Summer Internship

At

State Health Resource Centre (Chhattisgarh)

(March 1 to May 31st, 2021)

A Report

By

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Post-graduate Diploma in Hospital and Health Management

2019-2021

International Institute of Health Management Research, New Delhi

STATE HEALTH RESOURCE CENTRE

MOHFW (CHHATTISGARH)

A Synopsis On

ASSESSMENT OF PUBLIC HEALTH FACILITY READINESS TO TREAT PATIENTS OF RESPIRATORY ILLNESSES IN RAIPUR AND KORBA DISTRICT OF CHHATTISGARH

STATE HEALTH RESOURCE CENTRE

MINISTRY OF HEALTH AND FAMILY WELFARE (CHHATTISGARH)

Submitted in partial fulfillment for the degree of PGDHM

GUIDED BY

Miss. Punita Kumar

SUBMITTED BY

ANIRUDDH BHARGAVA

PGDHM 6th Semester

(Post-Graduation Diploma in Health Management)

STATE HEALTH RESOURCE CENTRE

MOHFW (CHHATTISGARH)

ACKNOWLEDGEMENT

I would like to express my sincere gratitude towards distinguished personnel for allowing me to do my summer internship under your guidance. I would take this opportunity sincere thanks to **Dr. Samair Garg Executive Director** of State Health Resource Center for assigning me to this project. I extend my gratitude to **Dr.Narayan Tripathi** for their support.

I owe my great debt of reverence & admiration to **Punita Kumar** Program Associate & Enviromentalist for Climate Change and Human Health for their guidance and support without which I wouldn't be able to complete my summer internship.

I would also like to give a vote of thanks to **Dr. Pankaj Talreja** for giving me valuable information and constant supervision. I also express my sincere gratitude to **Dr. Gagan Deepika** for guiding me during the data collection related to the project.

Last but not least I would like to thanks my friends and family members without whom I would not be able to do this project.

Date: 31st May 2021

Place: Raipur, Chhattisgarh **Aniruddh Bhargava**

(Completion of Summer Internship from State Health Resource Centre)

DECLARATION

I Aniruddh Bhargava hereby declare that this Internship assignment entitled Assessment of Public health facility readiness to treat patients of respiratory health is the outcome of study undertaken by SHRC under the guidance of Punita Kumar (Program Associate: Climate Change and Human Health). It has not previously formed the basis for the award of any degree, diploma, or certificate of this Institute or of any other institute or university. I have duly acknowledged all the sources used by me in the preparation of this field internship report.

Date: 31/MAY/2021

Sign:

Postgraduate Diploma in Hospital and Health Management

International Institute of Health Management Research

New Delhi

Signature: Miss Punita Kumar (Programme Associate)

CERTIFICATE OF COMPLETION

The certificate is awarded to

Name **ANIRUDDH BHARGAVA (ENROLLMENT NO.) (**PG/19/014])

In recognition of having completed her/ his Internship in the department of

Title- STATE HEALTH RESOURCE CENTRE (CHHATTISGARH)

and has completed her/his Project on **Assessment of Public Public health facility for Readiness to treat patients for respiratory health in Raipur and Korba District of Chhattisgarh**

Date- 30/MAY/2021

Organization STATE HEALTH RESOURCE CENTRE (CHHATTISGARH)

She/ He is a committed, sincere and diligent student who has a strong drive & zeal for learning.

We wish him/her all the best for future endeavors

Dean- Academics & Student Affairs **Mentor Name & Signature**

DR. PRADEEP PANDA DR. PANKAJ TALREJA

Certificate of Approval

The following Summer Internship Project titled **"Assessment of Public health facility readiness to treat patients for respiratory health at Korba and Raipur District of Chhattisgarh area"** at **"STATE HEALTH RESOURCE CENTRE (CHHATTISGARH)"** is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned does not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the report only for the purpose it is submitted.

Name of the Mentor – DR PANKAJ TALREJA

Designation – ASSOCIATE PROFESSOR / IIHMR, Delhi

Certificate from Dissertation Advisory Committee

This is to certify that **Mr.Aniruddh Bhargava** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He is submitting this dissertation titled **"Assessment of Public health facility readiness to treat patients for respiratory health at Korba and Raipur District of Chhattisgarh area"** at **"STATE HEALTH RESOURCE CENTRE (CHHATTISGARH)"** in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Institute Mentor Name,

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Designation, Assitant Professor

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Organisation Mentor Name

Miss Punita Kumar

Programme Associate

State Health Resource Centre

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled titled **"Assessment of Public health facility readiness to treat patients for respiratory health at Korba and Raipur District of Chhattisgarh area"** at **"STATE HEALTH RESOURCE CENTRE (CHHATTISGARH)"** and submitted by Mr. Aniruddh Bhargava Enrollment No. PG/19/014 under the supervision of Miss Punita Kumar

for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from to July 2019 to June 2021 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature : Mr Aniruddh bhargava

FEEDBACK FORM

Name of the Student: ANIRUDDH BHARGAVA

Summer Internship Institution: STATE HEALTH RESOURCE CENTER (CHHATTISGARH)

Area of Summer Internship: Climate Change and Human Health

Attendance: Ninety days

Objectives met: Public Public health facility Assessment for Health infrastructure-staff-diagnostic for respiratory health tools-drugs

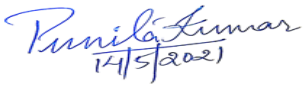
Deliverables: finding of research

Strengths: State Health Resource Centre is part of the health ministry and respondents are also aware of the organization so it becomes relaxed for us to collect data and kobo collect a mobile application make it easier to gather and store data

limitation – Time constraint and state-wise lockdown make it more challenging for the team to work together

Suggestions for Improvement: Increase sample size of tertiary care Hospitals

Signature of the Officer-in-Charge (Internship) : Miss Punita Kumar



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ABBREVIATION

ANM –	Auxiliary Nursing Midwives
AMO-	Ayurvedic Medical Officer
BMO-	Block Medical Officer
CG-	Chhattisgarh
CHC-	Community Health Centre
CRDs-	Chronic Respiratory Diseases
DH-	District Hospital
Distt-	District
Govt -	Government
GPS –	Geo Physical Satellite
KOBO collect – data	Android Based application to collect the
MO-	Medical Officer
MOHFW-	Ministry of Health and Family Welfare
MPWs –	Multi-Purpose Workers
PHC-	Primary Health Centre
PM 2.5-	Particulate Matter 2.5
PM 10-	Particulate Matter 10
RMA-	Registered Medical Assistant
SHRC –	State Health Resource Centre
STATA-	Statistical Software
TPP-	Thermal Power Plants

BACKGROUND –

Global situation Analaysis -

Noncommunicable diseases accounted for seven of the top ten causes of death globally in 2019 which cause the death of 41 million people. These seven factors were responsible for 44% of all deaths, or 80% of the top ten. However, NCDs accounted for 74 percent of global deaths in 2019. Over the next 20 years, NCDs are expected to cost the global economy $ 47 trillion, or 75 percent of global GDP.

CRDs are one of the four most popular NCDs worldwide. Asthma, chronic obstructive pulmonary disease (COPD), occupational lung disorders, sleep apnoea syndrome, and pulmonary hypertension are all examples of CRDs. The burden of preventable CRDs has a significant negative impact on the quality of life and disability of those affected, with women, children, and the elderly being particularly vulnerable. CRDs have a strong and growing global Disability Adjusted Life Years (DALYs). For instance, consider the global mortality rate. COPD deaths rose by nearly 11% between 1990 and 2015, and if current trends persist, it will be the third leading cause of death globally by 2025. **(1)**

Situation Analysis of India –

Every year, nearly 5.8 million people in India die from NCDs (heart and lung diseases, stroke, cancer, and diabetes) according to the World Health Organization (WHO). This means that 1 in every 4 Indians is at risk of dying from an NCD before reaching the age of 70.

According to the Ministry of Health and Family Welfare (MOHFW), Government of India (GOI) report "India: Health of the Nation's States," NCDs have increased their contribution from 30% of total disease burden-'disability-adjusted life years' (DALYs) in 1990 to 55% in 2016, as well as the proportion of deaths due to NCDs (among all deaths) from 37% to 55%. This demonstrates a rapid epidemiological change in disease burden to NCDs. **(2)**

Chronic respiratory diseases now account for 6.4 percent of total DALYs in India, up from 4.5 percent (95 percent UI 4.0-4.9) in 1990 to 6.4 (5.8-7.0) in 2016. In 2016, India accounted for 32.0 percent of global DALYs due to chronic respiratory disease. **(3)**

Situation Analysis of Korba and Raipur.

Korba is also referred to as Chhattisgarh's Industrial Hub. The district itself is well-stocked with all of the required raw materials for power generation, such as coal and water. The four thermal power plants (NTPC, KTPS, BALCO & BCPP, DSPM, CSEB East, CSEB West) produce 3650 MW of electricity when combined. A Hydro-Electric Power Station is located in Machadoli, Bango, in addition to these. The district also has a lot of coal. Many of the significant mines of the SECL, a profit-making coal company under Coal India Limited, are located in the Korba district. BALCO (Bharat Aluminium Company), an aluminum major and the world's largest single-location aluminum manufacturer, is also located in the district.

On the outskirts of Korba, which is India's and Asia's largest open-cast mine, as well as the world's second-largest. Korba is one of the country's most polluted cities. Korba was ranked fifth in the 'critically polluted environment' category among 88 industrial clusters in a 2009 study conducted by the Central Pollution Control Board (CPCB). **(2)**

According to the World Health Organization (WHO), 37 Indian cities are among the top 100 cities in the world with the worst PM10 pollution, with Delhi, Raipur, Gwalior, and Lucknow among the top ten (WHO, 2014) **(3)**

Review of Literature

Impact on health-

In India, air pollution claimed the lives of 167 million people (95 percent confidence interval: 142–192) in 2019, accounting for 178% (158–195) of the country's total deaths. The majority of these deaths were caused by air pollution in the environment (098 million [077–119]) and the home (061 million [039–086]). From 1990 to 2019, the death rate due to household air pollution decreased by 642% (522–742), while the death rate due to atmospheric particulate matter pollution increased by 1153% (283–3444) and the death rate due to ambient ozone pollution increased by 1392% (965–1958). **(4)**

Total premature mortality due to pollution from coal-fired TPPs is projected to increase by 2-3 times by 2030, from 186,500 to 229,500 per year. By 2030, the number of asthma cases linked to coal-fired TPP pollution will have risen to 42.7 million.

