 7             | 63.63                       | 0             | 0              |
| Foot suction machine                   | 0             | 0                           | 2             | 18.18          |
| Digital thermometer                    | 0             | 0                           | 2             | 18.18          |
| Episiotomy tray                        | 0             | 0                           | 3             | 27.27          |
| Stopwatch                              | 4             | 36.36                       | 0             | 0              |
| Adult resuscitation kit                | 10            | 90.90                       | 0             | 0              |
| Wall clock                             | 5             | 45.45                       | 0             | 0              |
| Wheel chair                            | 3             | 27.27                       | 0             | 0              |
| Air conditioner                        | 11            | 100                         | 0             | 0              |
| Neonatal oxygen hood                   | 9             | 81.81                       | 0             | 0              |
| Functional neonatal laryngoscope       | 6             | 54.54                       | 0             | 0              |
| Endotracheal tube                      | 0             | 0                           | 5             | 45.45          |
| Neonatal ambu bag                      | 0             | 0                           | 2             | 18.18          |
| Mucous extractor                        | 0             | 0                           | 9             | 81.81          |
| Feeding tube                           | 0             | 0                           | 5             | 45.45          |
| Kit for hemoglobin                     | 2             | 18.18                       | 0             | 0              |
| Blood glucose kit                      | 2             | 18.18                       | 0             | 0              |
| Hemoglobinometer                       | 6             | 54.54                       | 0             | 0              |
| Reagent and testing kit                | 5             | 45.45                       | 0             | 0              |
| Functional centrifuge                  | 10            | 90.90                       | 0             | 0              |
| Multipara monitor                      | 9             | 81.81                       | 0             | 0              |
| Functional C-arm unit                  | 11            | 100                         | 0             | 0              |
| Diathermy                              | 7             | 63.63                       | 0             | 0              |
| Functional ventilator                  | 11            | 100                         | 0             | 0              |
| Functional O. T. light mobile          | 8             | 72.72                       | 0             | 0              |
| Functional O. T. light ceiling         | 11            | 100                         | 0             | 0              |
| O.T. table                             | 1             | 9.09                        | 0             | 0              |

The data presented in Table 4 shows highest non-availability of air conditioner (100%), adult resuscitation kit (90.90%) and some O.T. equipment. Foot suction machine, neonatal ambu bag, digital thermometer is condemning at 18.18% facilities. Mucous extractors are expired at 81.81% facilities.

Table 5. Frequency and Percentage Distribution of Non-availability of Drugs

| Drug Name                              | Not Available |
|----------------------------------------|---------------|
|                                        | Frequency (f) | Percentage (%) |
| Inj. Hydrocortisone                    | 3             | 27.27          |
| Inj. Dexamethasone                     | 2             | 18.18          |
| Free days (sanitary napkin)            | 8             | 72.72          |
| Inj. Insulin                           | 11            | 100            |
| Inj. Phenytoin                         | 4             | 36.36          |
| Tab. Mifepristone                      | 4             | 36.36          |
| Tab. Nevirapine                        | 8             | 72.72          |
| Tab. Trimethoprim                      | 7             | 63.63          |
| Inj. Ampicilin                         | 4             | 36.36          |
| Inj. Cephalosporine                    | 3             | 27.27          |
| Inj. Gentamycin                        | 3             | 27.27          |
| Inj. Potassium Chloride                | 4             | 36.36          |

Table 5 shows highest non-availability of Inj. Insulin (100%). In Table 6, it is depicted that client feedback record, timing of each labor stage and timing of placenta expulsion in labor room register were not at all available in any facility. The data presented in Table 4 shows highest non-availability of air conditioner (100%), adult resuscitation kit (90.90%) and some O.T. equipment. Foot suction machine, neonatal ambu bag, digital thermometer is condemning at 18.18% facilities. Mucous extractors are expired at 81.81% facilities.
Table 7 points out that postnatal services and infection control practices were poor and antenatal service was average as graded and supported by mean score of each area. In Table 8, levels of performance of various facilities are depicted. The score card of RMNCH+A assists in comparing the performance of all blocks. Here, the performances of facilities have been compared by composite index of area-based positive and negative indicators of pregnancy care, childbirth, postnatal-maternal newborn care and reproductive age group. So, total eleven facilities \( f_{1,2,\ldots,11} \) have been divided by quartile division.\(^4\) In referral transport for mother-child, 18.18% facilities were lacking and among facilities having the facility of transport were provided by 63.63% private ownership.

