



Assessment of mid-level health care provider cadre under comprehensive primary health care in Chhattisgarh



Assessment of mid-level healthcare provider cadre working for comprehensive primary healthcare in Chhattisgarh

ISBN 978-92-9020-971-3

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Suggested citation. Assessment of mid-level healthcare provider cadre working for comprehensive primary healthcare in Chhattisgarh. New Delhi: World Health Organization, Country Office for India; 2022 Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

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Abbreviations

AB	Ayushman Bharat
ANC	ante-natal care
ANM	auxiliary nurse cum midwife
ARI	acute respiratory infection
CHC	community health centre
CHO	community health process
CHW	community health worker
CPHC	comprehensive primary health care
GoI	Government of India
HTN	hypertension
HWC	health and wellness center
IGNOU	Indira Gandhi National Open University
MCI	Medical council of India
MLHP	mid-level healthcare provider
MPW	multipurpose worker
NCD	non-communicable disease
NHM	national health mission
OPD	out-patient department
PHC	primary health centre
PSC	programme study centres
RCH	reproductive and child health
RMA	rural medical assistant
SHC	sub health centre
UTI	urinary tract infection

Acknowledgement

We would like to thank the Department of Health and Family Welfare, Government of Chhattisgarh, for their continuous support through the Demand Side Assessment of Primary Healthcare in the State

The exercise could be completed successfully due to the cooperation of the District Health Authorities, health workers and community participants during the process of field data collection and discussions

Project team and contributors

State Health Resource Centre, Chhattisgarh

- Dr Samir Garg
- Mr Narayan Tripathi
- Ms Jayathra Datla
- Mr Kirtti K Bebart

Department of Health and Family Welfare, Government of Chhattisgarh

- Ms Niharika Barik Singh, Secretary, Department of Health and Family Welfare
- Dr Priyanka Shukla, Mission Director, National Health Mission, Chhattisgarh

AIIMS Raipur

- Dr Atul Jindal
- Dr Sabah Siddiqui

WHO Country Office for India

- Dr Dilip Mairembam
- Dr Hilde De Graeve

Executive summary

Background:

Comprehensive Primary Health Care (CPHC) is one of the most important policy measures proposed by India's National Health Policy 2017. Earlier in 2014-15, the Government of India (GoI) set up a task force to roll out CPHC, and the pilot began in some states to provide CPHC through Health and Wellness Centres (HWCs). The above pilots were funded by National Health Mission (NHM). Subsequently, in 2018, GoI introduced HWCs as a key primary healthcare mechanism through its flagship health initiative 'Ayushman Bharat'. HWCs have been accorded the top priority in NHM funding to states since 2018-19.

The key objectives of HWCs include the promotion of health centres close to where people live to meet a wide range of primary healthcare needs. Apart from increasing proximity of services to people and the comprehensive range of services, population-based health and continuity of care are other important dimensions of what HWCs are meant to achieve. A continuum of care has been visualized for twelve kinds of services under CPHC:

1. Care in pregnancy and childbirth
2. Neonatal and infant health care services
3. Childhood and adolescent health care services
4. Family planning, contraceptive services and other reproductive health care services
5. Management of communicable diseases: national health programs
6. Management of common communicable diseases and general out-patient care for simple acute illnesses and minor ailments
7. Screening and management of non-communicable diseases
8. Screening and basic management of mental health ailments
9. Care for common ophthalmic and ENT problems
10. Basic dental health care
11. Geriatric and palliative health care services
12. Trauma care (that can be managed at this level) and emergency medical services

HWCs are being established by upgrading the Primary Health Centres (PHCs) and the Sub Health Centres (SHCs). The HWC developed at the SHC level is the most important addition to the healthcare delivery system because of its proximity to the population. Such HWCs are expected to enrol the entire population under the SHC and proactively provide them with an expanded range of curative, promotive and preventive services to address the primary health care needs of the catchment population.

By November 2020, around 50 000 HWCs have been operationalised in India, with around half of them in SHCs. An integral component of this effort is equipping these HWCs to deliver a comprehensive service package and gate-keeping function with linkage to the Block Primary Health Centers (PHC) as the first referral point. This process would primarily involve (a) infrastructure strengthening, (b) augmenting human resources, (c) assuring drugs & diagnostics, and (d) changing community perception.

The most important part of the upgrade in SHCs involves the Human Resources in Health (HRH). To enable the delivery of expected services at the HWC, an important addition to the centres upgraded as HWCs is a Mid Level Healthcare Provider (MLHP). An MLHP, along with the Auxillary Nurse Midwife (ANM), Multi-purpose worker (MPW) and ASHA Community Health Workers

(CHWs), forms the Primary Health Care Team of an HWC.

The roles of MLHPs are very closely related to the objectives of CPHC itself. The MLHP is responsible for delivering various services about CPHC, such as providing the expanded range of services, including clinical management of simple cases, identifying complicated cases and their referral, ensuring continuity of care through regular follow up, dispensing of medicines, conducting point of care diagnostic tests, leading the primary health care team in delivering services including preventive and promotive care and managing the functioning of HWC.

For the MLHP role, the government, at the national level, envisions a new cadre of Community Health Officers (CHOs). Nursing graduates are being trained in large numbers in a bridge course specially designed for the purpose. It is a 6-month training specifically designed to build the competencies needed for playing the MLHP role in HWCs at the SHC level. The course is run at district hospitals promoted as Programme Study Centres (PSCs) and certified under the Indira Gandhi National Open University (IGNOU). After completion, the nurses are posted as Community Health Officers (CHOs) in sub-centre based HWCs.

In Chhattisgarh, two cadres play the MLHP role: newly trained CHOs and a pre-existing cadre of Diploma clinicians known as the Rural Medical Assistants (RMAs). An RMA has a three-year diploma and one-year internship in modern medicine, and most have experience of more than a decade of providing clinical care in PHCs. The RMA cadre is an important reference for the MLHP role and even more so in the context of Chhattisgarh. In Chhattisgarh, RMAs have been posted as MLHPs at the centres where there is a shortage of CHOs. They played a crucial role in the initial roll-out of HWCs in Chhattisgarh. Now, they play a dual role, as they provide clinical care at PHCs and act as part-time MLHP for HWCs by running biweekly clinics in SHC based HWCs.

Since MLHP was a newly conceptualized role and CHOs are a new cadre, little was known about their suitability and performance in the assigned role. RMA cadre of Chhattisgarh had been evaluated around a decade ago for their clinical competence in primary care. Since they were playing the role of MLHP in a large number of HWCs, it was necessary to study the performance of RMAs in the MLHP role, and they could also offer a useful comparison with CHOs.

Most importantly, how the MLHPs perform has a huge bearing on CPHC. Therefore, there was a need to assess the MLHPs to identify the necessary inputs for improving their performance and strengthening CPHC. The assessment also aimed to identify areas where MLHPs need capacity building inputs.

Study objectives:

This study aimed to overview various aspects of the cadres' performance in the MLHP role. The study, therefore, examined multiple dimensions of their performance as MLHPs. The specific areas examined were:

I. Clinical skills and capacity assessment

This study aimed to provide a comparative assessment of RMAs' and CHOs' capacity as they are the leading providers of clinical services at HWCs. Provider competence was assessed for knowledge and practice for the health wellness centre's designated services.

II. Review of curriculum and training implementation

The current curriculum was reviewed, and the quality of its implementation in PSCs was examined.

III. Leadership and managerial skills

Another objective of the assessment was to evaluate their leadership and managerial capacity for the efficient functioning of the Health and Wellness Centers.

IV. Job satisfaction and attitudes toward rural service

This part of the assessment has explored qualitative aspects, including their attitudes towards serving in rural areas, aspirations for career progression and job satisfaction.

V. Career progression

The lack of a clear progression plan for RMAs has been a gap. Therefore, it is necessary to

develop a plan for cadres in the MLHP role (RMAs and CHOs). For this purpose, key stakeholders were interviewed as part of this assessment.

Methods:

A mix of quantitative and qualitative approaches was applied to carry out the above examination. Provider competence was assessed in terms of clinical knowledge and capacity for the designated services at HWC with the help of clinical vignettes, and a comparison of both the cadres was conducted. The quality of their training has been assessed by reviewing the current MLHP bridge course curriculum and interviewing the trainers, district officials and MLHPs to get feedback on its implementation. Their leadership and managerial aspects have been evaluated by assessing their performance-based indicators. In-depth interviews have been conducted to know the challenges they face in performing their role as a MLHP and to understand their perspective in terms of Job satisfaction, attitude towards rural services and career progression. Several key stakeholders have also been interviewed as part of this assessment to get their insights on the above aspects. The specific method and sample size for each objective were as follows:

I. **Clinical skills and capacity assessment:**

Respondents - CHOs and RMAs working at Health & Wellness Centers

Sample size - 50 CHOs and 50 RMAs from districts in all five divisions in the state

Method - Clinical vignettes (case scenarios) were developed on 10 common disease conditions crucial at the primary care level in Chhattisgarh. They have been administered to assess the cadres' clinical capacity (CHOs and RMAs) on five components of clinical care, i.e. history taking, examinations and investigations, diagnosis, treatment, and follow-up.

II. **Review of curriculum and training implementation**

Respondents - CHO training participants and CHOs passed out from the course. Training implementers-course in charge at the district level, trainers and officials and other stakeholders involved at state levels.

Sample size - At least 5 PSCs were visited, and interviews of officials and 10 CHO participants at each PSC were conducted in semi-structured personal interview schedules.

Method - Desk review of CHO modules in consultation with clinical experts and clinical guidelines for assessing the sufficiency of topics covered and the clinical detail. Feedback on course content and training implementation from CHO course participants and CHOs was presented in a semi-structured interview schedule format. For assessment of training implementation -visit to training sites and interviews for information on classroom schedules, the sufficiency of time allotted for classroom teachings and practical classes, topics on which further training is needed, attendance of participants and availability of teaching faculty.

III. **Leadership and managerial skills**

Respondents - CHOs and RMAs working at HWC

Sample size - 20 CHOs and 20 RMAs from all five divisions

Method - A structured format to collect all the relevant information and site visits and interviews to observe the availability of basic amenities, drugs, diagnostics, and service delivery components.

IV and V **Job satisfaction, attitudes toward rural service and career progression**

Sample size - 20 CHOs and 20 RMAs from 5 divisions of the state

Respondents - CHOs and RMAs working at HWCs

Methods - Semi-structured interview schedule was administered to respondents covering dimensions of living conditions and social/family life, job performance and professional development

Key findings:

Quantitative assessment

I. Clinical skills and capacity assessments

- In overall clinical competence, CHOs attained a median composite score of 55%. Overall, the scores show that the CHOs have attained considerable clinical skills relevant to HWCs, but continued training needs to address specific gaps. The overall composite score of RMAs was better, with a median of 61%.
- CHOs and RMAs had an almost similar overall score in history taking component of different disease conditions; though RMAs had slightly more overall scores than CHOs, their overall median score was not statistically significant.
- Analysis of each of the five clinical care components shows that both CHOs and RMAs have scored highest in the diagnosis section and lowest in the Physical examination and Investigations section. These results also reflect their practice of usually not conducting a physical examination. The practice regarding diagnostic investigations is also poor as HWCs can provide a minimal range of tests.
- Though both CHOs and RMAs have scored considerably well in the diagnosis component of Clinical care, there is a statistically significant difference in the overall mean score of both groups. The mean scores of CHOs show that they have scored higher mostly in diagnosing NCDs and Malaria when compared to diagnosing conditions like Scabies, Poisoning and Diarrhea with dehydration.
- There is a statistically significant difference in the overall median scores for treatment skills of CHOs and RMAs. RMAs have a significantly higher score in the diagnosis, treatment and follow-up components than CHOs. The comparatively higher scores among the RMAs reflect that they are more confident and are better at dealing with the common public health conditions as the RMA is an established carder practising primary health care in a state with over ten years of experience as an added advantage.
- CHOs and RMAs have almost similar median scores in follow up components of different disease conditions.
- In the disease wise clinical care scores, it was observed that both the cadres performed well in the clinical management of non-communicable diseases (hypertension and diabetes) and malaria. In contrast, the performance was poor in the clinical management of candidiasis and pre-eclampsia. CHOs scored poorly also in the management of severe dehydration and pneumonia.
- There is a statistical significance in the composite scores of CHOs and RMAs in all diseases' overall clinical care management, with RMAs scoring higher than CHOs. This overall difference in their clinical knowledge is because RMAs have more than a decade as providers of primary health care, and the curriculum pattern of RMA was similar to medical graduates. In addition to this, they have received many rounds of on-job training on topics related to primary health care though there is enough scope to improve their clinical knowledge of patient care.

II. Leadership and managerial Skills:

- Overall, HWCs, where the CHOs are posted, had better infrastructure than those where RMAs are posted. This can be because the location of the HWCs where RMAs are posted are interior, and those where CHOs are posted are located close to the main roads or towns and hence were prioritized for development.
- Further, the CHOs are posted full time in the centre, which gives them more time to engage in the better maintenance of the centre and for better follow up of the infrastructural requirements.
- Most of the staff quarters are occupied by ANMs, and CHOs have expressed the need to provide quarters near the centre.
- On average, 27% of centres managed by CHOs had >50% buffer stock of essential drugs compared to 25% of centres managed by RMAs. Though, an equal percentage (45%) of centres had stock out of essential drugs in the facilities managed by both the groups. The

availability of drugs in HWCs is not directly related to the leadership skills of MLHPs as there are systemic gaps that also exist, though posting full-time MLHPs in HWCs had a positive impact on the availability of drugs in the centres.

- At HWCs minimal range of diagnostic services are provided; the main point of care is diagnostics.
- Among the sampled HWCs, 57% are managed by full time posted CHOs, whereas the remaining are managed by RMA, who conducts a two-day OPD clinic per week, and the rest of the days, ANM conducts routine services. The average monthly OPD in CHO run HWCs is 308, around 30% higher than RMAs run centres. However, the average number of OPD patients per clinic treated by CHOs is 14, whereas 23 for RMAs, showing that even 2 days per week clinic conducted by RMA is effective.
- The cumulative numbers screened for hypertension and diabetes show that CHOs and 28% by RMAs screened 55% of the target population. This is due to the full-time availability of CHOs and their focus on NCDs.

a. Management of referrals

It was observed that, on average, CHOs refer 6 patients per month, and RMAs refer 3.4 patients to higher centres for treatment. In contrast, CHOs follow up on downward referrals of 3.1 and 3.2 patients on average per month, respectively. Maintenance of follow up registers is more at (72%) CHOs run centres than RMAs (41%).

b. Outreach and counselling

It has been observed that RMAs conduct 5 days of community visits per month, whereas CHOs conduct 3 days. RMAs mostly conduct a camp clinic on the local fare market, which they consider their community visit though they are not visiting households in the community. CHOs mostly do community visits to conduct awareness programs and to do the elderly health checkups after their OPD clinics.

c. Fund management

A majority of the sampled HWCs were spending the untied funds of Rs. 50,000 on purchase of supplies not supplied by the department directly. Most common items purchased using untied funds were glucometer strips, furniture, and spending on maintenance of the HWC like cleaning and repairs, paying electricity bills, and stationary. Most of the sampled HWCs face the challenge of timely availability of untied funds or lack of sufficient funds.

The signatory power of the ANM has resulted in conflict in the HWC team as the newly appointed CHO is supposed to be in charge of the centre. But in current arrangements, CHO has to get approval from the ANM to utilize the untied funds.

d. Performance incentives

The CHOs and RMAs working as mid-level health care providers at the sub-health centre HWC are granted a monthly incentive of up to Rs.15 000/- based on their performance. The MLHPs must fill a Monthly performance incentive claim format is the overall OPD done by MLHP in the month for claiming this incentive. In this study, most of the CHOs said that, on average, they receive a monthly incentive of around Rs.10 000 to 12 000 based on their performance. In many districts, the CHOs get their incentive timely but gets delayed for RMAs. In many districts, the incentives are delayed due to verification issues, while in a few districts, it is due to administrative reasons or their low priority of this activity.

There is also a provision for six-monthly team incentives in HWCs for the primary care team, whereby each team member has to submit a claim form through which they will be scored for the service provider under certain disease conditions. In this study, it was found that the team incentives are not received at many centres. The reason for the delay in team incentive is primarily administrative, and also, at some HWCs, the primary care team is not fully aware of incentive norms, so were not fill the claim forms regularly. Mitaniins are also part of the primary care team at the HWC and are supposed to share the team incentive. However, they were not getting this incentive because the ANM/CHOs did not include their names in the incentive claim.

e. COVID-19 related duties

In the initial phase of the COVID-19 pandemic, most of the MLHPs were involved in contact tracing and community surveillance to identify and isolate the suspected cases. This study found that, on average, RMAs have done contact tracing and community surveillance for 47 days, and CHOs have done it for 13 days from March to August 2020. Taking the experience of RMAs in the health care system, they have been posted in various COVID-19 related duties across the district and even at the higher-level facilities. In contrast, CHOs have performed COVID-19 related duties in the population under their respective HWC.

Though overall, the HWCs performed better than CHCs in making services available during the pandemic, they observed a decline in some of their services because of pandemics. There was a decline in the regular OPD in HWCs as the people were hesitant to visit the centres. The CHOs said that due to COVID restrictions, it had been an enormous challenge for them to conduct regular checkups for hypertensive, diabetic and ANC cases as they cannot touch the patient. Deliveries have also been restricted at the SC-HWC level. The patients were also not coming to the centre as they were concerned that they would be made to undergo a COVID-19 test, and they would be isolated if positive.