According to a McKinsey15 report, India's electricity demand may exceed 300 GW sooner than most forecasts. **(5)**

The public health effects, according to the Lancet report, will be serious. Sulfur dioxide (SO2) and nitrogen oxides (NOx) are released during coal combustion, resulting in the production of fine particulate matter (PM2.5, or particles smaller than 2.5 m in diameter) and ozone. PM2.5 raises the risk of respiratory and cardiovascular disease-related premature death. It is the world's most dangerous air pollutant to human health. (6) Surface ozone is also a major concern for public health and ecosystems. (7) The type of coal combusted, the type of boiler used, and the pollution controls in place can all affect SO2 and NOx emissions at a coal plant. (8)

Particulate matter is made up of small particles smaller than 2.5 micrometers (PM2.5) and larger particles up to I0 micrometers, (PM10) and it is generated by coal combustion. Smaller particles (less than PM2.5) penetrate further into the airways than PM10 and are thus thought to pose a greater risk to human health.

The US Environmental Protection Agency concluded in a study reviewing over 40 studies on the health effects of exposure to small particulate matter (PM2.5) that PM is likely to cause respiratory problems, the development of asthma, and a decline of lung function in children. According to the findings, an improvement in PM of I0 μg/m' is correlated with a 1% to 3.4 percent decrease in FEV1, a lung function indicator, in asthmatic children.

It also found that exposure to PM 2.5 increases emergency room visits and hospital admissions for respiratory-related symptoms including infections and COPD. Epidemiological data from Australia and New Zealand, Mexico, Canada, and Europe" shows that these respiratory health effects are seen in populations exposed to PM all over the world. Aside from respiratory illnesses, poor work power, cancer, and cardiovascular complications are all normal. **(9)**

Pollution from fine particulates and sulfur oxide has been linked to all-cause, lung cancer, and cardiopulmonary mortality. Each 10-microg/m (3) rise in fine particulate air pollution was associated with a 4%, 6%, and 8% increase in mortality from all causes, cardiopulmonary disease, and lung cancer, respectively. **(10)**

The following are some of the possible negative health effects associated with inhalable coal dust:

1. **Respiratory Effect**: - Contaminants from coal combustion include particulate matter (PM), sulfur dioxide (SO2)

and nitrogen oxides such as NO2, which cause harm to the airways and lungs by cell damage caused by oxidizing molecules in pollutants. Inflammation, cytotoxicity, and cell death result as a result of this.

2. **The cardiovascular effect**:- Cardiovascular effect of coal-fired power plants is largely due to particulate matter emissions, which contribute to the global burden of cardiovascular disease. Particles with a diameter of fewer than 2.5 microns (PM2.5) have been related to cardiovascular disease and death. Cardiovascular injury is caused by the same mechanism as respiratory injury: oxidative stress caused by oxidizing molecules in toxins causes inflammation and cytotoxicity.

Adverse effects of inhalable coal dust.

Possible adverse health effects associated with inhalable coal dust include:

Extra thoracic Region

• Nasal Cancer

• Sinusitis

• Buccal and lip cancer

• Pharyngeal and laryngeal cancer

• Gastric Cancer

• (Throat and Eye Irritation)

Tracheobronchial Region

• Chronic bronchitis

• Chronic obstructive airways disease and loss of FEV1b

Alveolar Region

• Coal Workers Pneumoconiosis (CWP)

• Silicosis

• Emphysema

• Tuberculosis

• Caplan's Syndrome **(9)**

Asthma is not a curable condition, but management techniques focus on keeping the disease under control and lowering the associated morbidity and mortality. To effectively treat asthma, it may be necessary to consider not only guideline-based clinical approaches but also socio-environmental risk factors. To manage the disease in developing countries, all hospitals must provide sufficient Public health facility and services, as well as have standard treatment. **(10)**

Based on international drug price information sources, the 2013 edition of the WHO EML, which was current at the time of the study, included two forms of inhaled corticosteroids (ICS): beclomethasone 50 micrograms (g) and 100 g, and budesonide 100 g and 200 g, as well as one inhaled bronchodilator: salbutamol 100 g as the drugs that are commonly available at the lowest price. These off-patent medicines are still included in the three global asthma management recommendations and guides, both of which emphasize the value of prioritizing cost-effective necessary medicines for primary health care and are also included in the new WHO EML. EMLs should provide products from each of these groups because people with chronic asthma need long-term care of both ICS and bronchodilator aerosols. **(11)**

IMPACT ON ECONOMY DUE TO AIR POLLUTION

In India, economic losses resulting from premature deaths and morbidity due to air pollution totaled US$288 billion (214–374) and $80 billion (59–103), respectively, in 2019. This cumulative loss of $368 billion (274%–477% of India's GDP) amounted to 136 percent of the country's GDP (GDP). The economic loss as a percentage of state GDP varied 32 times between states, ranging from 067 percent (047–091 percent) to 215 percent (160–277 percent), with the lowest per-capita GDP states of Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, and Chhattisgarh suffering the most. In 2019, Delhi had the highest per-capita economic loss from air pollution, followed by Haryana, with a 54-fold difference across all states. **(12)**

Additional health effects from coal-based pollution were quantified in the report, including a high number of heart attacks, emergency room visits, hospital admissions, and missed workdays. The study estimates that the monetary cost of these health consequences is between Rs. 16,000 and Rs. 23,000 crores per year. **(13)**

Rationale :

COPD and asthma were responsible for 75.6% and 20.0 of the chronic respiratory disease DALYs, respectively, in India in 2016. The number of cases of COPD in India increased from 28.1 million (27.0-29.2) in 1990 to 55.3 million (53.1-57.6) in 2016, an increase in prevalence from 3.3% (3.1-3.4) to 4.2% (4.0-4.4) The total loss of $368 billion (274 percent–477 percent of India's GDP) was 136 percent of the country's GDP due to respiratory diseases (GDP).

Chhhattisgarh states are rich in coal, and their extraction is abundant in Korba and nearby districts of Raipur, as well as their transportation to electricity production, which produces PM2.5 and PM10 particles in the air. One of the causes of respiratory illnesses in these areas is As a result, the State Health Resource Centre conducted this study to assesed the ability of public health facilities to treat patients with respiratory illnesses.

TITLE –

ASSESSMENT OF PUBLIC HEALTH FACILITY READINESS TO TREAT PATIENTS OF RESPIRATORY ILLNESSES IN RAIPUR AND KORBA DISTRICT OF CHHATTISGARH.

AIM –

To assess the Public Health Facility Readiness to treat patients for respiratory emergencies in Raipur and Korba Districts of Chhattisgarh

OBJECTIVES –

1. To assess the availability of drugs to handle respiratory emergencies.
2. To assess the availability of human resources in association with respiratory health.
3. To assess community awareness program or training of the staff and community on Respiratory Illnesses

PURPOSE OF STUDY –

To assess and identify the existing public health facility for their readiness to treat patients to treat patients of respiratory health in association with air pollution.

RESEARCH METHODOLOGY - The study is carried out in period of 3 months from March 2021 to May 2021. For the sake of convenience, two districts have been chosen: Raipur and Korba. Both cities have thermal power plants, so the likelihood of respiratory illnesses is inevitably higher. SHRC will, however, extend the sampling range soon.

A list of all health facilities from selected districts is drawn from cghealth.nic.in [website under Department of Health & Family Welfare, Govt of Chhattisgarh]. Out of all health facilities assessed 6-Community Health centre, 2-District hospital and 1-Medical colleges is made compulsory. A random sampling is carried out in remaining 47-Primary health centre to finalized the sample size.

Data is collected by an online questionnaire save in Kobo collect application. (see annexure 1.5 for detailed questionnaire)

SOURCE OF DATA –

The required data is collected from RMA, Ayurvedic Medical Officer, Allopathic Medical Officer, Block Medical Officer, Civil surgeon & Medical Public health facility in Medical college

MATERIALS & METHODOLOGY -

- The material used – Kobo collects an Android-based Mobile Application tool to collect Answers with a GPS location tracker from the respondents.
- Place of study – Korba, and Raipur (Chhattisgarh)
- Duration of study- 3 months (March to June)
- Study design – Cross-sectional study
- Data collection –
    - Primary data – from the health care staff
    - Secondary data – from Research paper, Govt Reports and Books.

PROCEDURE –

- Visit the various Public health facility and ask a question from Respondents and save that information in the Kobo Collect application.
- Ask and check the equipment's and drugs available at the Public Public health facility

DATA ANALYSIS –

- Data analyzed in statistical software STATA and Excel
- PHC,CHC and District Hospital Revised 2012 IPHS norms are considered for the analysis of availabliy of minimum requirement at the Public health facility.

Results –

Only tertiary hospitals, such as Raipur Medical College and Korba and Raipur District Hospitals, were found to have surpassed the readiness index cut-off of 70%, indicating that they had adequate capacity and could treat Respiratory Illnesses (RI:97%) and other diseases (RI:79.70 percent). Primary Health Centre: 41 percent, and Community Health Centre: 50.50 percent, in that order, were the mean readiness scores for the other hospital levels.