Table 7. Postnatal Services and Infection Control Practices

| Services                      | Good (\( \geq 70\% \)) | Average (40–69%) | Poor (\(<=40\% \)) | Mean Score (%) |
|-------------------------------|--------------------------|------------------|----------------------|----------------|
|                               | Frequency (f)            | Percentage (%)   | Frequency (f)        | Percentage (%)  | Frequency (f) |
| Antenatal                     | 2                        | 18.18            | 9                    | 81.81           | 0              | 0              | 61.39           |
| Postnatal                     | 0                        | 0                | 0                    | 0               | 0              | 0              | 35.57           |
| Infection control             | 0                        | 0                | 3                    | 27.27           | 7              | 63.63          | 39.77           |

\(^4\)\(f\)-facility

Table 6. Frequency and Percentage Distribution of Non-availability and Inadequacy of Records

| Record                                | Incompletely Filled | Not Filled up, Updated |
|---------------------------------------|---------------------|------------------------|
|                                       | Frequency (f)       | Percentage (%)         | Frequency (f)       | Percentage (%) |
| OPD Register                          |                     |                        |                     |                |
| Identification data                   | 11                  | 100                    | 0                   | 0              |
| Treatment                             | 11                  | 100                    | 0                   | 0              |
| IPD Register                          |                     |                        |                     |                |
| Treatment                             | 3                   | 27.27                  | 0                   | 0              |
| Client feedback record                | 0                   | 0                      | 11                  | 100            |
| Labor Room Register and Partograph    |                     |                        |                     |                |
| Timing of each labor stage            | 0                   | 0                      | 11                  | 100            |
| Time of placenta expulsion            | 0                   | 0                      | 11                  | 100            |
| Record of complication                | 0                   | 0                      | 7                   | 63.63          |
| Record of starting of breast feeding  | 0                   | 0                      | 3                   | 27.27          |
| within 1 hr. of birth                 |                     |                        |                     |                |
| O. T. register                        | 2                   | 18.18                  | 0                   | 0              |
| Drug stock register                   | 5                   | 45.45                  | 0                   | 0              |
| MDR register                          | 7                   | 63.63                  | 0                   | 0              |

Service provision lacking was found in criteria of emergency obstetric care (90.90%), SNSU (63.63%) and CAC (36.36%).
Data presented in Table 9 indicates that the mean of number of medical officers is 6.27 and mean of number of OPD attendance of September, 2016 is 7061.09 with the mean difference of 7054.82. Standard deviation of number of medical officers and number of OPD attendance of September, 2016 are respectively 2.96 and 3851.73. Standard error of mean difference is 1161.34. The obtained ‘t’ value is 6.07, which is greater than the critical region ‘t’ value 2.26 at df (9) at 0.05 level of significance. So, it can be inferred that the number of medical officers made significant difference in the number of OPD attendance of September, 2016 at total 11 selected facilities.

| Variables                                      | Mean   | Mean Difference | Standard Deviation | SE<sub>MD</sub> | ‘t’ Value |
|------------------------------------------------|--------|-----------------|--------------------|-----------------|-----------|
| Number of medical officers                     | 6.27   | 7054.82         | 2.96               | 1161.34         | 6.07 *    |
| Number of OPD attendance of September, 2016    | 7061.09|                 | 3851.73            |                 |           |

‘t’ (9)=2.26, p<0.05, *significant

Data presented in Table 10 indicates that the mean of number of trained medical officers on RTI/STI is 1 and mean of number of RTI/STI case management of adolescent in last year is 150.82 with the mean difference of 149.82. Standard deviation of number of trained medical officers on RTI/STI and number of RTI/STI case management of adolescents in last year are respectively 1 and 203.19. The obtained ‘t’ value is 2.45, which is greater than the critical region ‘t’ value 2.26 at df (9) at 0.05 level of significance. So, it can be inferred that the number of trained medical officers on RTI/STI made significant difference in number of RTI/STI case management of adolescents in the last year among total 11 selected facilities.

| Variables                                      | Mean   | Mean Difference | Standard Deviation | SE<sub>MD</sub> | ‘t’ Value |
|------------------------------------------------|--------|-----------------|--------------------|-----------------|-----------|
| Number of trained medical officers on RTI/STI  | 1      | 149.82          | 203.19             | 61.27           | 2.45 *    |
| Number of RTI/STI case management of adolescents in last year | 150.82 |                 |                    |                 |           |

‘t’ (9)=2.26, p<0.05, *significant

Data presented in Table 11 indicates that the mean of number of trained medical officers on NSV is 1.18 and mean of number of NSV cases in last year is 2.91 with the mean difference of 1.73. Standard deviation of number of trained medical officers on NSV and number of NSV cases in last year are respectively 1.08 and 2.30. Standard error of mean difference is 0. 766. Unpaired t-test is calculated to find out the significance of difference between two variables. The obtained ‘t’ value is 2.27 which is greater than the critical region ‘t’ value 2.26 at df (9) at 0.05 level of significance. So, it can be inferred that the number of trained medical officers on NSV significantly differed from the number of NSV cases in last year among total 11 selected facilities.