The referral system was also affected as the higher centres were converted into COVID-19 care centres and restricted their regular OPD. Even during the community surveillance, there were mixed reactions from the population as some of them were not cooperative and argued with the health care staff.

The MLHPs said they had to perform overtime duties and be available even during odd hours. The RMAs were also involved in the sample collection for COVID-19 testing. Both the groups said that their personal life has also been affected as they had to be away from their family members since they are working in high risk and contaminated areas. The MLHPs said that the centres had also faced an insufficient supply of PPE during the first wave of the pandemic. RMAs have been posted at Quarantine centres, even in ICUs, to manage the patients, check posts to screen the immigrants, and COVID-19 relief centres.

This shows that primary health care workers like MLHPs play a significant role during a pandemic. The presence of sufficient staff at the primary level will be a great strength to support the health system and manage the additional workloads during emergencies so that routine health care services will not be hampered.

III. Review of curriculum and training implementation

To better understand the course curriculum and training implication of the CHO and RMA cadre desk review of the curriculum, interviews with the officials, trainers, and MLHPs for their feedback have been conducted.

It was observed that the CHO curriculum was designed in such a way to cover all the common disease conditions, including various components of primary health care. In contrast, the RMA's curriculum is a trimmed version of the MBBS curriculum with additional AYUSH subjects, alternative medicine and public health.

Doctors at the district hospital are responsible for taking classes for the CHOs, and it is sometimes difficult for them to manage between their OPD or regular duty along with the classes.

Most CHOs said that they needed more practical sessions to get more exposure to understand all the clinical components better.

This shows that CHOs can perform more efficiently and confidently when they have more practical exposure and better understand the disease conditions they usually encounter at the HWC. This requires more emphasis on their practical postings during the training period.

Qualitative assessment

I. Leadership and managerial skills

The surveyors have done in-depth interviews with MLHPs to understand their roles and challenges as leaders and Managers of the HWCs and their services.

a. Management of patient records and challenges

After the upgrade of SC into HWC, electronic tablets have been provided to the centre to facilitate on-line data entry daily, in addition to different registers for specific services provided at the HWC like OPD register, ANC register, NCD register, and Follow up register etc. to maintain the patient records. Mitansins collected household and individual data in paper format tools of Family Folders and Community Based Assessment Checklists (CBAC). MLHPs and ANMs had to enter the above data into tablet-based Apps. The MLHPs felt that they had to face an excessive load of entering data into tablets. However, the utilisation of the entered data for the management of the services was found to be very limited.

Each staff at the HWC understands the responsibility of maintaining certain registers. At most of the centres, the CHOs said they maintain OPD, NCD, Follow-up and stock registers, whereas ANM maintains ANC and RCH registers, and the MPW (M) maintains the 20-point program registers mostly related to disease control and public health activities. In centres where the RMA runs the OPD clinic twice a week, ANM maintains the registers on the days when RMA is not present. Apart from this, it is the responsibility of the MLHP to fill the reports and submit the updated data for the weekly and monthly reporting of HWCs to the Block level

A significant challenge faced by the MLHP in record maintenance is the time constraint, especially at the centres run by RMA, where their focus during the two-day visit to the centre is to conduct OPD rather than maintaining the records. Most of the CHOs said they have to take extra time daily after the OPD hours to ensure that the registers are updated and there are no gaps in the records.

b. Challenges in the follow-up and management of chronic cases

Full-time posting of CHOs and the availability of drugs at the HWC have benefited many patients in treating NCDs. To ensure the follow-up of patients who missed their monthly visit to the health facility, MLHPs take the help of Mitansins to send the patients from their village to the HWC. Mitansins are given a list of chronic disease patients within their village that enables better follow-up. Sometimes elderly patients might miss their visit because of their old age and inability to travel to the centre. In such cases, medicines are given to the Mitansins during the meeting for delivery to the patient.

Only half of the diagnosed patients visit HWCs for their monthly follow-up and take medicines. One crucial reason emerging from both CHOs and RMAs regarding the poor follow up rate was the insufficient availability of NCD drugs. Before the implementation of HWCs in the state, the treatment part of NCDs was available only at the district hospitals because of which the community had a perception that there was no treatment for NCDs at other public health facilities, and they ended up visiting private practitioners.

After the roll-out of HWCs in the State, momentum for NCDs management has started. The annual indents for NCD drugs have been revised, purchased in enough numbers and distributed across various levels of health facilities. But the mechanism to make them reach till HWCs in sufficient quantity is still underdeveloped resulting in suboptimal follow-up rates.

c. Team coordination and conflict management

Most of the MLHPs have expressed their satisfaction with the support from the ANMs and MPWs at their centre. But at a few centres, they have power dynamics issues, especially between CHOs and ANMs, as the CHOs are new carders posted at the centre, whereas

ANMs have been working there for a long time. Senior ANMs might feel it difficult to work under a new staff in the same centre where they have been working for several years. Another major issue where they face a conflict of interest is utilising untied funds. Since ANM is the signatory for the untied funds, CHO requires her approval for fund utilization leading to the inability to use the funds whenever needed due to a lack of cooperation from the ANMs.

In centres where only a single ANM and one MPW are posted, they have more issues with team coordination. CHOs expect ANMs and MPWs to help them manage the OPD, whereas the ANMs expect the CHOs to help them conduct deliveries and in some of their responsibilities. Centres, where two ANMs are posted have fewer issues as one ANM gets involved in outreach work while one helps CHO conduct OPDs. There are also some policy issues as most CHOs assume that their work is only to do OPD and follow up of NCD patients; they don't get involved in MCH related services or public health promotive and preventive work.

d. Relationship of MLHP with the Mitanins

Mitanin Community Health Workers (CHWs) are a part of the primary health care team and act as a linkage between the community and the health care facility. They are the primary communication channel for creating community awareness and mobilization and are very helpful in following chronic cases, organizing activities and community visits. The CHOs have the opportunity to interact with the Mitanins more often when compared to RMAs as CHOs are present at the centre during the weekly meeting of Mitanins, and their full-time posting at HWC provides more chances to interact with Mitanins.

During the Covid -19 pandemic, they play a more crucial role in NCD patient follow up. They supplied the drugs from HWCs to the patients as patients were hesitant to visit health facilities.

e. Challenges in the referral system and suggestions to overcome them

MLHPs usually refer high-risk cases like pregnancy cases, severe newborn illnesses and complex cases to higher centres. Suspected hypertension and diabetes cases are sent to the PHC/CHC (whichever is the closest) for initial confirmation of diagnosis and treatment initiation.

CHCs and district hospitals have established a “Mitanin help desk”, through which they guide and help patients in the hospitals with their treatment, primarily pregnant women and newborn cases. However, there is no mechanism to ensure preferential treatment for referred cases from HWCs at the higher facilities. During the COVID-19 pandemic, referral to the higher centres has been even more challenging as most of these facilities have been converted into Covid Centers

Further, it is difficult for MLHPs to track patients referred to higher facilities or the downward referrals as most do not report back to the HWCs. But there is a plan by NHM to develop HWC windows at every CHC/DH where guidance and assured treatment will be provided to the patients, including speciality services.

f. Role of MLHP in organizing and planning outreach activities

The staff at the HWC is responsible for creating awareness in the community by organizing health promotion and disease prevention activities and reaching out to those who are unable to visit the health facility. To organize an outreach session or a health promotion activity, CHOs plan well in advance and take the help of the Mitanins for informing the community and gathering people.

As compared to outreach activities in the community, most of the CHOs have conducted more activities at the centre, including yoga sessions, screening camps and educational sessions as per the theme of specific health days

Though most CHOs said that they get good support from other primary health care team members, issues have been from centres having power dynamics issues between the

senior ANMs and the CHOs. At these centres, fund issues also arise as the sector-in-charge (LHV) or ANMs are the signatories of untied funds and do not support the timely provision of funds for organizing the activities.

Recommendations:

Overall, this assessment shows that MLHPs can play a significant role in performing various duties at the primary health care level. With more systemic support and training, they can provide comprehensive primary care to the community by meeting their health needs efficiently.

The deployment of RMAs in HWCs did help the state kick-start CPHC quickly and brought their skill and experience to provide quality services in HWCs. However, having a full-time MLHP in HWCs offers other very significant advantages in greater certainty in the availability of services and better follow-up of chronic disease cases.

Based on the findings of our above assessment, recommendations can be made for the strengthening of MLHP cadres in various aspects.

- Considering that the introduction of CHOs has resulted in a very significant addition of capacity to HWCs, CHOs in adequate numbers need to be quickly trained and placed to cover all existing and planned HWCs in the state.
- To facilitate the CHOs skills on comprehensive primary health care management at the HWCs, more focus is required on the practical aspect of their bridge course curriculum. More practical sessions that enable them to gain hands-on experience managing various disease conditions are required. They should have more postings at the PHC and SC-HWC level to better understand the wide range of disease conditions that are dealt with at the primary health care level.
- To ensure continuous knowledge acquisition and skill enhancement, it is necessary to have regular on the job training sessions for both the MLHP Carders. It is suggested to have an Annual Training Plan for CHOs and ANMs with around 10 days of training every year.
- Like RMAs, CHOs should also be encouraged and supported to “refer less and resolve more,” i.e. most HWCs should provide treatment to around 80% or more patients at HWC, including chronic disease cases. They should be able to identify the 10-20% of cases that may be complicated and refer them to higher facilities.
- Systems need to be strengthened for referrals of complicated cases to higher government health facilities and subsequent follow-ups through HWCs. The use of Information Technology should enable better follow-up of chronic disease cases across levels of care.
- There should be a clear and well-defined TOR of the roles and responsibilities of the MLHP carder and other members of the primary health care team at the HWC. This will avoid most of the job roles and work distribution issues.
- It is also necessary to have guidelines explaining the specific roles of each member of the primary health care team in managing chronic conditions, tracking down the lost to follow up cases and conducting preventive and promotive activities.
- To strengthen the role of MLHPs in undertaking community visits, they should be given action-based guidelines for conducting field visits and community awareness programs like Tobacco cessation, diarrhoea prevention, school visits, water quality testing etc.
- As more CHOs get recruited and posted in most HWCs, there will be a decline in the need for RMAs to continue their part-time role in HWCs. The role of RMAs in the context of HWCs can, however, grow in the direction of providing mentoring to newly inducted CHOs. RMAs can continue to visit SHC-HWCs under their PHC area to guide and support the CHOs, especially in clinical skills.
- Regarding the career progression of MLHPs, RMAs who are well experienced and efficient in their work can be promoted as senior RMAs and can be posted at higher-level facilities. They can also be appointed as District Consultants or Nodal Officers for specific health programs. Taking their experience in the public health system into consideration, they can also be appointed as Block Public Health Officers.

- For CHOs and RMAs, the immediate step can be to regularize their current contractual post as their role as an MLHP at the HWC will be essential even in the future.
- Supportive systems need to be developed to enable the MLHPs and HWCs to deliver optimal performance. These include systems for ensuring the availability of essential drugs and point of care test kits in HWCs. The HWCs should be enabled to indent their required medicines using software and receive door-step delivery.
- The record-keeping role of HWCs needs to be rationalized to avoid the over-burdening of the HWC team due to this role.

Background

CPHC is one of the most crucial policy measures proposed by India's National Health Policy 2017. Earlier in 2014-15, a Task Force was set up by the Government of India (GoI) for the rollout of CPHC, and pilots had started in some states to provide CPHC through HWCs. The above pilots were funded by National Health Mission (NHM). Subsequently, in 2018, GoI introduced HWCs as a key primary healthcare mechanism through its flagship health initiative 'Ayushman Bharat'. HWCs have been accorded the top priority in NHM funding to states since 2018-19.

The key objectives of HWCs include the promotion of health centres close to where people live to meet a wide range of primary healthcare needs. Apart from increasing proximity of services to people and the comprehensive range of services, population-based health and continuity of care are other critical dimensions of what HWCs are meant to achieve. A continuum of care has been visualized for twelve kinds of services under CPHC:

1. Care in pregnancy and child-birth
2. Neonatal and infant health care services
3. Childhood and adolescent health care services
4. Family planning, contraceptive services and other reproductive health care services
5. Management of communicable diseases: national health programs
6. Management of common communicable diseases and general out-patient care for simple acute illnesses and minor ailments
7. Screening and management of non-communicable diseases
8. Screening and basic management of mental health ailments
9. Care for common ophthalmic and ENT problems
10. Basic dental health care
11. Geriatric and palliative health care services

Trauma Care (that can be managed at this level) and Emergency Medical services HWCs are being promoted by upgrading services in PHCs and, more notably, in SHCs. By November 2020, around 50 000 HWCs have been operationalised in India, with around half of them in SHCs. An integral component of this effort will be equipping these centres to deliver a comprehensive service package and gate-keeping function with linkage to block PHC as the first referral point. This process would primarily involve (a) infrastructure strengthening, (b) augmenting human resources, (c) assuring drugs and diagnostics, and (d) changing community perception.

The most important part of the upgrade in SHCs involves the HRH. A new cadre of MLHPs has been designed. Nursing graduates are being trained in large numbers in a bridge course specially designed for the purpose. The course is run at District Hospitals promoted as Programme Study Centres (PSCs), and the certification is under the IGNOU. After completion, the nurses are posted as CHOs in sub-centre based HWCs.

The rationale for introducing this new cadre of health providers is to:

- Augment the capacity of the HWC to offer an expanded range of services closer to the community, thus improving access and coverage with a reduction in OOPE, and rational care will also be provided through the public health system.
- Improve clinical management, and care coordination and ensure continuity of care through regular follow up, dispensing of medicines, early identification of complications, and undertaking basic diagnostic tests.

- Improve public health activities related to preventive and promotive health and measure health outcomes for the population covered by the HWC.

This will improve health services utilisation at the primary care level and reduce fragmentation of care and workload at secondary and tertiary care facilities. Districts were encouraged to find MLHPs from within their district.

Chhattisgarh has a longer history of training and deploying HRH in the MLHP role. The state had started in 2001 with a three-year diploma in modern medicine with an additional one year of internship at district hospitals and produced around 1300 diploma graduates. Around 1200 Diploma holders have been working at the PHC level for more than the last 10 years and are known as Rural Medical Assistants (RMA). They played a key role in the roll-out of HWCs by running biweekly clinics in HWCs. The RMA cadre is an important reference for the MLHP role and even more so in Chhattisgarh. There are earlier studies on RMA, including their skills, though they were conducted a decade ago. It will be relevant to include a comparative analysis of CHOs and RMAs.

Assessment of MLHPs:

The key components of the MLHP role are:

- Clinical functions to provide ambulatory (out-patient) care and management, including identification of cases with complications and their referral
- Leading the HWC team, ensuring a continuum of care including across levels of care:
 - Enrolling the population and identifying those who need healthcare, and linking them with services of HWC
 - Ensuring successful referrals and continuation of treatment after referral
 - Ensuring follow-up of chronic disease cases
- Public health functions for health promotion, prevention and disease surveillance
- Managerial functions for the efficient functioning of the HWC

The above roles of MLHP are very closely related to the objectives of CPHC itself. How the MLHPs perform, therefore, has a significant bearing on CPHC. There is a need to assess the MLHPs to identify the necessary inputs for improving their performance and strengthening CPHC.

The proposed assessment will also identify areas where MLHPs need capacity building inputs.

Objectives of assessment: This assessment has focused on the following dimensions of MLHP:

I. Clinical skills and Capacity assessment

This study aims to provide a comparative assessment of RMAs and CHOs as the leading providers of clinical services at HWCs. Provider competence was assessed in knowledge and practice for the health wellness centre's designated services.

II. Review of Curriculum and training implementation

The current curriculum has been reviewed, and the quality of its implementation in PSCs was examined.

III. Leadership and managerial skills

Another objective of the assessment is to evaluate their leadership and managerial capacity for the efficient functioning of the Health and Wellness Centers.

IV. Job Satisfaction, attitudes toward rural service

This part of the assessment has explored qualitative aspects, including their attitudes towards serving in rural areas, aspirations for career progression and job satisfaction.

V. Career Progression

The lack of a clear progression plan for RMAs has been a gap. It is, therefore, necessary to come up with a plan for cadres in the MLHP role (RMAs and CHOs). For this purpose, key stakeholders were interviewed as part of this assessment.

Study framework and methodology

In this section objective wise study framework, methods for assessment and tools are discussed:

I. Clinical skills and capacity assessment: This objective will satisfy the purpose of assessing the primary care clinical skills of CHOs and RMAs. This will help them understand the areas needed to improve their skills by increasing their capacities as mid-level primary health care providers. Currently, in-state primary care in the last ten years has been mostly provided by RMAs. It will also be an evaluation of the clinical skills of RMAs and a comparison of their clinical skills with a newly appointed cadre of CHOs.

Respondents - CHOs and RMAs working at HWCs

Sample size- 50 CHOs and 50 RMAs from districts in all five divisions in the state

Method- By administering (case scenarios) clinical vignettes on ten primary care clinical conditions identified.