TABLE-1

Type of Public health facility	Respondents	No of Public health facility	Percentage of sample
PHC	RMA, MO, AMO	47	83.92%
CHC	BMO	6	10.71%
DH	Civil Surgeon	2	3.6%
Medical College	Medical superientendent	1	1.75%

Table-2

	MEDICAL COLLEGE N=1	DISTRICT HOSPITAL N=2	CHC N=6	PHC N=47
Human resources at the facility				
Doctor with MD (General Medicine)	1(100)	2(100)	0	6(13)
ECG Technician	1(100)	2(100)	1(16)	0
Radiographer (X-RAY Technician)	1(100)	2(100)	4(67)	5(10)
PFT (spirometry technician)	1(100)	0	0	0
LAB Technician	1(100)	2(100)	6(100)	36(76.6)
	100%	80%	36%	38.32%
Equipment				
Oxygen cylinder	1(100)	2(100)	6(100)	44(93.5)
Ventilators	1(100)	2(100)	1(16)	0
Nebulizers	1(100)	2(100)	6(100)	46(98)
Spirometer	1(100)	0	0	0
Spacer	1(100)	1(50)	0	4(8.4)
pulse oximeter	1(100)	2(100)	6(100)	45(95.7)
IEC Material	0	0	2(32)	5(10.5)
AMBU bag	1(100)	2(100)	6(100)	43(91.4)
Tracheostomy kit	1(100)	2(100)	2(32)	1(14.9)
	88%	72.10%	53%	45.80%
Diagnostic Facility				
Blood Test	1(100)	2(100)	6(100)	44(93.5)
X-ray chest	1(100)	2(100)	4(67)	4(8.4)
ECG Technician	1(100)	2(100)	1(16)	0
ECHO	1(100)	0	0	0
PFT (spirometry)	1(100)	0	0	0
Sputum CB NAAT/ True NAT	1(100)	2(100)	2(32)	24(51.1)
	100%	66.70%	35%	25.50%
Drugs				
SALBUTAMOL	1(100)	2(100)	5(82)	42(89.4)
PREDNISOLONE	1(100)	2(100)	3(50)	31(66)
BECLAMATHASONE	1(100)	2(100)	3(50)	11(23.3)
HYDROCORTISONE	1(100)	2(100)	6(100)	44(93.5)
EPINEPHRINE	1(100)	2(100)	5(82)	29(61.6)
ROTAHALER	1(100)	2(100)	4(67)	8(16)
ROTACAPS	1(100)	2(100)	4(67)	7(14.9)
ENALAPRIL	1(100)	2(100)	5(82)	30(63.9)
TELMISARTAN	1(100)	2(100)	5(82)	17(36.2)
AMLODIPINE	1(100)	2(100)	6(100)	43(91.5)
DIURETICS	1(100)	2(100)	6(100)	34(72.2)
ASPIRIN	1(100)	2(100)	5(82)	18(38.3)
	100%	100%	78%	55.66%
TOTAL	97%	79.70%	50.50%	41%

Table – 3

The Primary Health Centre (PHC) is a facility that offers curative, preventive, and promotive health services to the sick and those who directly identify or are referred from Sub-Centres. It is the first port of call for a licenced public sector doctor in rural areas. As a result, we've chosen 47 Primary Health Care Centers for the report, with RMA, AMO, and Allopathic Medical Officers as respondents (AMO). For the study, we wanted to see if human resources were available at the facility to handle respiratory emergencies, and we found that 24% of the Public health facility did not have lab technicians, and only 36% of the Public health facility had MBBS doctors, which is a very small percentage, and the majority of the Public health facility are run by RMAs, who are nursing graduates who have completed a 6-month Bridge-course in community health, IPHS believes so Every PHC should have at least one MBBS doctor, but only 15 of the 47 Public health facility have one, and only 36 of the 47 have a lab technician, implying that 25% of the Public health facility lack a lab technician, which is needed for simple lab tests.

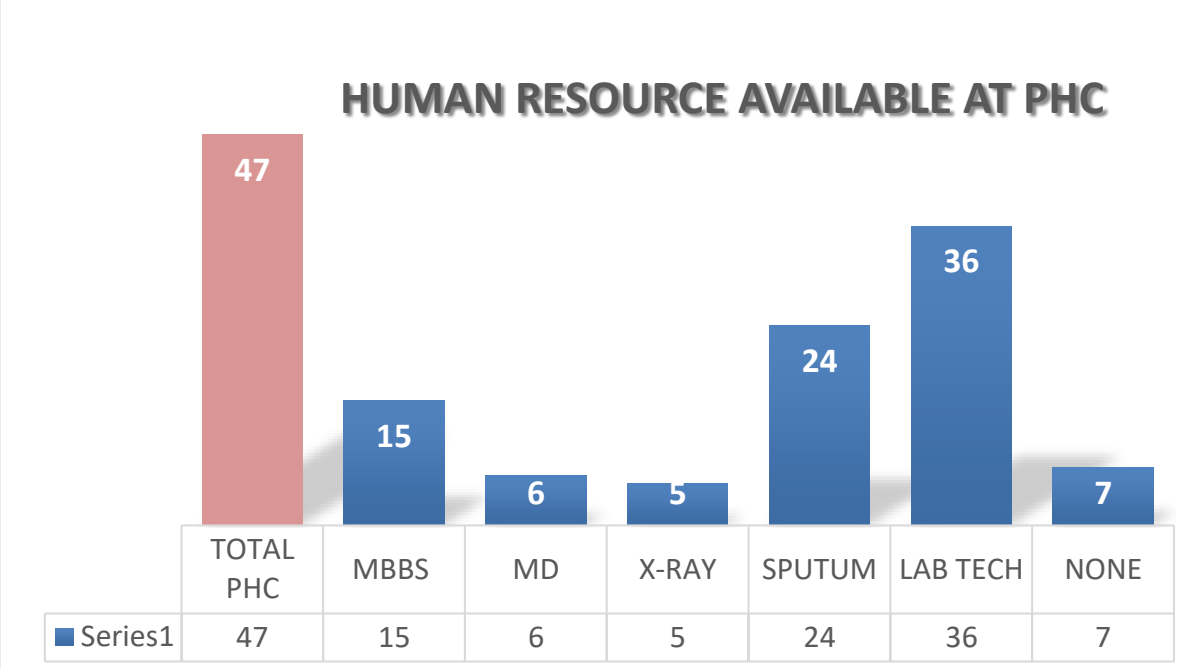


Table-4

The community health centre serves as the initial point of contact for referral services. One CHC contains four PHCs. according to IPHS guidelines, CHC should have Xray Technicians and one lab technician is available at any facility, despite the fact that IPHS recommends that a CHC have two lab technicians. Only one lab technican is available at te Public health facility.

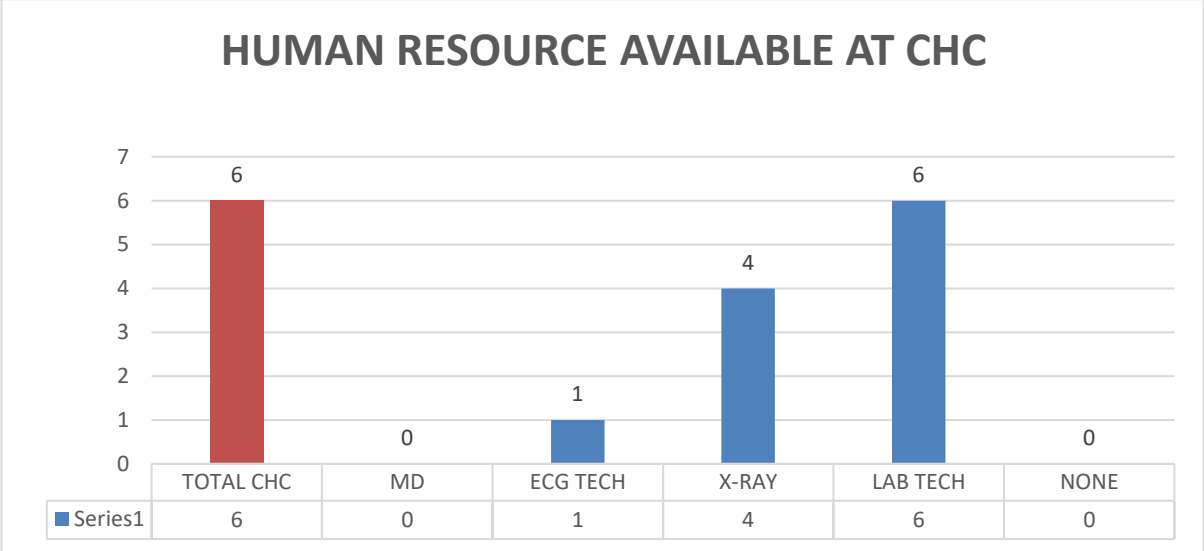


Table-5

The table includes two district hospitals: Korba 100-bed Indira Gandhi District Hospital and District Hospital (Pandri), as well as Bhim Rao Medical College.

We note that district hospitals and medical colleges, i.e. secondary and tertiary level hospitals, are only capable of handling respiratory emergencies in Chhattisgarh because the facility has all of the human resources required to handle respiratory emergencies.

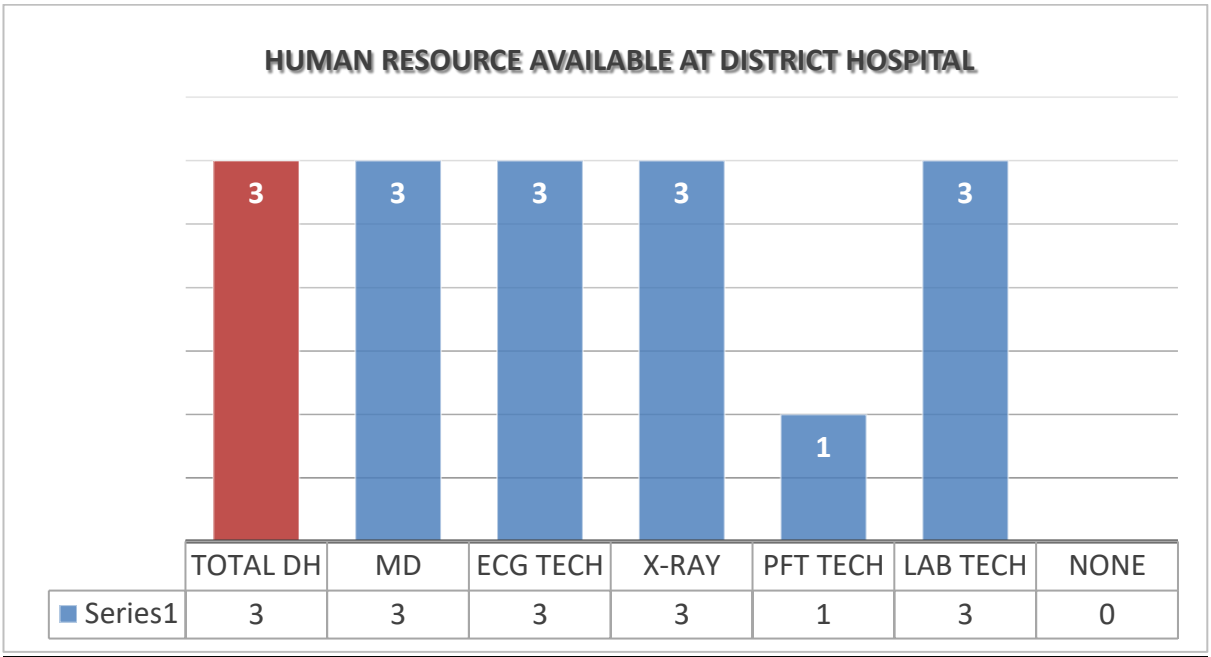


Table-6

According to the SARA tool we chose for this report, there is an important list of equipment that should be available at the facility to manage respiratory emergencies, or according to IPHS guidelines, PHCs have more than enough equipment, which may be due to the fact that some are urban PHCs and others are MCH PHCs.