| Variables                                      | Mean   | Mean Difference | Standard Deviation | SE<sub>MD</sub> | ‘t’ Value |
|------------------------------------------------|--------|-----------------|--------------------|-----------------|-----------|
| Number of trained medical officers on NSV     | 1.18   | 1.73            | 1.08               | 0.766           | 2.27 *    |
| Number of NSV cases in last year              | 2.91   |                 | 2.30               |                 |           |

‘t’ (9)=2.26, p<0.05, *significant
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Table 12. Mean, Mean Difference, Standard Deviation, Standard Error of Mean Difference and ‘t’ Value of Mean of Number of SBA-Trained Nurses and Mean of Number of Institutional Delivery Cases in Last Year of the Selected Facilities

| Variables                          | Mean  | Mean Difference | Standard Deviation | SE<sub>MD</sub> | ‘t’ Value |
|------------------------------------|-------|-----------------|--------------------|-----------------|-----------|
| Number of SBA-trained nurses       | 5.18  | 401.73          | 3.25               | 170.65          | 2.35 *    |
| Number of institutional delivery cases in last year | 406.91 |                 | 565.97             |                |           |

‘t’ (9)=2.26, p<0.05, *significant

Data presented in Table 12 indicates that the mean of number of SBA-trained nurses is 5.18 and mean of institutional delivery cases in last year is 496.91 with the mean difference of 401.73. Standard deviation of number of SBA-trained nurses and number of institutional delivery cases is respectively 3.25 and 565.97. The obtained ‘t’ value is 2.35, which is greater than the critical region ‘t’ value 2.26 at df (9) at 0.05 level of significance. So, it can be inferred that the number of SBA-trained nurses significantly differed from the number of institutional delivery cases in last year among total 11 selected facilities.

Table 13. Correlation Coefficient between Number of Infection Control Trained Staff Members and Infection Control Practice Score of Facility

| Variables                          | Mean   | ‘r’ Value |
|------------------------------------|--------|-----------|
| Infection control trained staff members | 2.909  | +0.26     |
| Infection control practice score   | 3.182  |           |

‘r’ (9)=0.602, p<0.05

Table 13 shows that there is a positive but weak correlation between number of infection control trained staff members and infection control practice score of facility as the value of ‘r’ is +0.26 which shows weak positive correlation but statistically not significant at df (9) and 0.05 level of significance.

Table 14. Multiple Correlation Coefficient among Number of Nurses, Number of Medical Officers and Antenatal Checkup Score of the Facilities

| Independent Variable | Dependant Variable | ‘r’ Value |
|----------------------|--------------------|-----------|
| Number of nurses     | Antenatal checkup score | +0.44    |
| Number of medical officers |                  |          |

‘r’ (9)=0.602, p<0.05

Table 14 shows the correlation between number of nurses, number of medical officers and antenatal checkup score of the facilities is 0.44 which is moderately positive but not statistically significant at df=9 and 0.05 level of significance.

Table 15. Multiple Correlation Coefficient among Number of Nurses, Number of Medical Officers and Postnatal Checkup Score of the Facilities

| Independent Variable | Dependant Variable | ‘r’ Value |
|----------------------|--------------------|-----------|
| Number of nurses     | Postnatal checkup score | +0.732  |
| Number of medical officers |               |          |

‘r’ (9)=0.602, p<0.05

Table 15 shows that there is a positive correlation among number of nurses, number of medical officers and postnatal checkup score of the facilities as the value of ‘r’ is +0.732. The table value of correlation coefficient is 0.602 at df (9) and 0.05 level of significance. So the positive correlation among number of nurses, number of medical officers and postnatal checkup score of the facilities is statistically significant at mentioned degree of freedom and probability.

Discussion

On the basis of the objectives of the study and the revealed findings, discussion can be framed as below:

In relation to first objectives, it has been found that the findings of the present study on the human resource strength, availability of infrastructural facilities of selected block primary health centers and rural hospitals has
remarkable shortfalls. As per the report of Rural Health Statistics (2014-15), the shortfalls are comparatively discussed as following:

There is vacancy in the posts of general duty medical officer such as 45.56% in West Bengal, 35.37% in Haryana, 30.96% in Jammu & Kashmir, 29.35% in Gujarat, 25.50% in Jharkhand whereas in the present study, 24.68% vacancy is found which is lesser than mentioned states. The shortfall in the post of staff nurses out of sanctioned posts is found in the state such as Chhattisgarh (39.44%), Gujarat (33.34%), Rajasthan (31.15%), etc., which is higher than the shortfall found in the present study (14.11%).