Clinical vignettes are a special type of clinical case structure used primarily to measure a health care worker's knowledge and clinical reasoning. Each clinical vignettes a structured case scenario having five components i.e. history taking, examination and investigations, diagnosis, treatment and follow up. Initially, the surveyor will provide a basic overview of the case, similar to how the case may be present at the health facility. The clinical vignette used in this study involved a surveyor interviewing a clinical care provider. Surveyor will play the part of the patient (e.g. I am a 30-year-old woman with 28 weeks of pregnancy who reached HWC with swelling of lower limbs), and the provider is requested to proceed with consultation as a real scenario and subsequently ask questions on history taking, examination and investigations, diagnosis, treatment and follow up. Whenever a clinician asks any relevant question on history, physical examination or investigation, the surveyor gives a standard prefix response. After the history, examination and investigation sections, the clinical care provider is asked to state their diagnosis, treatment and follow-up. How well a clinical care provider can cover these items reflects how their responses match with best treatment practices. Therefore their performance on the clinical vignettes reflects their clinical knowledge and their competence in managing the case. The structure of the clinical vignette used in this study attempts to bring a degree of realism to the assessment as the surveyor is presenting themselves as a patient pretending that this is an actual consultation. However, the clinical care provider knows that the patient is imaginary and has to rely on questions and answers for all aspects of the consultation, including physical examinations and diagnostics.

Performance on the vignettes is different from what providers do in practice. In this study, vignettes were primarily used as an interview tool to measure the clinical knowledge of CHOs and RMAs. This does not include the clinical skills and practices to perform the tasks necessary to diagnose and care for a patient. Competent trained surveyors with clinical backgrounds administered these vignettes to them. All 10 case scenarios were posed to CHOs and RMAs. Based on their responses marking was done, and the final score for each respondent for each clinical vignette was calculated.

Case selection:

The clinical vignettes were developed for the disease conditions most commonly seen in primary care settings, covering a comprehensive variety of cases. The clinical vignettes for ten cases were developed based on a literature review, standard treatment guidelines, and common practices suggested by treating physicians at PHCs in Chhattisgarh, experts from All India Institute of Medical Sciences, Raipur. Clinical vignettes have been developed on the following ten tracer primary-care health needs, i.e. diseases/conditions

1. Diarrhoea/ severe dehydration
2. Pneumonia
3. Malaria
4. Hypertension
5. Diabetes
6. RTI

7. PIH
8. Scabies
9. Poisoning
10. Sickle cell disease

Diseases of public health concern like tuberculosis and leprosy were not included as these conditions require laboratory confirmation, and the medical officer should prescribe their diagnosis and treatment. The role of CHO and RMA in such cases is only limited to identifying suspected cases and their referral to higher centres.

The questionnaire was pretested with a sample of practitioners from CHO and RMAs under study. (Detailed clinical vignettes are attached as **Annexure 1**).

Scoring of clinical vignettes

Each case was given a total score of ten, and within each case, different components were given different weights based on the significance of that component in that case.

II. Review of Curriculum and training implementation: The current curriculum of the CHO bridge course conducted by IGNOU was reviewed, and its implementation in PSCs was examined based on the following aspects.

Review of CHO Curriculum:

- Sufficiency of Topics covered vis a vis the desired scope of their role as MLHPs in HWCs – desk review, Feedback from CHOs, implementer officials at district and state levels.
- Sufficiency of clinical details covered under the topic vis a vis the expected role in the clinical management of the specific diseases/conditions - Desk Review including comparisons with standard treatment protocols and other existing modules for RMAs, Feedback from CHOs, trainers, implementer officials at district and state level

Assessment of implementation of training:

- Adequacy of time allotted for classroom learning and clinical practice
- Feedback of participants about the course implementation: Timely availability of reading materials, the proportion of classroom sessions conducted, the proportion of clinical practice sessions conducted, quality of teaching and clinical practice, any challenges faced

Training needs assessment

- Identifying topics on which further training is needed by asking CHOs, trainers, district and state level implementers

Respondents - CHO training participants and CHOs passed out from the course. Training implementers-course in charge at the district level, trainers and officials and other stakeholders involved at state levels.

Sample size - At least 5 PSCs were visited, and interviews of officials and ten CHO participants at each PSC were conducted in semi-structured personal interview schedules.

Method - Desk review of CHO modules was done in consultation with clinical experts and clinical guidelines for assessing the sufficiency of topics covered and the clinical detail given in them. Feedback on course content and training implementation been taken from CHO course participants, and CHOs passed out from the course in semi-structured interview schedule format by surveyors. (annexure-2) For assessment of training implementation: Information's on classroom schedules, the sufficiency of time allotted for classroom teachings and practical classes, topics on which further training is needed, attendance of participants and availability of teaching faculty was collected by visiting training sites (PSCs) and by conducting personal interviews of training implementers, trainers and officials involved at district and state levels.

III. Leadership and managerial skills

Another objective of the assessment is to evaluate their leadership and managerial capacity for the efficient functioning of the HWCs. Aspects that were examined include:

- Cleanliness, maintenance of essential records
- Availability of essential drugs,
- Availability of essential diagnostics
- Follow-up of chronic cases
- Management of extension/community-based activities: information on available services, prevention and promotion, follow-up of chronic disease cases
- Management of referrals to higher facilities and follow-up of downward referrals
- Fund management and expenditure
- Electricity, water and toilet facilities at HWC
- Maintenance of building and equipment
- Data and reporting

The Primary care team:

- Role division between MLHP, ANMs, Male MPW, ASHAs
- Areas of conflict, gaps in coordination
- Role of MLHP in managing team-coordination

Respondents - CHOs and RMAs working at HWCs

Sample size - 20 CHOs and 20 RMAs from all five divisions

Method - A structured format (**annexure 3.1**) was used by surveyors to collect all the information mentioned above. Aspects like cleanliness, electricity, water and toilet facilities and maintenance of buildings and equipment were examined by observations at HWCs.

Availability of drugs and diagnostics was done by physical verification and record review at HWCs.

Service delivery components, i.e. follow-up of chronic cases, management of extension/community-based activities, follow-up of chronic disease cases, management of referrals to higher facilities and follow-up of downward referrals, fund management and expenditure, were covered by interviews of CHOs by record verifications. The leadership role in the primary care team was covered by conducting a personal interview of CHOs. A separate semi-structured format (**annexure-3.2**) has been used to cover the subjective details of all these aspects.

IV and V. Job satisfaction, attitudes toward rural service and career progression

This part of the assessment will explore qualitative aspects, including their attitudes towards serving in rural areas, aspirations for career progression and job satisfaction.

Sample size - 20 CHOs and 20 RMAs from 5 divisions of the state

Respondents - CHOs and RMAs working at HWCs

Methods - Semi-structured interview schedule was administered to respondents covering dimensions of living conditions and social/family life, job performance and professional development (annexure-4). Their responses were thematically coded and analyzed

Dimension	Job satisfaction aspects
Living conditions and social/family life	<ul style="list-style-type: none"> • The condition of the house where they live • Amount of annual leave • Amount of time spent with family • Ability to take leave when they want it • The security environment
Job performance	<ul style="list-style-type: none"> • Availability of required drugs, supplies and equipment – any challenges faced • Workload, its nature, any additional responsibilities beyond the HWC role • Ability to use their skills well • The extent of community trust and respect • Ability to make a positive difference in providing necessary services to meet the health needs of the community • Support from seniors and PRIs
Professional development	<ul style="list-style-type: none"> • Adequacy of salary • Adequacy and timeliness of incentives, challenges faced in receiving incentives • Opportunities for learning, training, mentoring, support • Opportunities for promotion/career progression and development • Administrative powers with MLHP

Results

Sample distribution

Chhattisgarh has 28 districts divided into five divisions based on their geographical location and ease of administration.

For this study, it has been decided to choose at least two districts from each of the five divisions to get an overall coverage of the state. A total of 13 districts have been randomly selected across the 5 divisions in which 119 Mid-Level Health Care Providers (MLHPs) have been assessed, including 68 CHOs and 51 RMAs. The Distribution of Samples across the divisions is shown in Table 1.

Table 1: Distribution of Sample across 5 Divisions of Chhattisgarh

Sample distribution			
Division	District	CHO	RMA
Bastar	Bastar	10	0
	Kondagaon	4	0
	Kanker	2	1
Raipur	Dhamtari	3	1
	Garibandh	6	6
	Raipur	6	2
Durg	Kawardha	2	8
	Rajnandgaon	8	5
Bilaspur	Korba	5	0
	Mungeli	5	10
	Raigarh	6	10
Surguja	Koriya	8	8
	Surajpur	3	0
	Total	68	51

Ayushman Bharat Health and Wellness Centre program was launched in 2018 to provide a comprehensive range of health services at the primary level. The following Table 2: shows the year of operationalization of the HWC in which the MLHP is posted.

Table 2: Year of Operationalization of HWC

Year of HWC operationalization		
FY	CHO	RMA
2018-2019	32	11
2019-2020	34	27
2020-2021	2	13
Total	68	51

Sample Profile:

Among the sampled Mid-Level Healthcare Providers (MLHPs), more than half are females (63%), and most of them are CHOs (79%), whereas the proportion of males is higher among RMAs (69%) when compared to CHOs (13%). The Mean age of CHOs is lower (26.24 years) when compared to RMAs (36.43 years). The comparative young age among CHOs is because most of them are recent B.Sc Nursing graduates appointed as CHOs under the Ayushman Bharat HWC program after completing 6 months bridge course. Most of the sampled RMAs (94%) are married compared to CHOs (24%). The average distance of posting from the native place is higher among RMAs (87.08 km) when compared to CHOs (34.6 km). This can be because the CHOs were given the option to choose their place of posting based on their merit. The majority of the RMAs and CHOs belong to the OBC category, and the least belong to the SC category. Expectedly the average experience is higher among RMAs (10.24 years) when compared to CHOs (0.76) as the RMA carder is a special carder introduced in the State of Chhattisgarh 10 years ago into the public health system to provide services at Primary Health Centers. The average distance from the higher centre, especially the district hospital, was also found to be higher among the RMA posted centres (41.31 km) when compared to CHO posted centres (26.79kms), as most of the RMAs have been intentionally posted in the rural (interior) areas. The sample profile of the MLHPs assessed is shown in Table 3.

Table 3: Sample Profile

Sample profile				
S.No.	Indicator		CHO	RMA
1	Sample size	N=119	68	51
2	Age	21-25	26 (38%)	0
		26-30	41 (60%)	0
		31-35	1 (1%)	22 (43%)
		36-40	0	28 (55%)
		41-45	0	1 (2%)
		Mean age in years	26.24 (24-31)	36.43 (33-41)
		Median age in years	26	36
3	Gender	Male	9 (13%)	35 (69%)
		Female	59 (87%)	16 (31%)
4	Marital status	Single	52 (76%)	3 (6%)
		Married	16 (24%)	48 (94%)
5	Distance from native place	<50 Km	54	33
		50-100 Km	6	3
		>100 Km	8	15
		Avg distance in Km	34.6	87.08
6	Caste	SC	7 (10%)	6 (12%)
		ST	16 (24%)	1 (2%)
		OBC	34 (50%)	31 (61%)
		General	11 (16%)	13 (25%)
7	Qualification	Bsc nursing+CC	0 (0%)	0 (0%)
		GNM+CC	68 (100%)	0 (0%)
		PMHM	0 (0%)	51 (100%)
8	Experience of MLHP	Mean experience in years	0.76 (0.17-1.67)	10.24 (8.08-12.00)
		Median experience in years	0.88	10
9	Distance of higher centre from HWC	Average distance of PHC in km	7.97	9.32
		Average distance of CHC in Km	19.25	19.72
		Average distance of DH in Km	26.79	41.31

Results of quantitative assessment

I. Clinical skills and capacity assessments

This section describes the clinical skills and capacity of CHOs and RMAs in handling different disease conditions. This will help them understand the areas needed to improve their skills to increase their capacities as mid-level primary health care providers. Firstly, comparative scores of CHOs and RMAs in each of the five components of clinical care, i.e. history taking, examinations and investigations, diagnosis, treatment, and follow up for all the disease conditions, have been discussed. The following are diseases wise overall composite scores among the two groups.

Table 4: Comparison of scores on history taking part in different disease conditions

Section		History				
Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean \pm SD	Median	Mean \pm SD	Median	
1	Diarrhea with dehydration	35.78% \pm 17.89	33.33%	47.82% \pm 20.03	44.44%	0.001
2	Chest indrawing pneumonia	50.49% \pm 21.92	50%	52.29% \pm 21.35	50%	0.755
3	Malaria	46.73% \pm 18.47	44.44%	50.98% \pm 16.20	55.56%	0.125
4	Hypertension	59.97% \pm 23.33	55.56%	59.91% \pm 24.45	66.67%	0.916
5	Diabetes	63.97% \pm 26.76	75%	59.31% \pm 27.82	75%	0.443
6	Vulvovaginal candidiasis	47.19% \pm 22.72	45.45%	54.19% \pm 20.73	63.64%	0.056
7	Pre-eclampsia	38.45% \pm 20.28	35.71%	42.58% \pm 17.53	42.86%	0.131
8	Scabies	NA	NA	NA	NA	NA
9	Organophosphorous poisoning	65.44% \pm 22.36	66.67%	64.05% \pm 20.65	66.67%	0.374
10	Sickle cell disease	61.18% \pm 24.65	60%	67.06% \pm 25.56	80%	0.196
Overall score		52.13% \pm 14.13	51.95%	55.35% \pm 13.70	54.54%	0.253

Table 4 shows that CHOs and RMAs had an almost similar overall score in history taking components of different disease conditions; though RMAs had slightly more overall scores than CHOs, their overall median score was not statistically significant. CHOs performed their best on history taking for disease conditions like diabetes, poisoning, sickle cell diseases and hypertension, whereas they poorly performed in the history-taking of diarrhoea and dehydration, pre-eclampsia, malaria, candidiasis and pneumonia. This shows that CHOs are comparatively good in history, taking part in chronic diseases and emergency care conditions rather than infectious diseases and conditions related to maternal and child care. This might be due to the particular emphasis on NCDs and emergency care in their bridge course training since providing services for NCDs, and emergency care is one of the additional and significant components of HWC services.

While RMAs scored high in sickle cell diseases, hypertension, poisoning and candida infection, they performed poorly in pre-eclampsia, diarrhoea and dehydration, pneumonia and malaria. The competence scores also had an extensive range indicating that provider ability varies substantially within cases. The difference in median scores on history taking among CHOs and RMAs was found statistically significant only for diarrhoea and dehydration.

Table 5: Comparison of scores on physical examination/investigations part on different disease conditions

Section		Physical examination/ investigations				
Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean \pm SD	Median	Mean \pm SD	Median	
1	Diarrhoea with dehydration	44.33% \pm 19.02	42.86%	51.54% \pm 20.42	50%	0.032
2	Chest indrawing pneumonia	49.63% \pm 20.02	50%	58.82% \pm 20.51	62.50%	0.019
3	Malaria	40.63% \pm 18.12	37.50%	46.08% \pm 16.68	50%	0.081
4	Hypertension	45.29% \pm 20.69	40%	48.62% \pm 20.79	50%	0.459
5	Diabetes	43.71% \pm 17.47	44%	46.51% \pm 16.18	48%	0.385
6	Vulvovaginal candidiasis	46.47% \pm 30.41	40%	49.8% \pm 30.56	60%	0.516
7	Pre-eclampsia	41.18% \pm 20.54	40%	42.65% \pm 21.94	45%	0.601
8	Scabies	NA	NA	NA	NA	NA
9	Organophosphorous poisoning	54.41% \pm 25.07	50%	59.56% \pm 24.44	62.50%	0.223
10	Sickle cell disease	54.41% \pm 24.22	57.14%	59.38% \pm 24.14	57.14%	0.385
Overall score		46.67% \pm 13.19	48.91%	51.44% \pm 13.25	52.01%	0.080

Table 5 shows that CHOs and RMAs had an almost similar overall score in a physical examination and investigation component of different disease conditions. However, RMAs had slightly more overall scores than CHOs; the difference in their overall median score was not statistically significant. In the physical examination and investigations component of clinical vignettes, the median score for CHOs was $\geq 50\%$ in sickle cell disease and Poisoning, and for the rest of the disease conditions, their median score was $< 50\%$, with the lowest in malaria.

This fact is supported by the qualitative interviews of CHOs and their bridge course coordinators. They said that during the practical sessions of their bridge course, they were posted inwards and OPD as observers, but their case-based orientation on examination and investigation of the patient was weak. The CHOs also added that they do not prescribe specific investigations as they are not available in HWCs and are even not available in most of the PHCs and CHCs therefore, their diagnosis and treatment are based on symptoms rather than lab investigations.

RMAs' median score was $< 50\%$ in physical examination and investigations part of diabetes and pre-eclampsia, and for the rest of the disease conditions, their median score was $> 50\%$ though their overall median score was 52.01%. The low score on the examination and investigation part of RMAs was similar to CHOs that in HWCs/PHCs, only kit-based diagnostics are available, whereas laboratory-based diagnostics are available only in some of the CHCs and district hospitals. Even if they refer the patient to a higher centre, there is no system to ensure the investigation of the patients. RMAs have more than ten years of patient care experience, and they feel that because of their extensive experience, they are confident enough to diagnose the conditions without examination and investigation. With their experience, they don't feel the need for conducting all the examinations and investigations to come to a diagnosis

The difference in median scores on examination and investigation among CHOs and RMAs is statistically significant only for diarrhoea, dehydration, and chest in-drawing pneumonia.