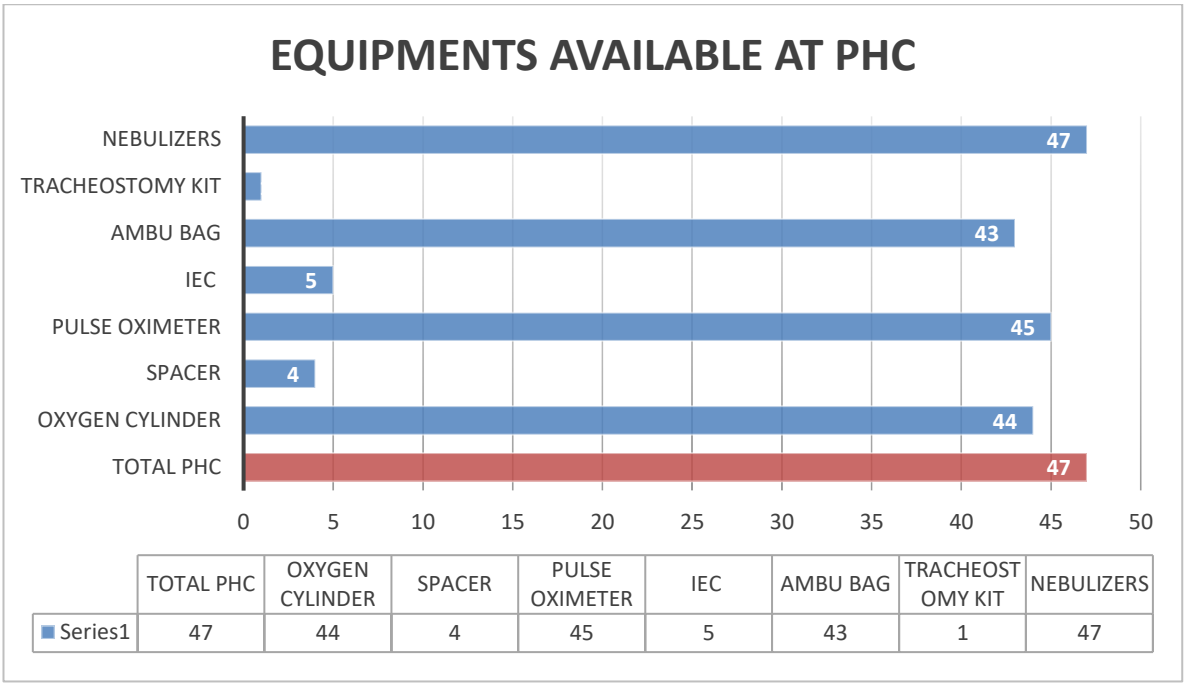


Table-7

CHC is the first point of referral services from neighbouring villages and locality people find it convenient to visit these referral centres, accounting for 10% of the total sample. as seen in table-7 Pulse oximeters, Ambu bags, and oxygen cylinders should be available in every CHC. These items are also available at all Public health facility, but items such as a spacer, a tracheostomy kit, and IEC material are preferable and should be available at the facility since these are the first points of referral for services, and Spacer and Tracheostomy kits should be available in the most contaminated areas.

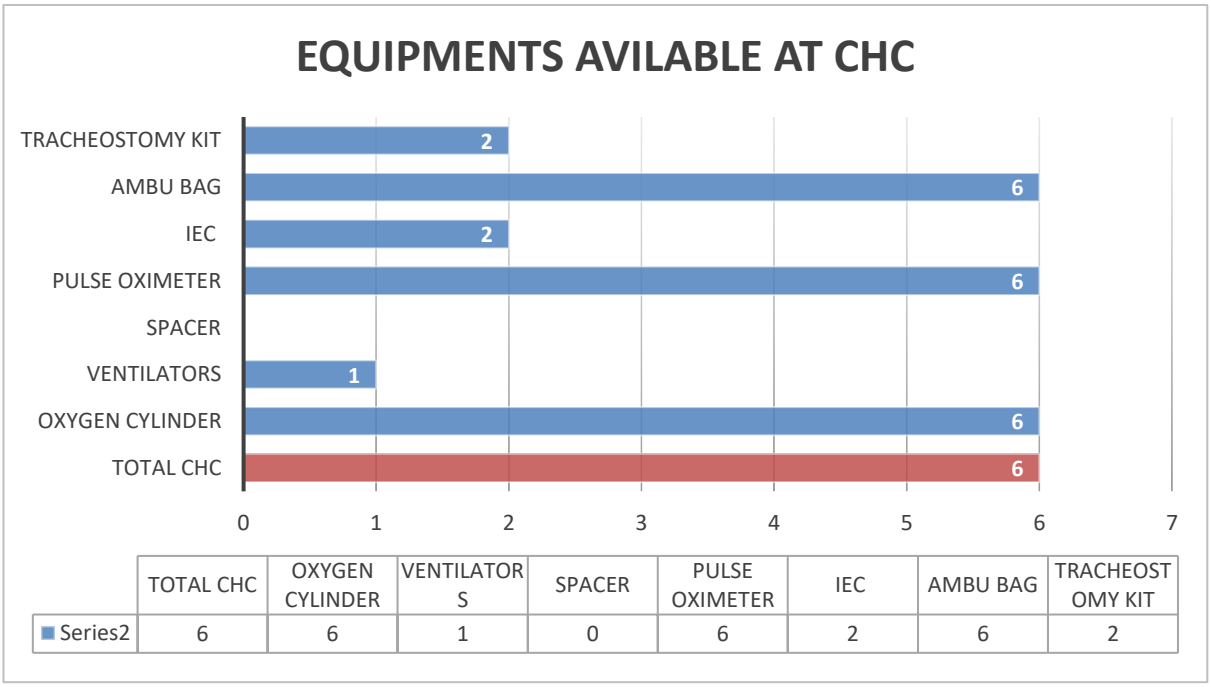
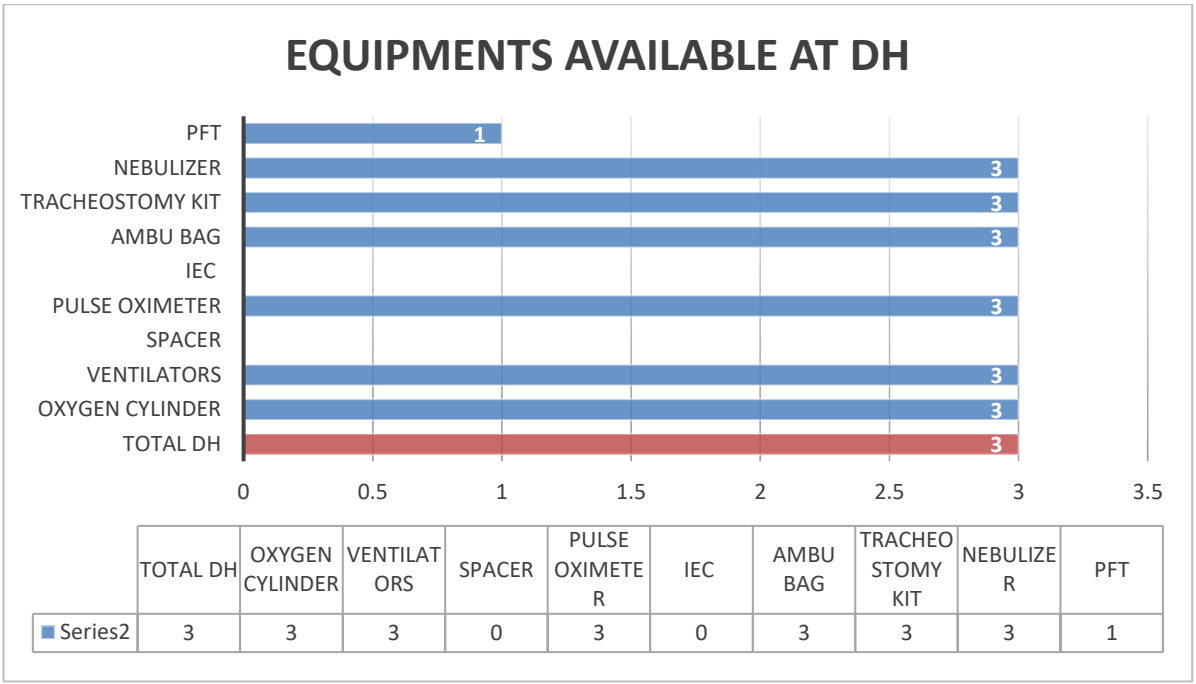


Table-8

Except for Spacer and IEC material, all of the equipment is available at secondary and tertiary Public health facility, and PFT technicians are desirable only at hospitals with more than 500 beds, which is why PFT technicians are only available at medical colleges.