In the post of laboratory technician out of sanctioned posts, vacancy has been noted in the states like West Bengal (62.19%), Himachal Pradesh (55.39), Rajasthan (43.65%), Jharkhand (41.55%), what is more or less supporting the shortfall (42.86%) found in the present study.

The posts of pharmacist out of sanctioned posts are found vacant in various states, i.e., Rajasthan (47.97%), Gujarat (43.29%), Jharkhand (40.78%), and Telangana (25.54%), which is higher than the finding in the present study (9.52%). 9.6% facilities in Chhattisgarh, 11.80% facilities in Maharashtra are running in rented buildings whereas all selected facilities in this study are running in government buildings. 23% facilities of Bihar do not have electricity with functional power back up; on the contrary, finding is higher in the present study.

21.19% facilities in Assam, 18.76% in Uttar Pradesh, 9.57% in Jharkhand, and 6.31% in Karnataka do not have provision 81.81% facilities do not have provision of functional labor room whereas it is present in all selected facilities of the present study. New born care corner was not available in Kerala (96.40%), Assam (68.57%), Gujarat (55%), etc., what is higher than the findings of the present study.

Staff quarters for medical officers, Staff nurses and other categories of staff are totally not available in Kerala, Goa, Manipur, and Meghalaya whereas in the present study, at 18.18% facilities such non-availability is found.

Functional operation theater is not available in the states like Assam (80.13%), Kerala (52.25%), Arunachal Pradesh (42.31%), Haryana (40.37%), and Chhattisgarh (20.65%), which is greater than the non-availability in the present study.

Functional laboratory is found not available in Bihar (25.71%), Kerala (20.72%), Uttar Pradesh (19.40%), and Assam (15.23%), which is less than the present study findings (63.63%). So the gap is comparatively higher than in other states.

Computer with MIS facility was not present in Arunachal Pradesh (28.84%), Rajasthan (23.42%), and West Bengal (15.56%); on the contrary all facilities have this provision in the present study. Registered Rogi Kalyan Samiti was not available in Uttarakhand (39.72%), Assam (18.54%), and Punjab (12.67%); on the contrary all facilities in the present study have this provision. 63.63% facilities have no provision of attached clean and functional toilet with the labor room.

In relation to the objectives of assessing the program management factors in terms of availability of IEC display, equipment, drugs, records and registers of RMNCH+A at primary health centers and rural hospitals show some gaps which can be discussed in comparison to findings of a survey held in Bihar. SBA protocols at 53% labor rooms and hand washing posters in 7% facilities were not displayed. On availability of equipment like wall clock (53%), stethoscope (83%), and doppler (23%), weighing machine (88%), shadow-less lamp (31%), delivery tray (33%) have been found, which is higher than the present study findings to some extent. Non-availability of drugs has been found such as Inj. Oxytocin (39%), normal saline (32%), Ringer’s Lactate (38%), Dextran (54%), Ampicillin (41%), Inj. Metronidazole (58%), Inj. Gentamicin (54%); consumables like bleaching powder (43%), etc., which is higher than the findings of the present study. Delivery register (22%), partograph (86%) facilities were not available, what is not supporting present study findings.

A study on status of emergency obstetric care in four districts of Punjab, Pakistan during 2015 shows that comprehensive abortion care was available at only 56.25% health facilities, which is far better than the scenario in the present study. Referral transport was not available in Chhattisgarh (23.84%), Uttar Pradesh (22.77%), Arunachal Pradesh (19.23%), etc., which is higher than the findings of the present study.

Conclusion

Findings from the present study provide an indicative picture of the RMNCH+A program implementation at block-level facilities. The findings of the assessment many gaps regarding strength and training status of human resources, infrastructure, availability of equipment, availability of drugs and consumables have been found out. Records and registers are not being maintained properly though they are available. Mean percentage of antenatal and postnatal checkup score was respectively average and poor. Ensuring biomedical waste management, and infection control practices need special focus and must be adhered to as the mean score of infection control was poor. The service coverage of RMNCH+A has very low deviation among selected facilities. The number of medical officers made significant difference in number of OPD attendance of September, 2016 at selected block primary health centers.
and rural hospitals. The number of trained medical officers on RTI/STI made significant difference in number of RTI/STI case management of adolescent in last year at selected block primary health centers and rural hospitals. The number of trained doctors on NSV significantly made difference in the number of NSV cases in last year at selected block primary health centers and rural hospitals. There is a significant correlation among number of nurses, number of medical officers and postnatal checkup of the block primary health centers and rural hospitals.

**Conflict of Interest:** None

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