Table 6: Comparison of scores on the diagnosis part of different disease conditions

Section		Diagnosis				
Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean \pm SD	Median	Mean \pm SD	Median	
1	Diarrhoea with dehydration	74.26% \pm 30.53	100%	80.39% \pm 31.75	100%	0.177
2	Chest indrawing pneumonia	44.85% \pm 37.70	50%	68.63% \pm 37.36	100%	0.001
3	Malaria	94.11% \pm 23.70	100%	100%	100%	0.079
4	Hypertension	89.7% \pm 20.37	100%	89.21% \pm 25.13	100%	0.772
5	Diabetes	97.79% \pm 10.34	100%	93.14% \pm 17.38	100%	0.071
6	Vulvovaginal candidiasis	12.5% \pm 32.75	0%	39.21% \pm 49.31	0%	0.001
7	Pre-eclampsia	83.09% \pm 30.68	100%	81.37% \pm 34.58	100%	0.975
8	Scabies	60.29% \pm 49.29	100%	70.59% \pm 46.02	100%	0.247
9	Organophosphorous poisoning	62.5% \pm 38.02	50%	83.33% \pm 31.09	100%	0.001
10	Sickle cell disease	88.23% \pm 32.46	100%	92.16% \pm 27.15	100%	0.484
	Overall score	70.73% \pm 13.33	70%	79.8% \pm 13.75	80%	0.001

Table 6 shows that though both CHOs and RMAs have scored considerably well in the diagnosis component of Clinical care, there is a statistically significant difference in both groups' overall mean score. The mean scores of CHOs show that they have scored higher mostly in diagnosing NCDs and Malaria when compared to diagnosing conditions like Scabies, Poisoning and Diarrhea with dehydration. A similar scoring pattern is seen even among RMAs. This can be because the diagnosis of NCDs and Malaria requires a point of care diagnostic tests that are available even at the HWC level. In contrast, conditions like scabies, poisoning, diarrhoea with dehydration, chest indrawing, pneumonia and vulvovaginal candidiasis require better clinical skills. During the assessment, it was observed that most of them were unable to differentiate between UTIs and RTIs and also were not confident enough in confirming the diagnosis of severe pneumonia. This clearly shows that the two groups will require training in these aspects to identify better and diagnose such cases. Though the median scores of RMAs appear to be higher than CHOs, the difference in the median scores was found to be statistically significant only among pneumonia, candidiasis and poisoning.

Table 7: Comparison of scores on the treatment part of different disease conditions

Section		Treatment				P-value
Type of MLHP		CHO		RMA		
S.No.	Disease	Mean \pm SD	Median	Mean \pm SD	Median	
1	Diarrhoea with dehydration	21.43% \pm 28.3	14.29%	46.22% \pm 34.12	42.86%	0.000
2	Chest indrawing pneumonia	61.52% \pm 26.12	66.67%	75.16% \pm 23.89	83.33%	0.002
3	Malaria	63.24% \pm 27.99	60%	80.39% \pm 26.07	100%	0.001
4	Hypertension	89.08% \pm 11.07	85.71%	83.75% \pm 22.13	85.71%	0.654
5	Diabetes	84.31% \pm 16.76	83.30%	88.24% \pm 15.38	100%	0.172
6	Vulvovaginal candidiasis	35.78% \pm 38.77	33.33%	54.9% \pm 35.79	66.67%	0.006
7	Pre-eclampsia	26.96% \pm 41.23	0%	39.87% \pm 42.70	33.33%	0.070
8	Scabies	46.81% \pm 29.96	50%	56.86% \pm 26.28	66.67%	0.049
9	Organophosphorous poisoning	45.34% \pm 26.52	50%	52.94% \pm 28.42	50%	0.109
10	Sickle cell disease	41.47% \pm 22.48	40%	47.84% \pm 25.32	40%	0.243
	Overall score	51.59% \pm 12.77	50.12%	62.62% \pm 14.23	58.52%	0.000

Table 7 shows a statistically significant difference in the overall median scores of CHOs and RMAs. The comparatively higher scores among the RMAs reflect that they are more confident and are better at dealing with the common public health conditions as the RMA is an established carder practising primary health care in a state with over 10 years of experience as an added advantage. Both CHOs and RMAs have < 50% median scores in diarrhoea with dehydration, preeclampsia and sickle cell disease, which show a vast gap in their clinical skill in dealing with diseases under the MCH component. These results also correlate with the qualitative findings. Most of the CHOs said they lacked sufficient practical training during their bridge course in the maternal and child health component, and they did not gain enough confidence in dealing with high-risk pregnancies and infant illnesses. Both CHOs and RMAs have scored highest in hypertension and diabetes. This shows that the role of CHOs in the screening and follow-up of NCD patients has enabled them to become more familiarized with the treatment of those disease conditions. There is a statistical significance in the difference in median scores among the two groups only in diarrhea with dehydration, chest indrawing pneumonia, malaria and vulvovaginal candidiasis.

Table 8: Comparison of scores on follow up part on different disease conditions

Section		Follow up				
Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean \pm SD	Median	Mean \pm SD	Median	
1	Diarrhoea with dehydration	62.39% \pm 26.23	71.43%	71.15% \pm 24.66	71.43%	0.070
2	Chest Indrawing pneumonia	41.18% \pm 28.25	50%	67.16% \pm 25.73	75%	0.000
3	Malaria	62.25% \pm 28.74	66.67%	67.32% \pm 27.07	66.67%	0.313
4	Hypertension	80.88% \pm 25.31	100%	77.78% \pm 29.56	100%	0.777
5	Diabetes	70.22% \pm 28.73	75%	77.94% \pm 30.68	100%	0.056
6	Vulvovaginal candidiadis	43.38% \pm 29.81	50%	52.94% \pm 31.48	50%	0.156
7	Pre-eclampsia	35.29% \pm 31.52	25%	50% \pm 36.40	50%	0.024
8	Scabies	NA	NA	NA	NA	NA
9	Organophosphorous poisoning	67.65% \pm 47.13	100%	68.63% \pm 46.86	100%	0.910
10	Sickle cell disease	19.12% \pm 39.62	0%	29.4% \pm 46.02	0%	0.192
	Overall score	53.6% \pm 15.79	51.72%	62.48% \pm 19.01	58.73%	0.010

Table 8 shows that CHOs and RMAs have almost similar median scores in follow up components of different disease conditions. RMAs have slightly more scores than CHOs, and there is a statistically significant difference in their overall median score. Since follow up is an important aspect to ensure continuity of care in the case of chronic diseases, a considerably good score of CHOs and RMAs in the NCDs reflects their good understanding of their roles in dealing with these conditions. Abysmal scores in the follow up of sickle cell disease in both CHOs and RMAs emphasize the need for training in this disease condition as SCD is a prevalent disease in the State of Chhattisgarh. In current state policy, CHOs and RMAs do not have more role in the treatment and followed up of SCD. A statistically significant difference in median scores among CHOs and RMAs is seen only in pneumonia and pre-eclampsia.

Table 9: Composite section-wise comparison of scores

Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean% \pm SD (CI)	Median% (Min.-Max.)	Mean % \pm SD (CI)	Median % (Min.-Max.)	
1	History	52.13 \pm 14.13 (48.71-55.55)	51.95 (18.95-6.14)	55.46 \pm 13.65 (51.62-59.30)	54.54 (24.84-93.21)	0.253
2	Physical examination/ investigation	46.67 \pm 13.19 (43.48-49.87)	48.91 (15.57-4.23)	51.40 \pm 13.25 (47.68-55.13)	51.98 (20.39-86.10)	0.080
3	Diagnosis	70.73 \pm 13.33 (67.50-73.96)	70 (25-100)	79.62 \pm 14.21 (75.63-83.62)	80 (45-100)	0.001
4	Treatment	51.59 \pm 12.77 (48.50-54.69)	50.12 (30.67-6.67)	62.72 \pm 14.09 (58.75-66.68)	58.52 (34.38-94.67)	0.000
5	Follow up	53.60 \pm 15.79 (49.78-47.42)	51.72 (22.75-7.22)	62.47 \pm 19.01 (57.12-67.82)	58.73 (27.65-100)	0.010
	Overall score	54.95 \pm 11.00 (52.28-57.61)	53.90 46.67-70.74)	62.33 \pm 11.26 (59.17-65.50)	61.37 (51-79.8)	0.001

Table 9 shows a statistical significance in the composite scores of CHOs and RMAs in all diseases and overall clinical care management, with RMAs scoring higher than CHOs. Both CHOs and RMAs have scored highest in the diagnosis section of clinical care and lowest in the physical examination and investigations section. RMAs have $\geq 50\%$. Median scores in all the components, whereas CHOs have $\geq 50\%$ median scores except for the physical examination and investigations component. A statistically significant difference was found among the median scores of CHOs and RMAs in the section-wise scores of diagnosis, treatment, and follow-up. This overall difference in their clinical knowledge is due to over a decade of experience with RMAs as providers of primary health care and the curriculum pattern of RMA, which was similar to medical graduates. In addition to this, they have received many rounds of on-job training on topics related to primary health care though there is enough scope to improve their clinical knowledge of patient care. In the case of CHOs, their basic qualification is BSc nursing in they are primarily training in the nursing part of patient care, and the six-month bridge is not sufficient for them to attain knowledge on all aspects of patient care.

Table 10: Disease wise comparison of composite scores

Type of MLHP		CHO		RMA		P-value
S.No.	Disease	Mean Score \pm SD (CI)	Median Score (Min.-Max.)	Mean Score \pm SD (CI)	Median Score (Min.-Max.)	
1	Diarrhoea with dehydration	4.28 \pm 1.71 (3.87-4.70)	3.89 (1.74-9.49)	5.69 \pm 1.95 (5.14-6.23)	5.74 (1.54-10.00)	0.000
2	Chest indrawing pneumonia	5.15 \pm 1.79 (4.71-5.58)	5.11 (1.42-8.92)	6.59 \pm 1.63 (6.13-7.05)	6.58 (2.96-9.84)	0.000
3	Malaria	6.68 \pm 1.66 (6.28-7.08)	6.60 (0.00-9.87)	7.56 \pm 1.09 (7.26-7.87)	7.66 (4.63-9.44)	0.000
4	Hypertension	7.22 \pm 1.27 (6.92-7.53)	7.32 (4.23-9.34)	7.1 \pm 1.57 (6.66-7.55)	7.43 (3.63-9.50)	0.944
5	Diabetes	6.93 \pm 1.32 (6.61-7.25)	7.04 (3.71-10.00)	7.15 \pm 1.32 (7.18-7.51)	7.51 (4.07-9.88)	0.255
6	Vulvovaginal candidiasis	3.33 \pm 2.09 (2.82-3.84)	3.00 (0.00-9.26)	4.93 \pm 2.25 (4.29-5.56)	4.86 (0.93-9.27)	0.000
7	Pre-eclampsia	4.26 \pm 1.89 (3.80-4.72)	3.71 (1.26-9.55)	4.88 \pm 2.12 (4.29-5.48)	4.82 (0.15-8.58)	0.039
8	Scabies	5.35 \pm 3.47 (4.52-6.19)	6.67 (0.00-10.00)	6.37 \pm 3.22 (5.47-7.28)	8.33 (0.00-10.00)	0.051
9	Organophosphorous poisoning	5.57 \pm 2.25 (5.03-6.12)	5.54 (0.17-10.00)	6.37 \pm 2.05 (5.79-6.95)	6.67 (1.50-9.46)	0.038
10	Sickle cell disease	5.64 \pm 1.87 (5.19-6.10)	5.75 (0.80-10.00)	6.22 \pm 1.80 (5.71-6.73)	6.29 (1.23-9.60)	0.069
	Overall score	5.44 \pm 1.26 (5.17-5.71)	5.64 (3.33-7.22)	6.29 \pm 0.90 (5.97-6.60)	6.63 (4.88-7.56)	0.000

Table 10 shows the overall disease wise composite scores among the CHOs and RMAs, and it has a significant statistical difference. CHOs have scored highest in the overall clinical care of hypertension and lowest in the clinical care of vulvovaginal candidiasis. RMAs have scored highest in the clinical care of scabies and lowest in pre-eclampsia. CHOs have a median score of < 5 in diarrhoea with dehydration, preeclampsia and vulvovaginal candidiasis. RMAs have < 5 median score in vulvovaginal candidiasis and pre-eclampsia. In every disease condition, RMAs have scored more than CHOs, but in hypertension and diabetes, their composite score is similar with no statistically significant difference.

I. Leadership and managerial skills:

This section describes the leadership and managerial capacity of Mid-level Health Care providers (MLHP) for the efficient functioning of the HWCs.

Table 11: HWC infrastructure and utilization of ambulance services:

S. No.	Indicator	CHO posted HWCs (N=68)	RMA posted HWCs(N=51)
1	Number of HWC buildings that are well maintained	59 (86.8%)	36 (70.6%)
2	Number of HWCs with hygienic and clean premises	58 (85.3%)	39 (76.5%)
3	Number of HWCs with the provision of electricity (24*7)	61 (89.7%)	44 (86.3%)
4	Number of HWCs with adequate lights and fans	63 (92.6%)	43 (84.3%)
5	Number of HWCs with 2 functional toilets	36 (52.94%)	24 (47.06%)
6	Number of HWCs with the provision of water supply (24*7)	59 (86.8%)	37 (72.5%)
7	Number of HWCs with the provision of safe drinking water	47 (69.1%)	33 (64.7%)
8	Number of HWCs with separate room for OPD consultation	63 (92.6%)	49 (96.1%)
9	Number of HWCs with ear marked waiting area	57 (83.8%)	46 (90.2%)
10	Number of HWCs with separate Labour room	64 (94.1%)	49 (96.1%)
11	Number of HWC with functional newborn care corner	42 (61.8%)	25 (49%)
12	Number of HWCs where newroom has been constructed	13 (19.1%)	7 (13.7%)
13	Number of HWCs where branding has been done	62 (91.2%)	34 (66.7%)
14	Number of HWCs that utilized ambulance for transport of patients to higher centre	56 (82.4%)	39 (76.5%)
15	Number of HWCs that utilized ambulance in the past 3 months	40 (58.8%)	29 (56.9%)

Table 11 describes the infrastructure of sampled HWCs where the CHOs and RMAs are posted. Overall, the HWCs where the CHOs are posted had better infrastructure than those where RMAs are posted. This can be because the location of the HWCs where RMAs are posted are interior, and those where CHOs are posted are located close to the main roads or towns and hence might be prioritized for development. Also, the CHOs are full time posted in the centre, which gives them more time to engage in the better maintenance of the centre and for better follow up of the infrastructural requirements. Whereas the RMAs conduct only two days of OPD at their sanctioned HWCs, their primary focus is on conducting OPD clinics rather than their involvement in the managerial aspects of the HWCs.

A minimum of two functional toilets is found only in half of the centres assessed because most of the centres had an attached toilet to the labour room, but they did not have a separate functional toilet for other patients and staff. For the sub-centres that have been upgraded to HWCs, construction of a new room was sanctioned to provide extra space that can be utilized based on their needs, like stocking drugs, patient examination, waiting for the area or activity room. Among the sampled centres and only 17% of them had a new room constructed. This gap was also highlighted in the qualitative research component, where most of the CHOs said that space constraints are a big challenge as the current SC layout is insufficient, especially for stocking drugs. More than three-fourths of the CHO and RMA run centres have utilized Ambulance services, and more than 50% have utilized them in the past 3 months. The ambulance services mainly were utilized for Delivery cases. This is a good measure of functionality and accessibility of the centre to ambulance services.

Table 12: Availability of Staff quarters at the HWC

S. No.	Indicator	CHO	RMA
1	Number of MLHPs staying at staff quarters	15 (22%)	2 (3.9%)
2	Number of ANMs staying at staff quarters	42 (61.8%)	33 (64.7%)

Table 12 shows that mostly ANMs stay at the staff quarters available in the centre compared to CHOs and RMAs. During the qualitative interview, CHOs expressed the need to provide quarters near the centre to be available to provide services at the centre as and when required, especially during nights and emergencies.