	TOTAL DH	OXYGEN CYLINDER	VENTILATORS	SPACER	PULSE OXIMETER	IEC	AMBU BAG	TRACHEOSTOMY KIT	NEBULIZER	PFT
Series2	3	3	3	0	3	0	3	3	3	1

Table-9

According to WHO SARA tool these drugs should be avialable at the Public health facility to manage respiratory emergency and according to the table Salbutamol, hydrocortisone drugs availability is 89% and 93% respectively that means these drugs is commonly available at the PHCs and Prednisolone and epinephrine availability is at around 65% and 61% and Beclamathasone, Rotahaler and Rotacaps availability is very low which is around 23%,17% and 14% respectively these are essential drugs and out of 7 drugs 3 essential drugs is availability is very low.

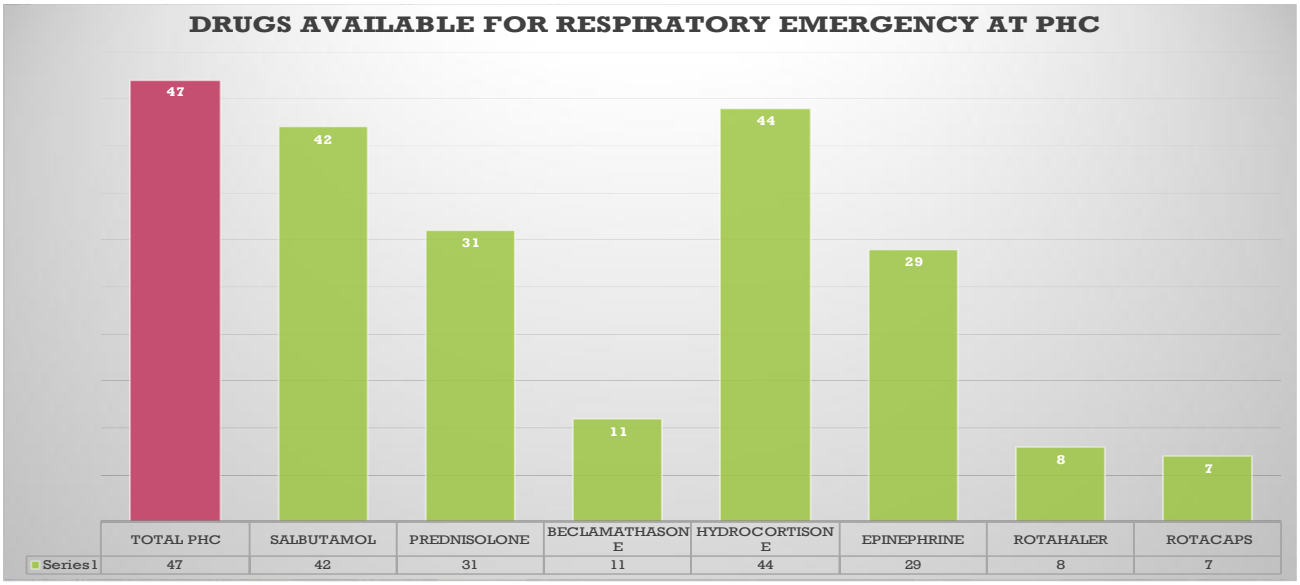


Table-10

Prednisolone and epinephrine are around 50 percent and 83 percent available at CHCs, respectively, and Beclamathasone, Rotahaler, and Rotacaps are around 50 percent, 66 percent, and 66 percent available at PHCs.

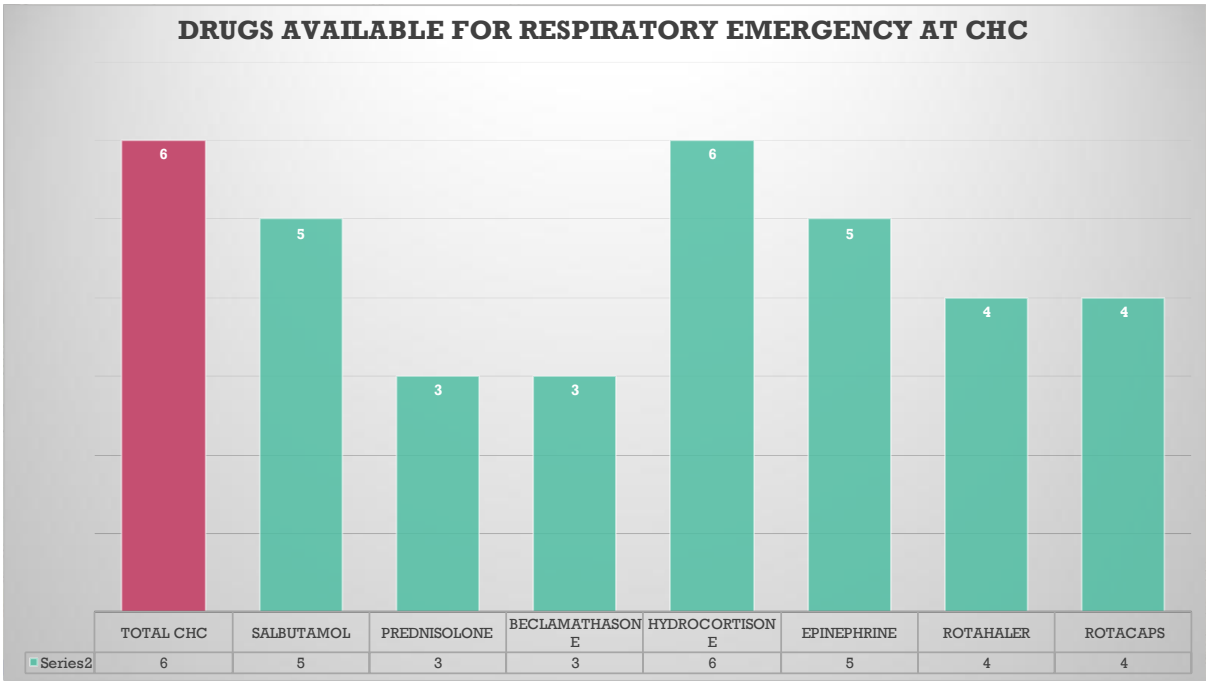


Table-11

All seven medications are 100% available in secondary and tertiary hospitals.

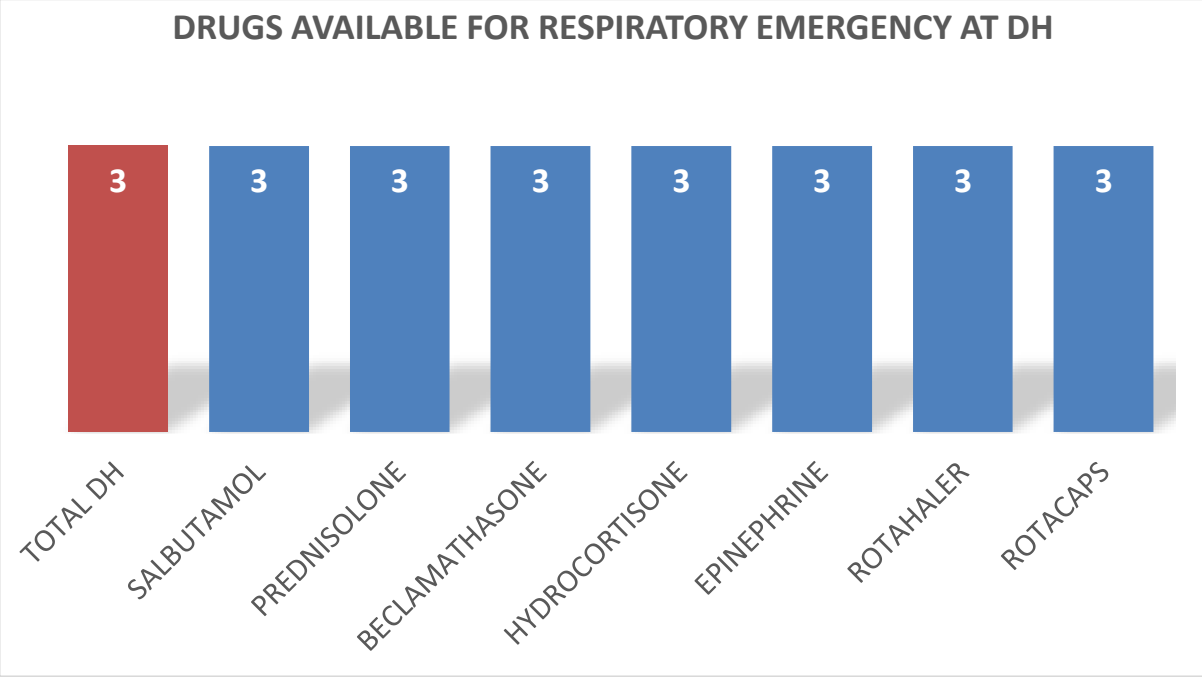


Table-12

The availability of telmisartan and aspirin drugs is very limited, about 35%, while the availability of amlodipine, enalpril, and diuretics is 91 percent, 63 percent, and 72 percent, respectively. Most PHC have these three life-saving drugs for cardiovascular emergencies.

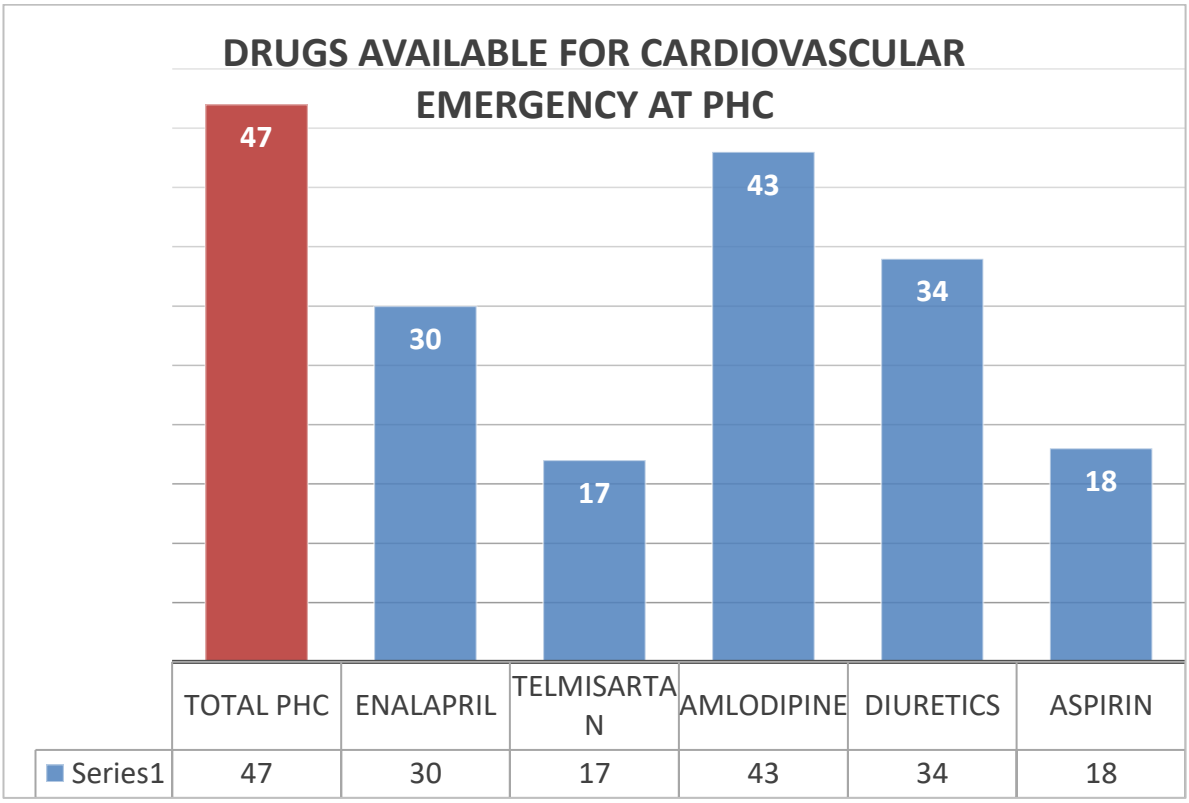


Table-13

The supply of telmisartan, enalapril, and aspirin is 83 percent, and amlodipine and diuretics are 100 percent, indicating that CHC is prepared to manage cardiovascular emergencies.

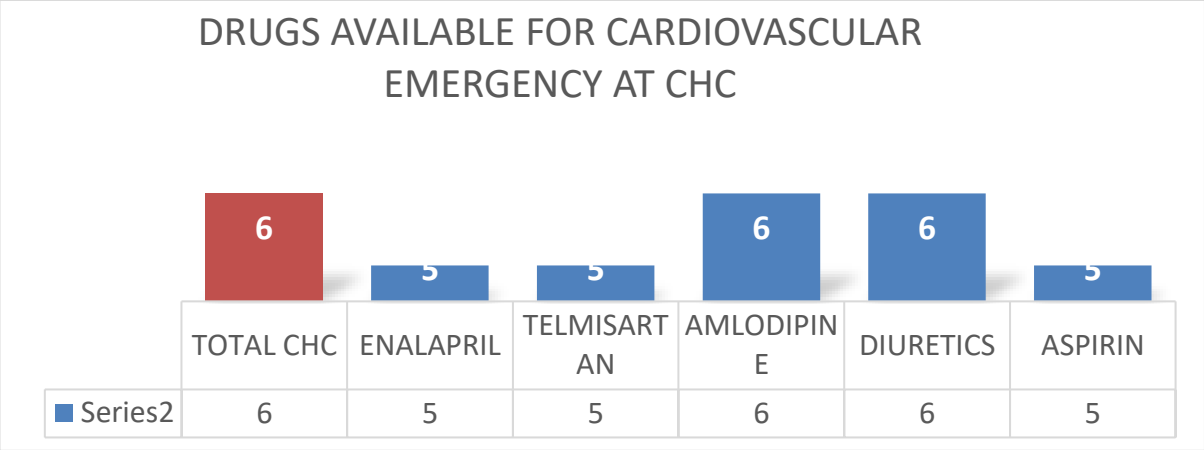


Table-14

Many of the medications are available in full at secondary and tertiary hospitals.

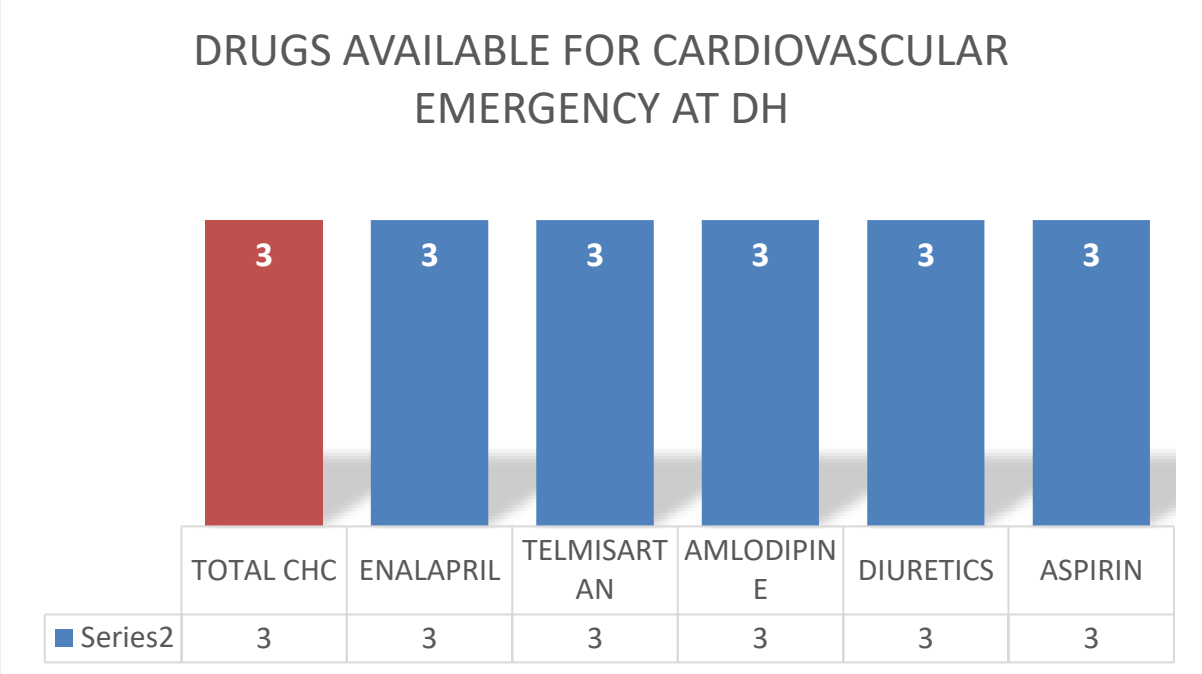


Table-15

According to IPHS guidelines, blood test Public health facility should be accessible at all PHCs, and 44 of the 47 Public health facility have blood test Public health facility, with some even having x-ray and sputum test Public health facility, which is beyond the IPHS guidelines due to community demand for these services.

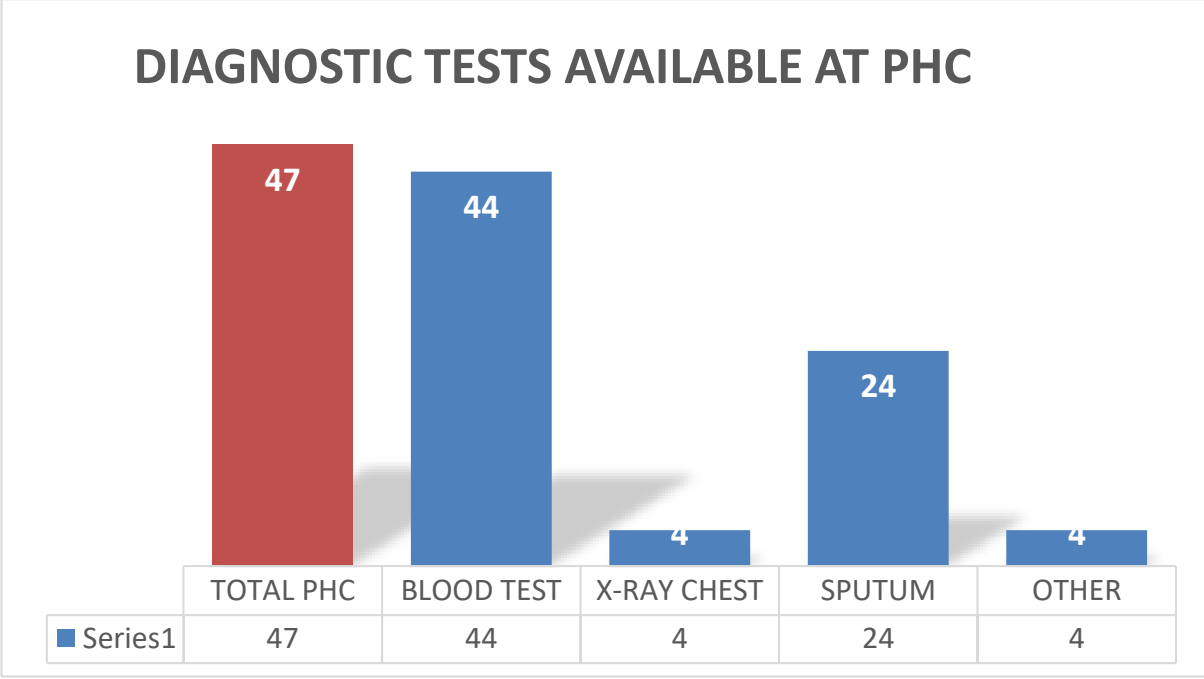


Table-16

Blood examination, X-ray chest, and sputum testing Public health facility should be available at CHC. Blood test is available at all Public health facility, and 66 percent of Public health facility have x-ray chest facility. Only 33 percent of Public health facility have sputum test facility, which is important to check if patients have any respiratory disease or not.