Table 13: Availability of essential drugs at the HWCs

Type of MLHP			CHO (N=68)		RMA (N=51)	
S.No.	Drugs	Dosage	Number of centres with >50% stock of drugs	Number of centres with stock out of drugs	Number of centres with >50% stock of drugs	Number of centres with stock out of drugs
1	Amlodipine	Tablet 5 mg	24 (35%)	0 (0%)	11 (22%)	4 (8%)
2	Enalapril	Tablet 5 mg	14 (21%)	45 (66%)	11 (22%)	37 (73%)
3	Isosorbide dinitrate	Tablet 10 mg	1 (1%)	67 (99%)	2 (4%)	49 (96%)
4	Glimepiride	Tablet 1 mg	33 (49%)	29 (43%)	24 (47%)	19 (37%)
5	Metformin	Tablet 500 mg	34 (50%)	1 (1%)	21 (41%)	3 (6%)
6	Diazepam	Oral liquid 2 mg/5 ml	10 (15%)	58 (85%)	5 (10%)	45 (88%)
7	Salbutamol	Tablet 2 mg	5 (7%)	59 (87%)	8 (16%)	41 (80%)
		Oral liquid 2 mg/5 ml	17 (25%)	46 (68%)	15 (29%)	29 (57%)
		Respirator solution for use in nebulizer 5mg/ml	12 (18%)	51 (75%)	13(25%)	37 (73%)
8	Diclofenac	Tablet 50mg	5 (7%)	46 (68%)	5 (10%)	35 (69%)
		Injection 25mg/ml	21 (31%)	26 (38%)	12 (24%)	23 (45%)
9	Paracetamol	Tablet 500mg	15 (22%)	2 (3%)	7 (14%)	0%
		Syrup 125mg/5ml	22 (32%)	15 (22%)	16 (31%)	5 (10%)
10	Cetirizine	Tablet 5mg	8 (12%)	27 (40%)	5 (10%)	20 (39%)
11	Gentamicin	Injection 10mg/ml, Drop 0.3%	32 (47%)	21 (31%)	12 (24%)	24 (47%)
12	Amoxicillin	Capsule 250mg,	48 (71%)	10 (15%)	37 (73%)	5 (10%)
		Capsule 500mg,	18 (26%)	35 (51%)	11 (22%)	27 (53%)
13	Azithromycin	Tablet 500mg	3 (4%)	39 (57%)	0%	22 (43%)
14	Fluconazole	Tablet 150mg	31 (46%)	28 (41%)	22 (43%)	23 (45%)
15	Chloroquine	Tablet 150mg	25 (37%)	19 (28%)	15 (29%)	9 (18%)
16	Primaquine Artesunate (A) + Sulphadoxine	Tablet 7.5mg	31 (46%)	32 (47%)	11 (22%)	31 (61%)
		Tablet15mg	5 (7%)	62 (91%)	2 (4%)	49 (96%)
17	Clotrimazole	Cream 2%	18 (26%)	26 3(8%)	13 (25%)	19 (37%)0
19	Povidone iodine	Cream 1%	24 (35%)	16 (24%)	14 (27%)	11 (22%)
19	Permethrin	Lotion 1%/Ointment 5%	12 (18%)	21 (31%)	17 (33%)	20 (39%)
20	Dicyclomine	Tablet 10mg	39 (57%)	10 (15%)	24 (47%)	5 (10%)
21	Ondansetron	Tablet 4mg	42 (62%)	16 (24%)	33 (65%)	9 (18%)
		Syrup 2mg/5ml	19 (28%)	31 (46%)	11 (22%)	20 (39%)
22	Oral rehydration salts	As licensed	39 (57%)	2 (3%)	32 (63%)	0%
23	Ciprofloxacin eye/ear drops	Drops 0.3%	29 (43%)	23 (34%)	22 (43%)	16 (31%)
24	Misoprostol	Tablet 200mcg	11 (16%)	52 (76%)	11 (22%)	37 (73%)
25	Oxytocin	Injection: 10 IU	11 (16%)	20 (29%)	14 (27%)	9 (18%)
26	Magnesium sulphate	Injection 500mg/ml	15 (22%)	45 (66%)	9 (18%)	36 (71%)
27	Ringer lactate	Solution 500ml	1 (1%)	10 (15%)	1 (2%)	8 (16%)
28	Atropine	Injection 1mg/ml	2 (3%)	46 (68%)	0	40 (78%)
29	Snake venom antiserum lyophilized polyvalent	Powder for injection	7 (10%)	42 (62%)	7 (14%)	40 (78%)
30	Anti rabies vaccine	Injection 2.4 IU	1 (1%)	52 (76%)	3 (6%)	41 (80%)
31	Adrenaline	Injection	1 (1%)	43 (63%)	0	32 (63%)
32	Glucometer strips	NA	17 (25%)	13 (19%)	19 (37%)	9 (18%)
33	Urine Dip sticks	NA	19 (28%)	39 (57%)	9 (18%)	33 (65%)
34	RDK kits for malaria	NA	20 (29%)	25 (37%)	14 (27%)	13 (25%)
	Average		18 (27%)	31 (45%)	13 (25%)	23 (45%)

Table 13 shows the availability of essential drugs in HWCs managed by both CHOs and RMAs. The analysis was done by comparing available drugs in the HWCs with the facility wise buffer stock of important drugs. Two indicators were calculated, i.e. several centres with >50% of buffer stock and several centres with stock out of drugs. On average, 27% of centres managed by CHOs had > 50% of buffer stock of important drugs compared to 25% of centres managed by RMAs. Though, an equal percentage (45%) of centres had stock out of essential drugs in the facilities managed by both the groups. Chhattisgarh has centralized procurement and distribution system of drugs called Chhattisgarh Medical Service Cooperation (CGMSC). Most of the districts have a warehouse of CGMSC at their headquarters. Drugs from the warehouse are distributed to all levels of health facilities regularly. PHCs do quarterly indenting of drugs, whereas CHCs and DH do monthly from the warehouse. Most of the HWCs are upgraded sub-health centres. In current practices, indenting of drugs for HWCs are from PHCs, and most of the time, drugs are not indented as per their requirements. Centres where CHOs are posted, are performing better in the stocking of drugs as they themselves go and collect the required drugs from the PHC pharmacy, and they also do the regular indenting of drugs. RMAs take drugs from PHCs with them whenever they visit the HWCs for roster duty. During qualitative interviews also raised their concern about the availability of drugs. They suggested that they should also be given login id for indenting of drugs, and the drugs should be supplied to them by CGMSC directly to their centres. Thus, the availability of drugs in HWCs is not directly related to the leadership skills of MLHPs, as there are systemic gaps that also exist. Though posting full time, MLHPs in HWCs positively impacted the availability of drugs in the centres.

Table 14: Availability of point of care diagnostic test

S.No.	Test	CHO (N=65)		RMA (N=49)	
		Number of centres that conducted > 50% of expected tests	Number of centres that conducted 0 tests	Number of centres that conducted > 50% of expected tests	Number of centres that conducted 0 tests
1	Heamoglobin test	19 (29%)	9 (14%)	24 (49%)	7 (14%)
2	Urine pregnancy test	54 (83%)	7 (11%)	39 (79%)	7 (14%)
3	Urine dipstick test	9 (14%)	40 (61%)	14 (29%)	32 (65%)
4	Blood glucose test	59 (91%)	2 (3%)	40 (82%)	7 (14%)
5	RDK for malaria	11 (17%)	22 (34%)	17 (35%)	16 (33%)
6	Sickle cell solubility test	4 (6%)	61 (94%)	2 (4%)	46 (94%)
7	Collection of sputum samples for TB	15 (23%)	36 (55%)	16 (33%)	28 (57%)

Table 14 shows the number of diagnostic tests conducted at the HWCs in the last month. At HWCs minimal range of diagnostic services are provided, including point-of-care diagnostics. The expected numbers of diagnostic tests were compared with their current practices for this analysis. Again, two indicators were calculated for the analysis: the number of centres that conducted > 50% of expected tests and centres that conducted zero tests. When each diagnostic test is considered, RMAs prescribe more diagnostics related to national health programs like malaria, tuberculosis and haemoglobin, whereas CHOs conduct more sugar tests as they think their primary role is to diagnose more NCD cases. Even in diagnostics availability of rapid kits is also one of the major concerns. To make high-end diagnostic tests available for the patients at the HWC, it was thought to establish a central laboratory in the district headquarters and by the hub and spoke mechanism, samples collected from HWCs will be sent to the central lab results will be shared back to the HWCs.

Table 15: Service delivery

Type of MLHP		CHO (N=65)	RMA (N=41)
S.No	Indicators	Mean (CI)	Mean (CI)
1.	Total OPD in last month	308 (277-339)	218 (183-252)
2.	Total OPD by MLHP in last month	259 (228-289)	113 (82-144)
3.	Total OPD by ANM/MPW in last month	56 (41-70)	99 (75-123)
4.	Number of OPD clinics held by MLHP in the last month	19 (18-21)	5 (4-6)
5.	Number of OPD clinics held by ANM/MPW in the last month	5 (4-7)	17 (15-19)
Mean proportion of each disease condition from total OPD			
S.No	Disease conditions	CHO (65)	RMA (49)
1.	ANC (%)	7 (6-9)	9 (7-12)
2.	Fever (%)	13 (10-15)	14 (11-17)
3.	Cold and cough (%)	19 (17-21)	15 (12-17)
4.	Diarrhea (%)	4 (3-9)	3 (2-4)
5.	Immunization (%)	12 (9-15)	14 (10-18)
6.	Sickle cell under treatment (%)	0.6 (0.2-1)	0.4 (0.2-0.6)
7.	TB suspected (%)	0.8 (0.5-1.1)	0.9 (0.5-1.3)
8.	Epilepsy (%)	0.04 (0-0.1)	0.01 (0-0.03)
9.	Aches and pains (%)	21 (18-24)	20 (17-23)
10.	ARI/pneumonia	0.3 (0.1-0.5)	0.9 (0.14-1.7)
11.	Skin related (%)	9 (8-10)	8 (6-10)
12.	Severe dehydration (%)	0.4 (0.1-1)	0.24 (0-0.5)
13.	UTI (%)	1.1 (0.8-1.4)	1.2 (0.6-1.7)
14.	RTI/STI (%)	0.2 (0-0.5)	0.8 (0-1.9)
15.	Malaria (%)	0.16 (0.04-0.3)	0.12 (0-0.3)
16.	Minor injuries/burns (%)	4 (3-5)	3 (2-4)
17.	Newborn illness (%)	0.5 (0.2-0.7)	0.3 (0.1-0.4)
18.	Delivery cases (%)	1.8 (1.2-2)	4 (3-5)
19.	Ear infections (%)	3 (2.2-3.7)	2 (1.6-3)
20.	Eye infection (%)	2.3 (1.7-3)	2.1 (1.3-3)

Table 15 shows the service delivery components of the sampled HWCs. Among the sampled HWCs, 57% are run by full time posted CHOs, whereas the remaining are run by RMA, which conducts a two-day OPD clinic per week, and the rest of the days, ANM conducts routine services. The average monthly OPD in CHO run HWCs is 308, around 30% more than RMAs run centres. The average number of OPD patients per clinic treated by CHOs is 14, whereas 23 for RMAs. Even two days weekly clinic conducted by RMA is shown to be effective. Assuming that 5000 is the average population to be covered per HWC, the expected OPD per month will be around 650. This shows that the current OPD rates by a full-time MLHP are close to 50% of the expected OPD, so there is enough scope to increase the OPD numbers.

While looking at the mean proportion of each disease condition from total OPD by CHOs and RMAs similar pattern is seen. CHOs have more patients with common disease conditions like cough and cold, Ache and pains and diarrhoea. This is because of their full-time availability at the centre. At the same time, conditions like pneumonia, RTI/STI, ANC, and delivery cases are more seen by RMAs. It is seen that after the up-gradation of SHCs into HWCs, the range of services has improved as conditions like skin infections, minor injuries /burn, and ear and eye infections cases also have a fair share of the total OPD.

Table 16: Performance measurement indicators on NCDs

S. No.	Type of MLHP	CHO (N=68)	RMA (N=51)
1	Population	4490 (4032-4948)	6231 (4358-8104)
2	Cumulative screened for HTN	1163 (1016-1310)	832 (625-1040)
3	Cumulative diagnosed for HTN	67 (58-77)	52 (43-62)
4	Diagnosing and initiating treatment for patients self (%)	45.59	98.04
5	The average number of cases diagnosed and treatment initiated in the last month	9	14
6	Line listing maintained for hypertension (%)	80.88	84.31
7	Hypertension Line list distributed to Mitanins (%)	75	51.0
8	Maintenance of follow up a record of each patient for HTN(%)	86.76	72.55
9	The mean number of patients who received treatment (follow up rate) for hypertension in the last month	33 (28-38)	28 (21-35)
10	Cumulative screened for DM	1160(1018-1301)	818 (609-1026)
11	Cumulative diagnosed for DM	41 (33-49)	35 (27-42)
12	Diagnosing and initiating treatment for patients self (%)	44.12	96.08
13	The average number of cases diagnosed and treatment initiated in the last month	8	9
14	Line listing maintained for DM (%)	79.41	78.43
15	DM Line list distributed to Mitanins (%)	76.47	50.98
16	Maintenance of follow up a record of each patient for DM (%)	86.76	74.51
17	The mean number of patients who received treatment (follow up rate) for DM in the last month	21 (18-25)	21 (15-27)

Table 16 shows the performance measurement indicators on NCDs in CHOs and RMAs run HWCs. The cumulative screen for hypertension and diabetes shows that CHOs and 28% RMAs screened 55% of the target population. This is due to the full-time availability of CHOs and their focus on NCDs. The cumulative diagnosis for hypertension and diabetes in CHO run centres is 5.8% and 3.8%, respectively, and in RMA run centres is 6.3% and 4.2%, respectively.

Among the total sampled MLHPs, 45.59% of CHOs and 98.04% of RMAs diagnosed and initiated treatments for patients with hypertension by themselves. In diabetes, 44.12% of CHOs and 96.08% of RMAs diagnosed and initiated treatments for patients by themselves. As per the CPHC guideline, the role of MLHPs is to screen and refer the suspected cases to the medical officer/specialist, who will then confirm the diagnosis and initiate treatment. In the State of Chhattisgarh, Medical Officers are not available at most of the PHCs, so RMAs run those centres, and in a way, they are playing the role of Medical Officers. A previous study done in 2009 suggests that RMA's clinical competence is equal to a medical officer. Also, if a patient is referred to a higher centre by RMAs, there are chances to go to the higher facility; he might consult a private practitioner or a quack resulting in high out-of-pocket expenditure.

In chronic diseases, line listing of diagnosed cases is important for follow-up; the CHO and RMA run centres maintain a similar proportion of line listing. The line list maintained by the MLHPs is given to Mitanins (Community Health Workers) to encourage them to follow up at HWCs. More Proportion of centres managed by CHOs shared the line list of NCD cases with mitanins compared to RMAs. Follow up records were also comparatively well maintained in CHO run centres. Overall follow up rates against cumulative diagnosed cases for hypertension and diabetes were similar in both the groups.

III. Management of referrals

Continuity of care is an important aspect of HWCs that includes referral of patients to the higher centre and follow up of downwards referrals. It was observed that, on average, CHOs refer six patients per month, and RMAs refer 3.4 patients to higher centres for treatment. At the same time, they follow up on downward referrals of 3.1 and 3.2 patients on average per month, respectively. Maintenance of follow up registers is more at (72%) CHOs run centres than RMAs (41%). Less referral by RMAs is because of their more experience in providing a wide range of patient care

services. The challenges in the referral system are discussed in detail in other sections.

iv. Outreach and counselling

One of the important roles of MLHPs is to perform public health functions by having community visits. The study has observed that RMAs conduct five days of community visits per month, whereas CHOs conduct three days. RMAs mostly conduct a camp clinic on the local fare market that they consider their community visit though they are not visiting households in the community. CHOs mostly do community visits to conduct awareness programs and to do the elderly health checkups after their OPD clinics. In the study it was also planned to assess their involvement in school health programs, and it has been observed that, on average, CHOs undertook 1.5 school visits per month, and RMAs have done 2.4 visits per month. When it comes to giving education on menstrual hygiene, which is an important component of adolescent health programs, it has been observed that, on average, RMAs provide counselling to 23 girls per month, and CHOs provide counselling to 21 girls.

As no clear guidelines indicate the role of MLHPS in outreach and counselling services, there is a need to emphasise this aspect of their role. This enables them to understand the community's needs and plan and provide services accordingly. Based on the qualitative interview of state, district officials and MLHPs, their role in outreach and counselling services has been discussed in the recommendation section in detail.

V. Fund management

As per the current CPHC norms, an SC that has been converted to HWC is granted a total of Rs.50 000/- annually as an untied fund. The facility can utilize the untied funds as per the need. In this study, it was observed that the majority of the sampled HWCs were spending the untied funds on the purchase of supplies that were not supplied by the department directly. Most common items purchased using untied funds were glucometer strips, furniture, and spending on maintenance of the HWC like cleaning and repairs, paying electricity bills, and stationary. It was observed that the untied funds are released to the centres in instalments rather than as a single payment. There were also differences in the amount and regularity of untied funds sanctioned in different districts. The amount will be sanctioned to the facility from the block level in a few districts, whereas in others, directly from the district level. Most of the sampled HWCs face the challenge of timely availability of untied funds or lack of sufficient funds. There is also an Rs.25 000/- per HWC as a stock gap arrangement for purchasing essential drugs and equipment. In practice, that amount is not being directly transferred to the HWC; instead, block and district directly purchase those items using that money and then supply it to HWCs. In this mechanism, all the HWCs will usually not get an equal share of supplies worth the sanctioned amount. Sometimes districts use that money to re-purchase drugs already supplied by CGMSC.

Rational use of that money as a stock gap arrangement is often missing. Initially, when the facilities functioned as Sub health centres, ANM used to be the signatory for the untied fund. The same has been continued even after the up-gradation of centres as HWCs. The signatory power of the ANM has resulted in the power dynamics issue at the HWC as the recently appointed CHO is supposed to be in charge of the centre. But in current arrangements, CHO has to get approval from the ANM to utilize the untied funds. Lack of common understanding and cooperation in decision making between the two creates conflict in utilising funds. To resolve such power dynamics, consultation of various stakeholders has been done during the study, and their recommendations have been discussed in further sessions.

VI. Performance incentives

The CHOs and RMAs working as mid-level health care providers at the sub-health centre HWC are granted a monthly incentive of up to Rs. 15 000/- based on their performance. To claim the incentive, the MLHPs have to fill a monthly performance Incentive claim format that is the overall OPD done by MLHP in the month. Their OPD performance is scored and categorized into 5 Grades A, B, C, D and E, with A being the highest grade for an incentive of Rs15 000/- and E being the lowest for an incentive of Rs.3 000/-. In this study, most of the CHOs said that, on average, they receive a monthly incentive of around Rs.10,000 to 12,000 based on their performance. Though the CHOs get their incentive timely, it gets delayed for RMAs. In many districts, it gets delayed in the name of verifying

their performance, and in some districts, it gets delayed due to administrative reasons or their low priority of this issue.