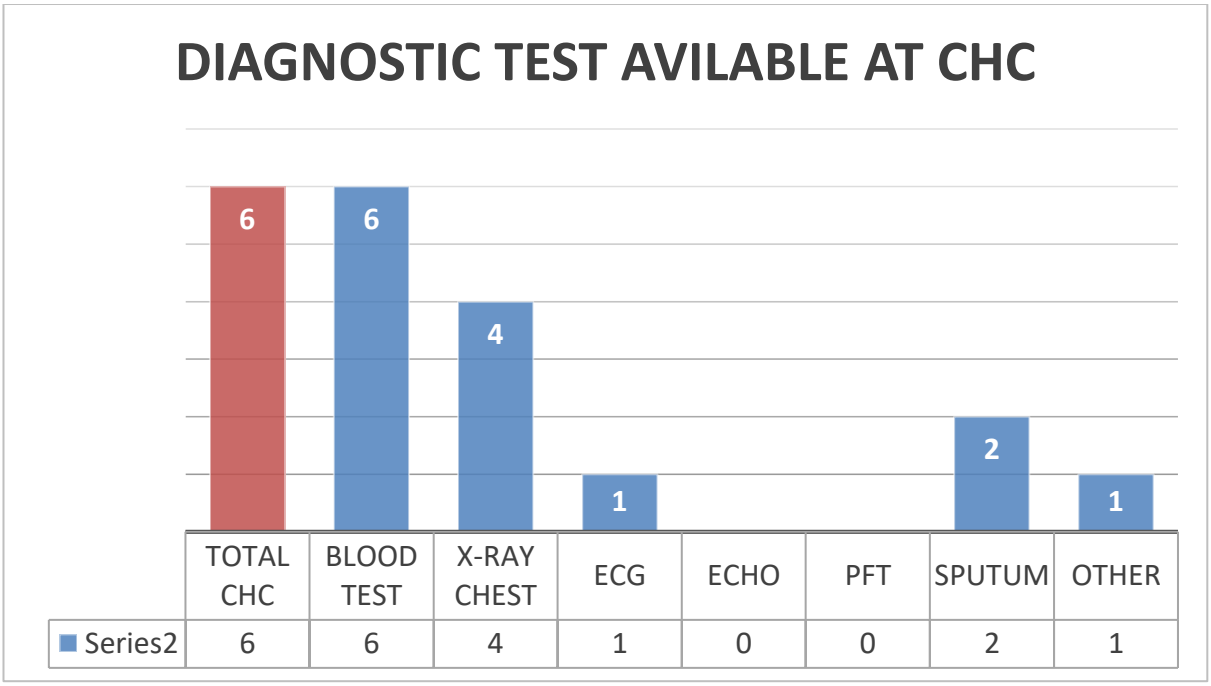


Table-17

Except for ECHO and PFT, both tests are available at the laboratory. PFT is only desirable in hospitals with 500 beds or more, so it is only available in medical colleges.

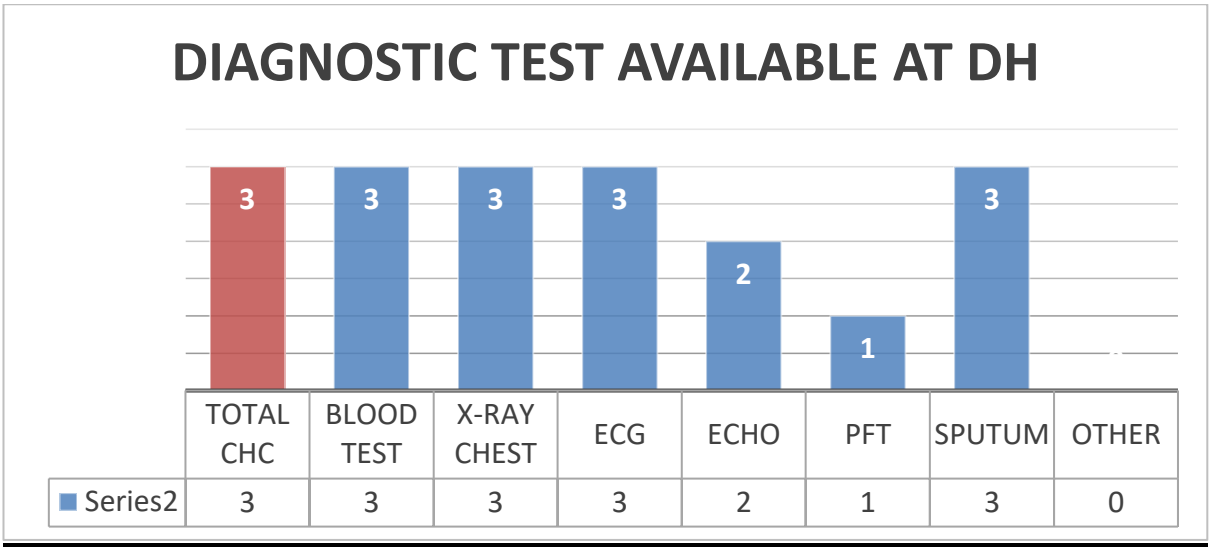
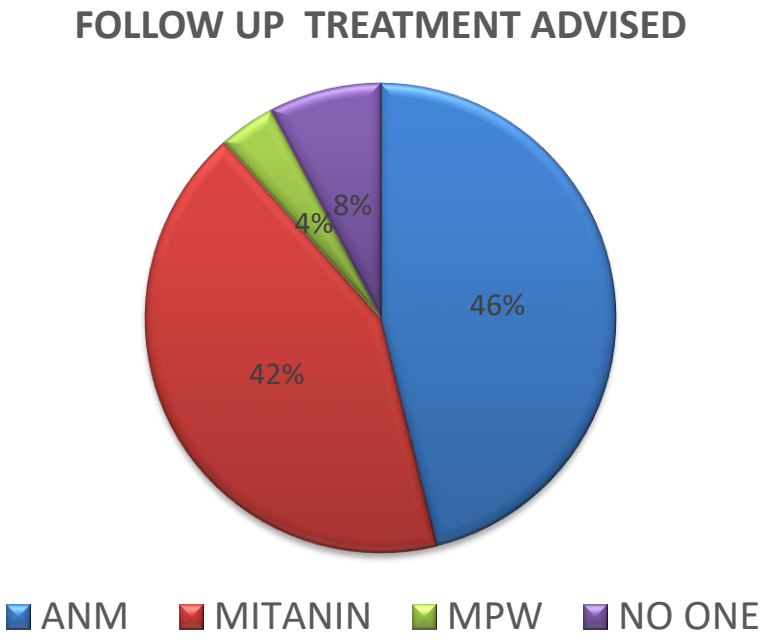


Table-18

How the follow-up Treatment is advised and done in the community



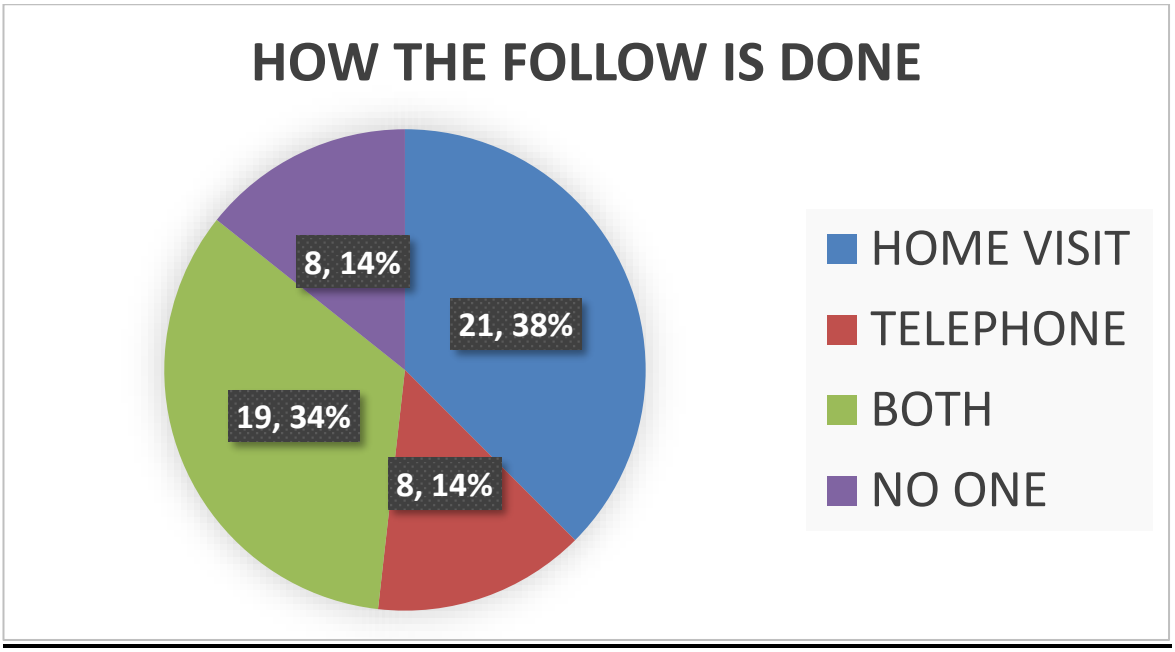


Table-19

According to the table, everybody in the vicinity of the facility is aware of the 108 percent and 104 percent emergency numbers, and Only 7 Facility provides community members with instruction on first aid, evacuation, and patient transfer in the event of an emergency. Just ten Public health facility hold group activities or education camps to raise public awareness and understanding of the effects of air pollution. Just nine Public health facility perform community surveillance for early detection of health risks associated with air pollution.