There is also a provision for six-monthly team incentives in HWCs for the primary care team. The primary health care team at the Sub Centre level-HWC includes ANM, MPW and Mitanin and the PHC-HWC level team includes MO if posted, RMA, Staff Nurse, ANM, Pharmacist, Lab Technician, Ophthalmic assistant Paramedical staff and other Grade IV staff. Each team member has to submit a team incentive claim form in which they will be scored for the service provider under certain disease conditions. The incentive will be provided to each member based on their respective grades. In this study, it was found that the team incentives are not received at many centres. The reason for the delay in team incentive is mostly administrative, and also, at some HWCs, the primary care team is not fully aware of incentive norms, so were not fill the claim forms regularly. Apart from this, Mitanins (CHWs) also have an additional Rs incentive. 400/- on sending 10 patients every month to HWCs. Though Mitanins are also part of the primary care team, at most of the centres, they were not getting the team incentives because their team incentive claim is filled either by ANM/CHOs, and they misunderstood with Rs 400 monthly incentive of Mitanins as team incentive, so they were not mentioning the names of Mitanins in their team incentive claims. In a qualitative interview, RMAs were concerned about the timely availability of their incentives as they were feeling overburdened by doing multiple duties (at PHCs/HWCs/CHC night duty/hot bazaar clinic/ other public health work), and upon that, they were not getting timely incentives. In some districts, RMAs also reported the cut demands on their incentives by higher authorities.

VI. COVID related duties

Health care providers across the globe are facing the challenge of tackling Corona disease caused by the novel COVID 19 virus. To better understand the roles, responsibilities, and challenges faced by the healthcare providers, especially those working at the primary healthcare level during this pandemic situation, we have assessed the COVID related duties performed by the MLHPs.

In the initial phase of the COVID 19 pandemic, most of the MLHPs were involved in contact tracing and community surveillance to identify and isolate the suspected cases. This study found that, on average, RMAs have done contact tracing and community surveillance for 47 days, and CHOs have done it for 13 days. RMAs have suspected and referred 33 patients during their community surveillance, whereas CHOs have suspected and referred an average of 6 patients. They were also involved in visits to quarantine centres; the average number of Quarantine centre visits done by RMAs is 12, and it is 3 in the case of CHOs. RMAs have given preventive education on COVID-19 to 363 people, and CHOs have given 130 people. Taking the experience of RMAs in the health care system, they have been posted in various COVID related duties across the district and even at the higher-level facilities. In contrast, CHOs have performed COVID related duties in the population coming under their respective HWC.

This pandemic has had a considerable effect on the routine services provided at the HWC. There was a decline in the regular OPD as the people were hesitant to visit the centre. CHOs said that due to COVID-19 restrictions, it had been a huge challenge for them to conduct regular checkups for Hypertensive, diabetic and ANC cases as they cannot touch the patient. They said they only used to provide drugs through the window as per the instructions from a higher level. Deliveries have also been restricted at the SC-HWC level. The patients were also not coming to the centre as they were concerned that they would be tested for COVID-19 and they would be isolated if tested positive. As most of the rural population is daily wage labourers, they are afraid that they will not be able to go to their work and thus lose the opportunity to earn in the harvest season. The referral system was also affected as the higher centres were converted into COVID-19 care centres and restricted their regular OPD. Even during the community surveillance, there were mixed reactions from the population as some of them were not cooperative and argued with the health care staff when they were on home quarantine. This kind of reaction from the public can also be because of the stigma related to COVID-19 among the population since Corona is a communicable disease that spreads rapidly. The community sees the positive corona person as a threat.

The MLHPs said they had constant pressure from the higher officials for regular follow up and reporting of corona patients. They faced the challenge of managing a vast workload while working under pressure. They said that they had to perform overtime duties and be available even during

odd hours. The RMAs were also involved in the sample collection. They said they had not been provided with enough PPE kits, gloves and N95 masks to manage high-risk situations. Both the groups said that their personal life has also been affected as they had to be away from their family members since they are working in high risk and contaminated areas. The MLHPs said that the centres had also faced the challenge of an insufficient supply of sanitisers and gloves. RMAs have been posted at Quarantine centres, even in ICUs, for managing the patients, check posts to screen the immigrants and COVID-19 relief centres. The CHOs were mostly involved in contact tracing and providing health education in the community. They are also involved in the sample testing in the post lockdown phase.

This shows that primary health care carders like MLHPs play a significant role during a pandemic. The presence of sufficient staff at the primary level will be a great strength to support the health system and manage the additional workloads during emergencies so that routine health care services will not be hampered.

Review of curriculum and training implementation

To better understand the course curriculum and training implication of the CHO and RMA, desk review of the curriculum and interviews with the officials, trainers and MLHPs for their feedback have been conducted as part of this assessment.

IGNOU rolls out the certificate program for CHOs. As part of this program GNM/B.Sc Nursing graduates qualified for the bridge course will undergo six months of training at program study centres and Health Centers (district hospitals, CHCs etc.) identified and accredited by IGNOU. The training includes theory classes, practical sessions and rotational posting for 18 days, mainly at the district hospital, with practical training at PHCs, H&WCs/SCs, Anganwadi Centers and the Community.

The RMA carder has undergone a 3-year diploma course run by the State of Chhattisgarh called Practitioner in Modern Holistic Medicine (PMHM), followed by an Internship of one year. However, this course has been discontinued after only 3 batches due to a lack of appropriate support from the State and rejection by the MCI.

A desk review of both the curriculums was done, and it was observed that the CHO curriculum was designed in such a way to cover all the common disease conditions, including various components of primary health care, whereas the RMA's curriculum is a trimmed version of the MBBS curriculum with some additional subjects of AYUSH, alternative medicine and public health.

One of the CHO's comments on the course curriculum was, **“We have all the basic topics covered in our syllabi like disease conditions and RCH components. We had similar topics in B.Sc. Nursing, so it was like a revision.”**

When asked about the sufficiency of clinical details covered, one of the CHOs said, **“The details like signs and symptoms, causes etc. have been discussed well in the module, but when it comes to treatment, I feel that it would be more helpful if they had elaborated on the drug's component like which drug should be given and which cannot result in that disease condition.”**

Similar views were expressed by other CHOs, showing that the treatment component, especially the usage of drugs, needs more detailing in their module.

Regarding the adequacy of time for course completion, one of the CHOs said, **“Doctors will not have time to teach sometimes, so few classes would get cancelled. So, in the end, there was a rush to cover the syllabus.”**

This time is constrained mainly because Doctors at the District Hospital are responsible for taking classes, and it is sometimes difficult for them to manage between their OPD or regular duty along with the classes.

Most of the CHOs said that they needed more practical sessions to get more exposure to enable them to better understand all the components of clinical. The comments of a few of the CHOs regarding practical sessions were as follows.

“We should have more practical sessions. We were posted inwards as batches, and we used to observe the doctors when they conducted OPD, but that was not sufficient for us to understand the clinical care required for a patient in all aspects of efficient dealing of clinical conditions.”

“We were posted in rotations, but we did not have LR posting. We were posted only in ANC

and PNC wards. It would have been better if we had more hands-on training.”

Even the district officials had similar views regarding more practical based training of the CHOs. One of the district officials suggested, **“CHOs have to provide treatment to various kinds of diseases and the 6 months training they get is not sufficient to get enough practical exposure. During the bridge course, they have to be posted at the SC-HWCs for more time as it will help them understand the functioning of HWC, and they will also be confident in dealing with various cases when they are posted at their allotted centre.**

When questioned about their training need, the responses of the CHOs were as follows

“LR training is required as it is expected even from us in the centre to do the deliveries. It would be much more helpful if we had more training on delivery.”

“The 6-month training was not sufficient. We require more NCD related training.”

This shows that CHOs can perform more efficiently and confidently when they have more practical exposure and a better understanding of the disease conditions they usually encounter at the HWC. This requires more emphasis on their practical postings during the training period.

Results of qualitative interviews

I. Leadership and managerial skills

One of the objectives of this study is to assess the leadership and managerial role of MLPHs at the HWC. Part of this assessment is done in a quantitative method in which the surveyors have assessed the maintenance and infrastructure of the HWC building by using a checklist whose results have been already discussed. To further understand this aspect, the surveyors have done qualitative in-depth interviews of MLPHs to understand their roles and challenges as leaders and Managers of the HWCs and their services.

a) Management of Patient records and challenges

Record maintenance is an important component in the management of health care facilities. After the up-gradation of SC into HWC, electronic tablets have been provided to the centre to facilitate on-line data entry daily. Apart from different registers are allotted for specific services provided at the HWC like the OPD register, ANC register, NCD register, and Follow up register etc., to maintain the patient records. It is the duty of the MLHP at the centre to ensure that the records are up to date and reports are regularly submitted to the higher facility. The qualitative interview results show that each staff at the HWC understands the responsibility of maintaining certain registers. At most of the centres, the CHOs said they maintain OPD, NCD, Follow up, and stock registers, whereas ANM maintains ANC and RCH registers and MPW will maintain the 20 point program registers mostly related to disease control and public health activities. In centres where the RMA runs the OPD clinic twice a week, ANM maintains the registers on the days when RMA is not present. Apart from this, there will be weekly and monthly reporting of the HWCs to the block level, and it is the responsibility of the MLHP to fill the reports and submit the updated data.

A significant challenge faced by the MLHP in record maintenance is the time constraint, especially at the centres run by RMA, where their main focus is on the two-day visit to the centre to conduct OPD rather than maintaining the records. Most of the CHOs said they have to take extra time daily after the OPD hours to ensure that the registers are updated and there are no gaps in the records.

Mitanins collected household and individual data in paper format tools of Family Folders and Community Based Assessment Checklists (CBAC). MLPHs and ANMs had to enter the above data into tablet-based Apps. MLPHs felt that they had to face an excessive load of entering data into tablets. However, the utilisation of the entered data for the management of the services was found to be very limited.

Regarding this issue, one of the CHOs said, **“Sometimes it becomes difficult for me to manage the various tasks at the centre like managing OPD, conducting activities,**

attending meetings, and maintaining these registers. So, I take extra time daily after the OPD hours to update the health records to avoid gaps.”

A few centres have been found in the maintenance of NCD follow up registers. This is because those centres have recently received the follow-up registers, and some of the CHOs are not trained to fill the register appropriately.

Few CHOs are also following efficient methods in maintaining records, as seen at one of the centres where the CHO has shown her NCD follow up the register and explained how she was maintaining it.

“For NCD follow up, I am maintaining a separate register which has a month-wise summary of all the patients at one place to get a quick overview instead of turning to each patient page to know the monthly follow up status.”

At the Centers where the RMA is very proactive, it was observed that the records were well maintained. One of the RMA from such a centre said

“Whenever I visit the centre on my OPD days, I make sure that I check the records and keep them updated. I maintain the OPD register and NCD register by myself, and I have also trained the ANM to maintain the records properly so that she takes over in my absence. I always keep myself updated about the patient information of the HWC.”

As mentioned above that, electronic tablets have been provided by the state. In all the HWCs for reporting, they have to do daily data entry of their work and the weekly monthly reports in those tablets. Also, they have to enter the details of each NCD screen patient; after that, the application helps diagnose the patients based on their blood pressure readings and sugar value. One important issue with this online application was that it diagnoses cases as hypertensive if BP reaches 120/80 mmHg and suggests referral of patients to the higher centre for management of hypertension. Also, the quality tablets supplied to the HWCs are of very poor quality, and in most of the centres, it has been damaged in a few weeks. Some of the HWCs staff, mostly ANMs and MPWs, also find it difficult to operate these tablets for data entry and get out the details of patients for follow up. They suggested that registers are better to maintain and less time-consuming. One of the CHOs has expressed her view on this issue and said

“These tablets given to us are of very poor quality, most of the time, they will not work, and we have to spend lots of our time on this. Whereas registers are easy to maintain.”

This problem is more severe in centres managed by RMAs as they only visit two days a week for OPD. Then in those centres, data entry and record maintenance are mostly done by ANM/MPWs, and they struggle a lot.

Some of the CHOs have expressed their concern saying that they have a double burden in record maintenance as they have to write in the registers and enter the same data in the tabs most of the time. One of them said

“Record maintenance is difficult as we have to do the same entry twice, once in registers and then in tablets. It takes so much of our time, and adding to this, most of the time, our tablets will not work.”

Reporting is still the weak component of HWC's functions, especially in RMAs run centres that need to be further prioritized and improved.

b) Challenges in the Follow-up and Management of Chronic Cases

One of the major objectives of a HWC is to provide Continuity of Care, especially in the case of chronic diseases. It is the responsibility of the MLHP to make sure that the NCD patients, especially those diagnosed with Hypertension and Diabetes, are visiting the centre regularly for medicines and checkups. Hypertension and Diabetes are lifelong diseases, and they have to take medicines have to be taken throughout life. So apart from providing medicines, it is also crucial for the MLHP to counsel the patients to modify their lifestyles. Cooperation from the

patient is vital in managing such conditions. The attitude of the patients toward the public health facilities and the dominance of private practitioners is one of the challenges in the management of Chronic Cases. One of the CHO has expressed her view on this issue and said, **“Most of the patients have an intention to get better immediately instead of taking medications for a longer time, and they have a perception that government medicines will not work properly. The private doctors and quacks will prescribe high doses to give them immediate results. To change this attitude of patients, I had to counsel them a lot.”**

The CHOs said that most of the patients were initially unaware of the availability of drugs even at the SC-HWC level, so they used to go to higher-level facilities or private practitioners. Full-time posting of CHOs and the availability of drugs at the HWC have benefited many patients in the treatment of NCDs.

A CHO at a newly operationalized HWC said, **“Initially the patients were not aware that medicines are available here also, so they used to go to the district hospital or private hospital later with the help of Mitanins I have informed them the availability of drugs, and now they get their medicines from here.”**

To ensure the follow-up of patients who missed their monthly visit to the health facility, MLHPs said that they take the help of Mitanins to send the patients from her village to the HWC. Mitanins are given a list of chronic disease patients within their village that enables better follow-up. Sometimes elderly patients might miss their visit because of their old age and inability to travel to the centre. In such cases, medicines will be given to the Mitatins during the meeting, delivering to the patient. Some of the patients also prefer alternate forms of medicine, so even though they are registered at the HWC, they visit the centre only for checkups. One of the CHOs, when asked about the poor follow up rate at her facility, said, **“I try to follow up the patients with the help of Mitanins and family members of the patients. Few patients will stop taking medicines when they feel discomfort, and the elderly sometimes can't come to the facility. Bus services are also not available in some places. Many patients have shifted to Ayurvedic medication as they feel it has fewer side effects. So they will only come to the centre for checkups but will not take medicines from here.”**

It has been observed that currently, only half of the diagnosed patients are visiting HWCs for their monthly follow up and are taking medicines. One important reason emerging from both CHOs and RMAs regarding the poor follow up rate was the insufficient availability of NCD drugs. Before implementing HWCs in the state, the treatment part of NCDs in public health facilities was not well-developed. NCD drugs were available only at the district hospitals. The State was indenting a very less quantity of drugs which were not even sufficient for covering at least 5% of total hypertensive diagnosed patients. Due to those situations, the community believed that there was no treatment for NCDs at public hospitals, and they ended up visiting private practitioners. Also, basic NCDs drugs like Amlodipine and Metformin were available only at a few CHC and DH and in very low quantities. After the roll-out of HWCs in the State, momentum for NCDs management has started. The annual indents for NCD drugs have been revised, purchased in enough numbers and distributed across various levels of health facilities. But the mechanism to make them reach to HWCs insufficient quality is still underdeveloped resulting in poor follow up rates.

Regarding this issue, an RMA said, **“ We have around 70 diagnosed hypertensive patients in our centre, but I have drugs to treat only 30 of them in a month. Once the patient is returned from HWC without drugs next time, rarely the patient will again come for the follow-up.”**

c) Team Coordination and Conflict management

For the efficient performance of HWC in providing a wide range of services under comprehensive health care, the primary health care team needs to maintain good coordination among them. As part of their interview, the MLHPs were asked about their perception of the team coordination, support, and expectations from the primary healthcare team at the facility (ANM and MPW). Most of the MLHPs have expressed their satisfaction with the support from the ANMs and MPWs at their centre. One of the CHOs responses was, **“Team coordination is**

good ANM, and MPW are very supportive. Whichever activity we plan at the centre, we do it together,” response of a CHO on team coordination.

But at a few centres, they have power dynamics issues, especially between CHOs and ANMs, as the CHOs are new carders posted at the centre, whereas ANMs have been working there for a long time. Senior ANMs might feel it difficult to work under a new staff in the exact centre where they have been working for several years. Another major issue where they face a conflict of interest is utilising untied funds. Since ANM is the signatory for the untied funds, CHO requires her approval. CHOs said they could not use the funds whenever needed due to a lack of cooperation from the ANMs.

A CHO said, “The coordination is not as good as needed. I face an issue utilizing untied funds since it is under ANM's control. There is a requirement for many items, but I cannot purchase them even though we have some untied funds. So, I made a list and reported to BMO.”

In centres where only a single ANM and one MPW are posted, they have more issues with team coordination. As CHO's role is to conduct OPD and ANMs is to conduct immunization, Ante-natal care of pregnant women, conducting deliveries and some role in disease control programs like DOTs provider whereas MPWs are primarily involved in disease control programs and public health preventive work. In those centres, CHO expects ANMs and MPWs to help manage the OPD, whereas the ANMs expect the CHOs to help them conduct deliveries and other work. Lack of mutual understanding in such cases will lead to conflict. Centres, where two ANMS are posted, have fewer sorts of these issues as one ANM gets involved in outreach work and one helps CHO conduct OPDs. There are also some policy issues on the roles of CHOs as most of them assume that their work is only to do OPD and follow up of NCD patients; they don't get involved in MCH related services or public health promotive and preventive work.

The district officials are aware of this power dynamics issue and expressed their views as follows

“Yes, it exists in some places as the ANM is senior inexperience, and CHO is a new cadre. Sometimes the ANM will dominate the CHO as she has more experience. We try to counsel them that they have to coordinate with each other and work as a team for the facility to perform better.”

A detailed TOR that defines the job roles and work division of CHOs and ANMs at the HWC will help to avoid such issues.

d) Relationship of MLHP with the Mitanins

Mitanins are also part of the primary health care team as they act as a linkage between the community and the health care facility. They are the major channel of communication for creating community awareness and mobilization. MLHPs said that the Mitanins are very helpful in following up chronic cases, organizing activities and community visits. CHOs can interact with the Mitanins more often than RMAs as CHOs are present at the centre during the weekly meeting of Mitanins, and their total time posting at HWC provides more chances to interact with them mitanins. The CHOs said they would convey the required key messages to the Mitanins during these meetings. Even the RMAs said that they would arrange a meeting with the Miatanis whenever it is needed. CHOs said that though the Mitanins initially felt the follow up of chronic cases as an additional duty that increases their workload, they are now very cooperative as they are more aware of its importance.

During the interview, one of the CHOs responded, **“There are 17 Mitanins under this centre. 4th of every month they have a meeting at the centre, so I will convey whatever I want to at that time. Initially, they complained that I was increasing their workload, but now the situation is fine. They are very cooperative. They help me during outreach sessions.”**

In follow-up of patients, they play a critical role as most of the mitanins are working for a long time in the same community where they have earned people's trust. So when mitanins encourages people to visit HWCs for follow-up or routine care, people in the community do so. Also, in Covid -19 pandemic times, they play a more crucial role in NCD patient follow up. They

supplied the drugs from HWCs to the patients as patients were hesitant to visit health facilities.

e) Challenges in the referral system and suggestions to overcome them

The disease conditions which cannot be dealt with at the HWC level are referred to the higher centre to ensure the treatment of the patients. The role of MLHP is to give a proper referral slip to such patients and send them to the appropriate level of higher health care facility for treatment. MLHPs usually refer high-risk cases like pregnancy cases, severe newborn illnesses and complex cases to higher centres. Hypertension and Diabetes suspected patients would be sent to the PHC/CHC (whichever is the closest) for initial confirmation of Diagnosis and treatment initiation. Their further treatment will be continued at the HWC. In the case of pregnant women, Mitanins accompany them for their delivery at the higher centre. Whereas in other cases, patients have to go independently apart from emergencies. When it comes to the challenges in the current referral system, one of the CHO said that:

“Sometimes the patients who are referred to the higher centre will get dissatisfied with services from the higher centre due to delay in the time of service provision or non-availability of services even at the higher centre.”

Another CHOs said that **“When a patient is referred to the DH, they find it difficult to identify the room where the required service is provided as the District Hospital is a large facility with several departments.”**

Lack of patient-friendly signages or appropriate guidance causes inconvenience to the patient, especially in the case of the elderly.

One of the RMA of a good centre said: **“When they advise patients to go to the higher centre, most of the patients ask them to give medicines or injections at the HWC itself due to difficulty in access or their inability to visit the centre on their own since no one is available to accompany them. Some of them will prefer going to the private sector as they feel they will get better treatment and quality of services at private hospitals.”**

In CHCs and district hospitals, the department has established a **“Mitanin help desk”**. In the Mitani help desk roster wise, some of the mitanins sit to guide and help patients in the hospitals with their treatment, primarily in the delivery and newborn cases. There is no mechanism to ensure treatment at the higher centre; HWC referral cases have to come and seek treatment as general patients. Also, it is difficult for MLHPs to do downward follow up and get details of the referred patient as, in most cases, patients will not come to the HWC. Even in most CHCs and DHs, disease-specific specialist care and diagnostics are not available, and medical officers treat them, and their treatment is not more different than an RMA. Whereas to ensure the better treatment for HWC referral cases, there is a plan to develop an HWC window at every CHC/DH where guidance and treatment assurance will provide to the patients also identify speciality wise referrals so that MLHPs can directly refer to the patient in centres where specific services are available

Experiences of some of the MLHPS on patients referral to higher centres is given below:

“I mostly refer the cases to CHC as it is close by. The patients want to get treated immediately as they go to the higher centre, but in government setup, it takes time; that's why they prefer going to a private facility. So I had to make them understand that it would take time for doctor's consultation and treatment at the higher facility due to patient load. It will be better if we can reduce this waiting time.”

“Once, I have suspected oral cancer in an elderly man and referred him to the District hospital. Though I have provided him with a proper referral slip and advised him to go to DH several times, he refused. He said that he is afraid to go to DH as they are doing COVID testing, and he is also not sure whether he will receive proper treatment at the DH. He insisted I provide pain relief medicines and injections at the HWC itself. After a few days, when I saw him, his mouth was swollen, so I insisted he go to DH again. Then he went to DH, and from there, he was referred to Raipur and was diagnosed with oral cancer. Now he said he is arranging money for treatment. Till then, I will give him

medicines for pain relief”.

In the ongoing COVID-19 pandemic, referral to the higher centres was even more challenging. A CHO said that **“During COVID sample testing was happening at the PHC, so the patients were hesitant to go there when I referred them thinking that they would also get tested. Some of the patients could not get the services from the CHC as it was converted to COVID centre, and they did not have regular OPD.”**

MLHPs posted at interiorly located centres said they have network issues, and it becomes difficult for them to contact the ambulance and transport the patients to the higher centre on time.

An RMA posted at an interior centre shared the challenges they face in such areas, saying

“We have huge network issues. So even for delivery cases, Mitanins will ask me to arrange a vehicle. Then I have to request locally known people to provide their private vehicle for transporting the patient. We have requested the higher officials to provide a mobile tower closer to this area to overcome this issue. But it will take time. So until then, we have to manage the same way on our own.

Another major challenge in the referral system is the follow up of referral cases, as some patients will not visit the higher centre even when advised. There is no current system in place to know whether a patient who is referred to a higher centre is visiting the higher centre or not. Though some patients return to the HWC to show their reports, most will not turn up. Both CHOs and RMAs said that tracking such patients is a considerable challenge. CHOs said that when they refer a patient from the HWC to PHC, they usually inform the MO/RMA who is in charge of the PHC beforehand regarding the patient and their issue, but the same cannot be done when the patient is referred to secondary level centres like CHC and DH.

One of the CHO suggested that **“It will be better if we have a system in which whenever there is a referral case we initially inform the higher centre, and they have to make necessary arrangements for the referred patient, and there will be someone to receive them at the higher centre. This is happening for delivery cases, but the same should be for all the cases.”**

A facility like a referral help desk where the patients can go to the higher centre and from where they will be guided to the appropriate department for treatment will be very convenient to the patient. There should also be a system of communication between the health care staff at the higher level and the lower to ensure proper tracking of the referral patients.

f) Role of MLHP in organizing and planning outreach activities

An HWC is designed to deliver Comprehensive Primary Health Care focusing on wellness and delivering an expanded range of services closer to the community. So the staff at the HWC is responsible for creating awareness in the community by organizing health promotion and disease prevention activities and reaching out to those who are unable to visit the health facility. Ministry of Health and Family Welfare has circulated an annual Health and Wellness Calendar with a list of health activity related days so that at least two health promotion activities are organized at all functional AB-HWCs. As part of the FIT India program, certain fitness activities like yoga, dance, Zumba etc., are identified that can be carried out along with the health promotion activities conducted according to the HWC calendar.

CHOs said that to organize an outreach session or a health promotion activity, they plan well in advance and take the help of the Mitanins to inform the community and gather people. They said that ensuring people's attendance at awareness sessions is a challenge as most of them work in the fields and will return only after the noon hours. When it comes to active participation in health promotion activities, CHOs said that children and the elderly are more interested when compared to the youth and middle-aged population. This can be curiosity in the children, concern in the elderly and carelessness of the younger population regarding their health.

Most of the CHOs said that they had conducted more activities at the centre when compared to

outreach activities in the community. At the centre, they have conducted activities like yoga sessions, screening camps and educational sessions as per the theme of specific health days, and for community-level outreach activities, most of them said they had done elderly screening, malaria awareness and hand wash training sessions. CHOs said that they get a positive response from the community, and also, people will come to the centre to participate whenever activities are conducted.

The response of a CHO regarding this was, **“I have organized yoga sessions, health awareness for the elderly and activities for school children at the centre. I have not organized any activities in the community yet”**.

Though most of the CHOs said that they get good support from other members of the primary health care team while conducting activities, few of them were not satisfied with the extent of support they receive. This situation was encountered mostly at the centres having power dynamics issues as the senior ANMs are not cooperative and focus only on the RCH component. In such cases, CHOs face the challenge of managing the activities alone. At some centres, CHOs said they have fund issues as the Sector In-charge (LHV), or ANMs are the signatory of their untied funds and are not supportive of timely provision of funds for organizing activities. CHOs said that they spend their money-making posters and charts and arranging refreshments during health promotion activities, and the amount they spent may not even get reimbursed.

An RMA posted in an interior, and the sensitive area is very proactive and has conducted many outreach sessions to increase health awareness among people even under challenging conditions, setting an and excellent example for others. He said that

“Whenever we conduct any outreach activity, we go as a team since it is a sensitive area. I usually guide the team as I am well aware of the geographical location in this area. People will see the efforts we put in to get to them and respect us for our work. So, they will not disturb us while we are conducting health promotion activities. To gain public trust and support, we have to put our efforts first. This will help change the attitude of the people and create health awareness among them.”

This shows that the attitude of the MHLP towards their work is very important. A proactive health care provider will be more successful in gaining the trust and support of the population than the one who performs their duty just to meet the targets.

II. Living conditions and social/family life

Work-life balance is essential for the overall well-being of an individual. So the qualitative interview has also covered the aspects of the present living conditions of the MLHPs, their ability to take leave when required, and the workplace security.

A CHO's response regarding the living conditions was, **“I presently live in a rented room close to. I am satisfied with the time I spend with my family as I visit them on weekends and holidays. But I feel that it would be more secure and convenient for me if I were given quarters at the centre.”** Even the CHOs among the married group felt the need to have quarters at the centre as one of them said that **“If I get quarters near the centre, it will be much better because it becomes problematic to come to the centre during nights as there are no street lights near the centre and alcoholics will be sitting in the surroundings.”**

Similarly, an RMA said, **“I have my own house, and I have been living with my family here for a long time. Though it sometimes gets hectic with the work, I also manage to spend some time with the family daily.”**

Our sample profile shows that most CHOs are young and unmarried, whereas RMAs are married. So, most of their responses are similar to the above.

Regarding getting leave whenever required, both the groups said they did not have any significant issues. One of the CHO's responses was, **“We have 18 annual leaves and leave will be**

sanctioned whenever required. I will submit my leave application at the PHC and inform RMA Madam.”

RMA has a positive response regarding the security at the workplace, but few of the CHOs have expressed their concern regarding it by sharing their issues and experiences as follows

“The centre does not have a boundary wall, so we don't have good safety.”

“Once I was alone at the centre, two drunken people came inside. Then I had to take the help of the neighbours to send them away. It will be safer to have a security guard at the centre.”

III. Job performance

Various factors will affect the Job performance of MLHP, ranging from the availability of required drugs and equipment, an enabling environment to use their skills, and the extent of community trust and support for the higher authorities. So, in this section of the Qualitative interview, the MLHPs were asked about their perception regarding various factors that affect their job performance, the challenges they face and ways to overcome them.

1. Availability of drugs and diagnostics

MLHP posted at the HWC is expected to deliver services under 12 major categories. The availability of drugs and diagnostics directly affects the ability of the MLHP to provide treatment for the wide range of disease conditions falling under them.

As discussed earlier, the State has a centralized CGMSC for the procurement and supply of drugs. CGMSC has warehouses at the district level from where indented drugs will be a monthly supply to DH and CHC and quarterly supply to the PHC. PHC pharmacist is also indenting the drugs for the HWCs indent from the CGMSC warehouse. So the drugs for the SC-HWCs will be supplied to the PHCs for further distribution.

In the current practices, CHOs are indenting the drugs from the PHC or CHC pharmacy, whichever is closest to their centre. One of the issues they face is transporting drugs from PHC/CHC to the HWC as most of the CHOs have to arrange their transport, and they are spending their own money for this purpose. Regarding this issue, one CHO said, **“I make a list of required items and get them by myself from PHC/CHC whenever required. I have to bear the transport costs for this purpose. It will be much better if the drugs are sent here from the higher facility.”**

The CHOs said they also did not get the required type or quantity of drugs as per the need. This can be because the PHC pharmacist is not fully aware of the actual requirement at the HWCs, so he indents the drugs based on assumptions resulting in an insufficient supply of drugs to HWCs. When a PHC pharmacist was asked regarding this issue, the response was, **“Most of the CHOs only write the name of the drugs required in the indent form and will not mention the quantity, so it is difficult for me to calculate the required number of drugs while I am indenting.”**

Regarding the same issue, one of the CHOs said, **“Sometimes we get the drugs when we go to sector meetings, but those will be only in the nominal amount and not per our requirement. We will also not get all the types of drugs at that time; they give us what they have and not the ones we want.”**

There is also an additional provision of Rs 25000 as an untied amount for stock gap arrangements of drugs and equipment, but in most districts, the district/block itself uses that amount to purchase the drugs for HWCs. Some of them said they would buy the medicines with their own money when the drugs are needed immediately but are not available in the centre. One of the CHOs has expressed her concern on this issue, saying **“We have a shortage of emergency drugs in the Labourroom they are not available even at the higher centre, so we have to buy them on our own. Our supervisor will say to pay the amount on our own and submit the bills for reimbursement. But the amount has not been reimbursed yet, it got delayed, and I am not sure if I will get it.”**

Patients will visit the health facility hoping to get proper treatment, and they will get

disappointed when they do not get the medicines they want. One of the CHOs said that **“Many elderly will visit the centre for Calcium and Multivitamin tablets as they feel that those medicines will give them strength. But at my centre, those drugs are not available now, and I feel bad when I have to send those patients back without giving medicines to them.”**

In the case of RMAs, they said that they take whatever drugs they need along with them from the PHC to HWC on the day they conduct their OPD at the HWC. An RMA in charge of Two HWCs said that **“I will take the medicines with me in my car from the PHC to the HWCs during my visit to those centres. I will take the medicines as per the OPD requirement; if anything else is required, the ANMs will inform me.”**

At most of the centres, glucometer strips are not available, so it has become a challenging issue at many centres to undertake Diabetes screening and checkups. A CHO said that **“We have targets to cover for NCD screening, and we have a shortage of glucometer strips. It has become a huge challenge to manage in such situations. So we mostly purchase glucometer strips by ourselves”**

Some of the CHOs said that they would perform better if provided with an adequate number of drugs and equipment, especially in the Labour Room.

It was observed that the distribution of Warmers for the New Born Care Corner among the centres was unequal as some of them have two warmers, and some don't even have one. This uneven distribution is due to the lack of proper knowledge at the block level regarding the actual requirement of the warmers at each centre.

Some of the CHOs said they would have performed better if they had the required equipment and facilities. **“I am able to use my skills and perform my duties well; my only concern is the lack of beds in LabourRoom as it is difficult to manage when two labour patients come at the same time. Now I am dealing on a priority basis.”**

2. Work load

As in charge of the centre, MLHP has to manage several tasks at the HWC. They are responsible for providing services at the HWC, preparing reports, organizing activities, and supporting the government to run various health programs.

When asked about the nature of workload at the centre, one of the CHOs responded, **“Initially the workload was less as even I was new and I was not completely aware of my job role, responsibilities and patients were less, but now the situation has improved a lot the OPD has also increased. Now it has become difficult to manage all the programs at a time.”**

A similar response was seen in many CHOS, and they said since they are relatively new to the health system, it took time for them to understand the functioning of the public health system and perform effectively.

The CHOs said that the workload is manageable, but it sometimes becomes difficult when we have pressure from the higher authorities to perform certain tasks, especially during COVID. One of the CHO said, **“I was given the task of screening all the people who have come from outside. At that time, I had to manage between my regular OPD clinics and also the COVID duty.”**

Most of the RMAs, especially those doing two days OPD in two SC-HWC and PHC, said it is very hectic for them to manage many centres simultaneously as each centre has its challenges. Regarding this issue, an RMA managing two HWCs said that **“I have three facilities to look after, i.e. the PHC and two HWCs where I am posted as per the rostered duty. Our PHC is located close to the main block, due to which we have a high patient load and we have staff constraints. I am also unable to visit the HWCs on all days as per my roster duty as I have to manage at the PHC; I will be doing night duties in CHCs and involved in various other works at the district level, like training and meetings.”**

RMAs face the challenge of increased workload as most of them are made responsible for

multiple duties across all the levels of health facilities like HWC roster duty, PHC duty, Night shifts at the CHC and also duty at the DH. As discussed above, they have also undertaken several duties even during the COVID situation. Even though Medical Officers are present at the centres where RMAs are posted, they said they have more workload as the Medical Officer expects the RMAs to be responsible for more duties.

This shows that having a full-time MLHP at the HWC benefits the centre and the staff. The CHOs are exclusively posted at HWC, and their main concentration will be on the functioning of HWC, so their workload will be manageable. This also enables them to be more efficient while performing their duties.

3. Ability to use their skills.

As discussed, CHOs have a GNM or B.Sc nursing background with 6 months of bridge course training, and RMAs have a clinical degree as a Practitioner in Modern Holistic Medicine (PMHM). So we need to understand whether the current HWC setup provides them with an enabling environment for utilizing their skills.

There was a mixed response from the CHOs when they were asked about their perception regarding this issue as one of them said, **“I have improved my skills here. Earlier, my skills were only in in-patient care. In this role, I can undertake general outdoor patient care as well.”** Whereas another CHO said, **“I am not using my B.Sc nursing skills because our job here is to treat patients and give medicines most of the time. I am unable to use my nursing care skills.”**

RMAs are comparatively more satisfied in this regard, as one of them said that **“In my experience, I had the opportunity of treating many patients with different health issues by using my skills. I feel very satisfied when they get cured. Our services will be more beneficial to people, especially in these tribal areas.”**

When the District officials were asked about their perception regarding the job performance of MLHPS, they said that **“RMAs are more experienced and their counselling pattern is similar to doctors. CHOs are new since their background is B.Sc Nursing their counselling pattern is similar to Nurses.”**

One of them said, **“Initially, CHOs faced challenges reporting using tabs and mobile apps, but now they can do it well. Few CHOs grasp everything quickly, like using the app and online entry.”**

4. The extent of community trust and the ability to create a positive impact

People are the end-users of the services provided by the health care system, so their attitude and trust in the public health system are the major factors that affect the utilization of its services.

A CHO said, **“The trust and respect are good. Some patients gave positive feedback that they are better after taking medicines.”**

Most of the MLHPs said that they were able to positively impact the population of their centre as they are available full-time at the centre and made the centre better functional. One of the CHO said, **“Initially, the centre was not open regularly; after I am posted here, OPD will be available on all days, so more patients are benefited.”**

The District officials had similar views about this: **“There is a good improvement after CHO allotment. Now people are getting more services close to where they live; drugs are available at the centre, there is no need to go to the private pharmacy and spend money, OPD also increased. Mitanins have also become more proactive after CHOs allotment at the Community Level. Overall the centres have improved, services have improved, and people's trust increased”**

RMAs have been in the service for over 10 years and have contributed to people's better health ever since. An RMA said, **“ I have worked in this area for 9 years. So people will easily**

identify me and have good respect for me. They express their gratitude as I provide their services even in difficult conditions.”

5. Support from the seniors and Panchayat Raj Institutions (PRIs)

The relationship an MLHP has with their seniors, and other important systems in the community like the Panchayat Raj Institution is essential to get support in times of need and thus enable them to perform their duties well.

A CHO has responded regarding the support from the seniors as follows **“Seniors give us support whenever needed; they train us in guidelines and help us deal with certain cases. When even I doubt regarding the treatment of any case, I will call RMA at the PHC; she will guide me in giving appropriate treatment to the patient.”**

Many CHOs said they would contact the Medical Officer or RMA at the PHC to clear their queries. Such mentorship is essential, especially to the CHO carder, since they are new to the system and will require support in providing appropriate treatment to the patient.

Regarding the relationship with the PRIs, there were mixed responses from CHOs about the extent of support they get from them. While CHOs said the PRIs are very supportive at a few centres, they said they are not. The responses of the CHOs are as follows.

“They are cooperative. They provide places and furniture during outreach sessions. I will contact them, and they will help me whenever required.”

“They are not that cooperative. They have torn the home quarantine sticker pasted on their house and argued with us. This will set a bad example for others. They will also not help me in matters they can. They will ask me to do it on my own.”

A pro-active member of PRI who has concern over the health of the people in his/her village will provide support in the functioning of HWC and various other health programs at the village level. So it is essential to create awareness among the PRIs in this regard as better health is a common goal for all.

IV. Professional development

It is necessary to have a proper career pathway for development in any profession. In this section, MLHPs were interviewed about their perception regarding various aspects of professional development.

1. Adequacy of salary

Adequate salary is one of the significant contributors to professional satisfaction. Related to this aspect, one of the CHOs said that **“I think we deserve more based on the workload we handle. Being in the field, we have to manage many programs and should be available 24hrs, so it's not easy.”**

Another CHO's response regarding their basic salary was, **“We should get a more basic salary. CHOs in other states get a basic salary of 25,000, but we get only 16,500. So even we should get the same.”**

When it comes to RMAs, those who have been regularized have expressed satisfaction with the salary, whereas those who are contractual were not completely satisfied. One of the contractual RMAs said, “Though I have an experience of years, my salary is not as much as regular”

The district officials have also expressed their views in this regard as follows

“I think it is sufficient as of now based on their workload. Otherwise, their performance will become incentive oriented, not service-oriented. In future increments can be given based on their overall performance.”

“There should be regular monitoring, and incentives should be given based on their performance to work more efficiently.”

2. Adequacy and timeliness of incentives.

As discussed earlier, MLHPs will receive incentives based on their performance every month. Though most of the CHOs gave positive feedback, some issues related to the timely availability of incentives in RMAs.

A CHO at a well-functioning HWC has responded, **"I submit my reports and forms regularly on time, so I am getting my salary and incentives on time."**

Whereas an RMA has expressed his concern regarding the timely availability of incentives and said, **"My incentives get delayed very often though I submit the reports and claim forms regularly. When I ask why the delay, they mostly say that the claims are under verification."**

This shows that it is necessary to strengthen the existing system as timely provision of incentives is a motivating factor for efficient job performance of a health care worker.

3. Opportunities for promotion/career progression and development

The perception of an MLHP regarding their promotion or career development as a health care provider is important to understand their expectations from their job.

When asked about the promotion, a CHO responded, **"I haven't thought about promotion. They say we will get promoted after some years of experience if way, then it is good."** And another CHO said

"I am not sure about the CHO promotion. I would prefer to change my current post if I get a better opportunity and permanent post."

This lack of clarity among the CHO carder regarding their career progression is because currently, they are working as contractual staff, and they are not sure whether their post will be regularized. Also, there is no well-defined career pathway currently for the MLHP carder.

Similar concerns were expressed among the RMAs, who are contractual. One of them said, **"Those who have been regularized have got a raise in salary and job security as well as they are posted at in good locations, but we have less salary and also have more workload."**

When the district officials were asked to provide their view, one said, **"An experienced CHO can become PHC In-charge or be posted at higher level centres and then can also become Block level officer if they have that capability."** Most of the district officials believed that the career growth of the MLHP depends upon the interest and capability of that individual.

Since we have both contractual and regular health care providers in the current health system as part of this qualitative assessment, we have also asked the district officials to provide their views on this aspect. One of them expressed their view, **"They will work more if they are contractual as they are concerned that they can be removed from their post easily if they don't work well."**

and another official said, **"If they are regularized, they will have more job security and will have more responsibility towards their work."**

An official has expressed his view on an employee's attitude and commented, **"In a hierarchy, if the lower person is regular and the top person is contractual, then the lower one might feel like -We are regular; why should we listen to contractual staff. I think everyone should be on the same line; then, there will be no issues like this."**

The response of a CHO in the same aspect was, **"Right now, our carder is contractual if we are regularized, and we are also given more on the job training. I feel that I can contribute even more efficiently to my role as an MLHP."**

Such debate over contractual and regular employees has been there for a long time, and we cannot clearly say that one is better than the other as each type of them has its pros and cons.

Though the HWC guidelines say that the career progression of the CHOs will be explored up to the block and district levels, the career pathway they have proposed was only suggestive but not assured. It is necessary to have a well-defined professional development plan, especially for the CHO carder.

Discussion

This study assessed Mid-level Health Care Providers (MLHPs) serving at HWCs in Chhattisgarh to manage common and essential health conditions relating to a child, adult and maternal health. Their clinical skills were assessed on several components of clinical care, i.e., history taking, examinations and investigations, diagnosis, treatment, and follow up care. In this assessment, their clinical competence in these sections was calculated in scores that reflect their ability and knowledge to manage these cases.

Findings from this study suggest that overall disease wise composite median scores of RMAs were 17.5% more than CHOs in managing the conditions commonly seen in primary care settings. CHOs have scored highest in the overall clinical care of Hypertension and lowest in the clinical care of Vulvovaginal candidiasis and Preeclampsia. RMAs have scored highest in Scabies, Malaria, hypertension, and diabetes clinical care and lowest in Pre-eclampsia and Vulvovaginal candidiasis. In every disease condition, RMAs have considerably scored more than CHOs, but in Hypertension and Diabetes, their composite score is almost similar with no statistically significant difference. Whereas when overall scores were calculated for both the groups on various components of clinical care, i.e. history taking, examinations and investigations, diagnosis, treatment, and follow up care, RMAs' overall median score was 13.86% more than CHOs. Both CHOs and RMAs have scored highest in the diagnosis section and lowest in the Physical examination and Investigations section. A significant difference was found among the median scores of CHOs and RMAs in the section-wise scores of Diagnosis, Treatment and Follow-up.

In an earlier section of the report, it was also discussed that both the cadres are different in terms of their training and experience in clinical care. In the case of CHOs, their basic qualification is BSc nursing, in which they are mostly trained on the nursing part of patient care, and in the six-month bridge course, they have been introduced to their primary care provider role, which was not sufficient for them to attain knowledge on all aspects of patient care. However, like nurses in other countries, the paramedical staff is as effective as fully qualified physicians in providing primary health services.

In several other countries, available evidence indicates that clinical care providers with a shorter duration of training will perform as well as those with a longer duration of training. A study on the performance of different types of health workers trained in implementing the IMCI protocol in Bangladesh, Brazil, Uganda and Tanzania generally found no difference in the quality of childcare between health workers trained for longer and shorter durations.^[1] Another study from Tanzania reported that for managing complicated deliveries and major obstetrical operations, there were no differences in outcomes, risk indicators, or quality between medical officers (medical school graduates) and assistant medical officers.^[2] In as many as 47 sub-Saharan countries, non-physician health workers have been trained to diagnose and treat and have helped ameliorate the shortage of qualified health workers in rural areas with lower training and better rural retention than medical doctors.^[3]

The RMA cadre has 10 years of experience practising primary health care at PHCs in Chhattisgarh with 4 years of medical training. The course, curriculum, and training were designed similar to the MBBS course, with considerable time given to classroom sessions and practical training in medical colleges and higher-level district hospitals. In their 4 years, of course, 3 years were allotted for classroom sessions and practical postings at various speciality wards, followed by a year of internship at all levels of care, i.e. DH, CHCs and PHCs. During their internship, they were given practical experience similar to their current role at PHCs in managing general OPD and acute and emergency illnesses. They have good experience and underwent on-the-job training in RCH related components, Disease and emergency management.

As the State of Chhattisgarh is a high malaria endemic zone, RMAs have a significant role in the primary management of malaria. This can be the reason for their considerably higher score than CHOs in the clinical care of malaria. RMAs had poor scores in pre-eclampsia, RTI and Diarrhea assessment with dehydration. So, these areas require more focus for training.

A similar assessment done 10 years ago showed that Medical Officers and RMAs are equally competent to manage conditions commonly seen in primary care settings.^[4] The overall median score was 56.5 for medical officers, 55.8 for RMAs and 33.8 for paramedics (mostly staff nurses).^[4]

The CHO carder (Nurses with 6 months bridge course) has been proposed Nationwide to play the role of MLHP at the HWCs. This assessment's median score of CHOs shows that half of the CHOs have scored above 5.64, and a half have scored below it. This means that they have half of the essential skills to provide primary health care as MLHPs. Their skills on NCDs, especially in Hypertension and Diabetes, are equal to RMAs, as, during their training, they were given more orientation in the management of these diseases. This shows that if they are given continuously on the job training, they can provide adequate and rational health care at HWCs.

The Clinical Vignettes used as a tool for the assessment have some limitations as the vignettes measure the clinical care provider's prescribing knowledge which can be quite different from what they do in practice. This means that the vignettes can mostly measure their clinical management knowledge but not their clinical skills, like measuring blood pressure, doing a rapid test etc. Their actual practice also depends upon various other factors like availability of drugs, equipment and patient compliance.

Health and Wellness Center program is a recently launched program, and most of the sampled HWCs have been functional for over a year. Assessment of their outcome in terms of Out-patients care and follow up rates of chronic diseases shows that after a year of their functionality, they can cover half of the expected OPD and diagnose half of the expected chronic disease cases. HWCs with a full time posted CHO have considerably more outcomes in terms of total OPD, diagnosis, treatment and follow up of chronic cases than centres with RMAs. But if their performance is compared to their number of clinic days (centres run by RMAs have only 2 clinic days), RMAs have better outcomes than CHOs. This can be considered acceptance of RMAs in the community as primary care providers since they have a long practising experience. This conclusion also opens ways for the new CHO carder; with continuous on-the-job training, supervision and mentorship, even they can develop into an ideal MLHP carder.

In leadership and management role, CHOs have better performance than RMAs as CHOs are full time posted and are more involved in the management of their centres. Also, centres that were selected for CHOs posting have better infrastructure and accessibility. But still, many systemic and supply-side issues affect their performance.

There is some ambiguity in terms of their role as leaders of the primary health care team in the administrative aspect. A detailed TOR for all the primary health care team members that clearly defines the roles and responsibilities of each staff will help them better manage financial resources, team coordination, reporting of work, inventory management, and public health work.

As per the current policy decision, the post of CHO is contractual, and their salary and incentive are performance-based. Many CHOs have expressed their concern regarding job stability and said that if they find a permanent post in future, they will shift to it rather than continuing in the present contractual post. They suggested that since HWC is a permanent program and they play a significant role in it, their post should also be made permanent. Job security has a more positive impact on career stability, performance and equality among health care providers.

Recommendations

Overall, this assessment shows that MLHPs can play a significant role in performing various duties at the primary health care level. With more systemic support and training, they can provide comprehensive primary care to the community by meeting their health needs efficiently.

The deployment of RMAs in HWCs did help the state kick-start CPHC quickly and brought their skill and experience to provide quality services in HWCs. However, having a full-time MLHP in HWCs offers other very significant advantages in greater certainty in the availability of services and better follow-up of chronic disease cases.

Based on the findings of our above assessment, recommendations can be made for the strengthening of MLHP cadres in various aspects.

- Considering that the introduction of CHOs has resulted in a very significant addition of capacity to HWCs, CHOs inadequate numbers need to be quickly trained and placed to cover all existing and planned HWCs in the state.
- To facilitate the CHOs skills on comprehensive primary health care management at the HWCs, more focus is required on the practical aspect of their bridge course curriculum. More practical sessions that enable them to gain hands-on experience managing various disease conditions are required. They should have more postings at the PHC and SC-HWC level to better understand the wide range of disease conditions that are dealt with at the primary health care level.
- To ensure continuous knowledge acquisition and skill enhancement, it is necessary to have regular on the job training sessions for both the MLHP Carders. It is suggested to have an Annual Training Plan for CHOs and ANMs with around 10 days of training every year.
- Like RMAs, CHOs should also be encouraged and supported to “refer less and resolve more”, i.e. most HWCs should provide treatment to around 80% or more patients turning up at HWC, including the chronic disease cases. They should be able to identify the 10-20% of cases that may be complicated and refer them to higher facilities.
- Systems need to be strengthened for referrals of complicated cases to higher government health facilities and subsequent follow-ups through HWCs. The use of Information Technology should enable better follow-up of chronic disease cases across levels of care.
- There should be a clear and well-defined TOR of the roles and responsibilities of the MLHP carder and other members of the primary health care team at the HWC. This will avoid most of the job roles and work distribution issues.
- It is also necessary to have guidelines explaining the specific roles of each member of the primary health care team in managing chronic conditions, tracking down the lost to follow up cases and conducting preventive and promotive activities.
- To strengthen the role of MLHPs in undertaking community visits, they should be given action-based guidelines for conducting field visits and community awareness programs like Tobacco cessation, Diarrhea prevention, School visits, water quality testing etc.
- As more CHOs get recruited and posted in most HWCs, there will be a decline in the need for RMAs to continue their part-time role in HWCs. The role of RMAs in the context of HWCs can, however, grow in the direction of providing mentoring to newly inducted CHOs. RMAs can continue to visit SHC-HWCs under their PHC area to guide and support the CHOs, especially in clinical skills.
- Regarding the career progression of MLHPs, RMAs who are well experienced and efficient in their work can be promoted as senior RMAs and can be posted at higher-level facilities. They can also be appointed as District consultants or nodal officers for specific health programs.

Taking their experience in the public health system into consideration, they can also be appointed as Block public health officers.

- For CHOs and RMAs, the immediate step can be to regularize their current contractual post as their role as an MLHP at the HWC will be essential even in the future.
- Supportive systems need to be developed to enable the MLHPs and HWCs to deliver optimal performance. These include systems for ensuring the availability of essential drugs and point of care test kits in HWCs. The HWCs should be enabled to indent their required medicines using software and receive door-step delivery.
- The record-keeping role of HWCs needs to be rationalized to avoid the over-burdening of the HWC team due to this role.

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Under the Ayushman Bharat - Health and Wellness Centers for strengthening comprehensive primary health care a new cadre of mid-level health care providers has been introduced. The study is an assessment of this cadre to help improve their performance, and thereby strengthen comprehensive primary health care.