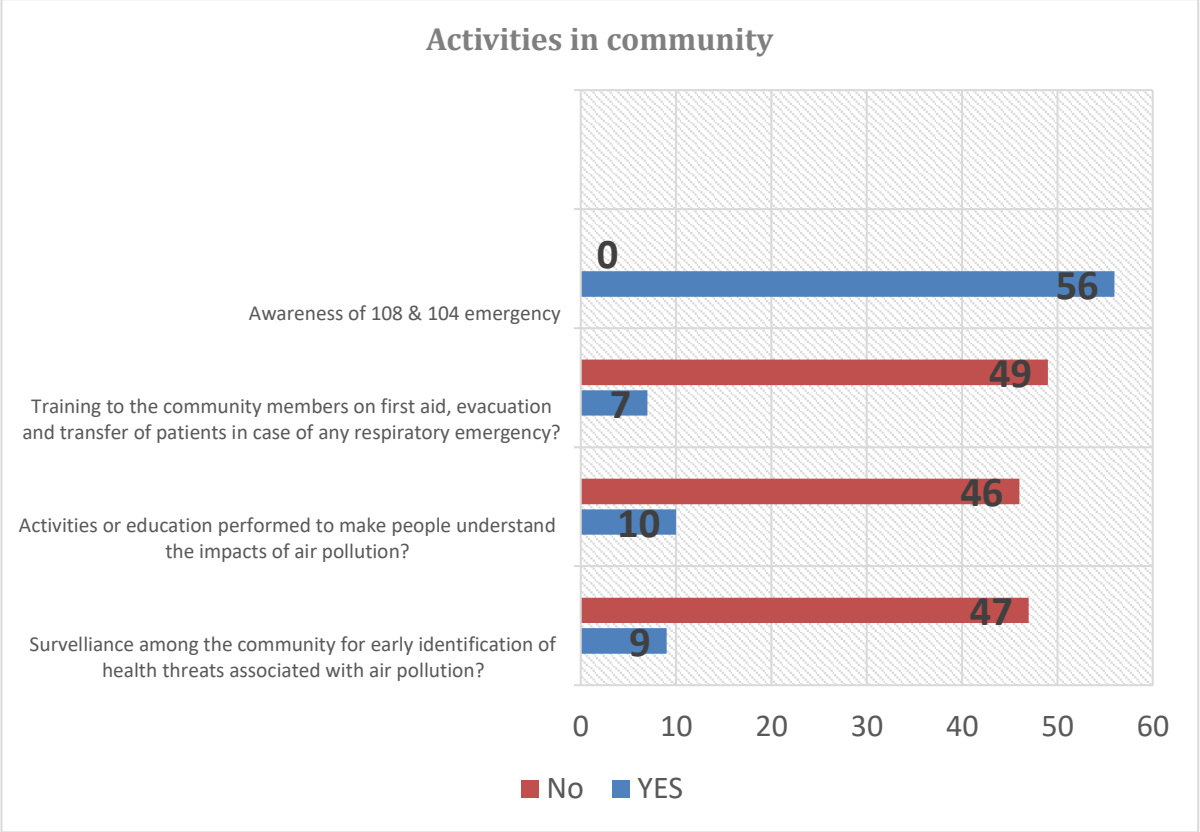
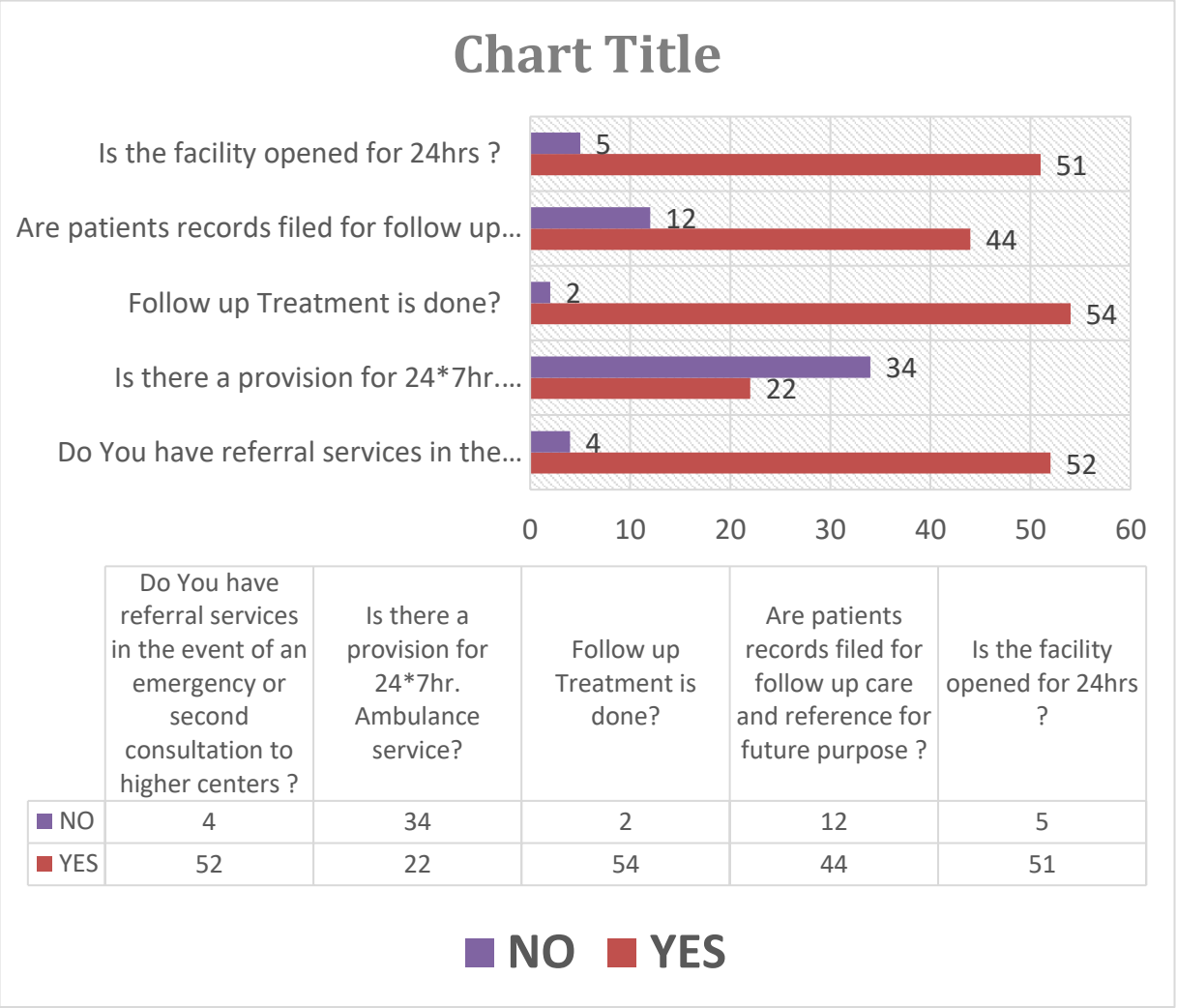


Table-20

There are 57 Public health facility in total. 51 Public health facility are open 24 hours a day, and 44 Public health facility have reports filed for potential follow-up treatment. There are 57 Public health facility in total. Only two Public health facility did not attend follow-up patients, although the majority of the Public health facility did. Just 38% of Public health facility provide a 24-hour emergency service, while the remainder refer critical patients to a higher hospital. In the event of an emergency, 52 Public health facility provide referral services. Four of the 52 Public health facility, such as Kathgora

CHC, Pandri and Korba District Hospital and Medical College, serve as referral centres.

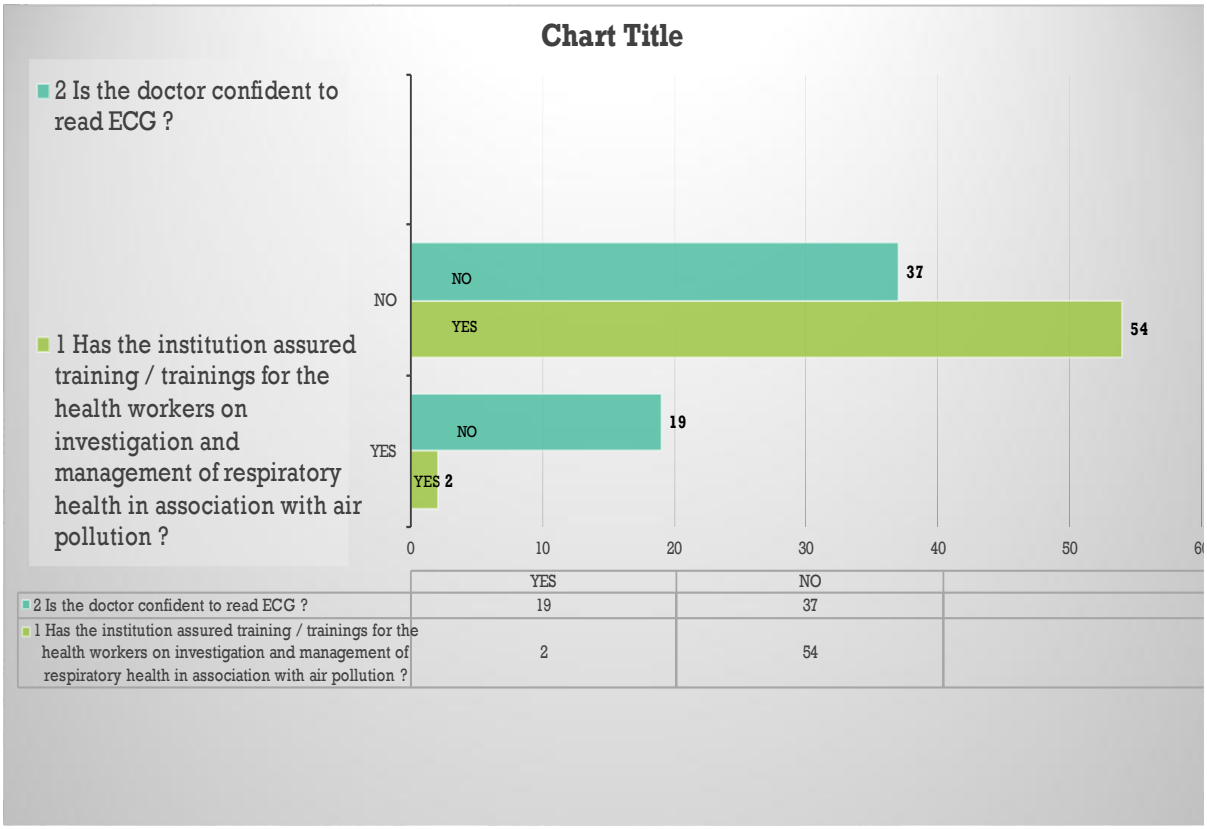


	Do You have referral services in the event of an emergency or second consultation to higher centers ?	Is there a provision for 24*7hr. Ambulance service?	Follow up Treatment is done?	Are patients records filed for follow up care and reference for future purpose ?	Is the facility opened for 24hrs ?
NO	4	34	2	12	5
YES	52	22	54	44	51

Table-21

37 doctors are unable to read ECGs because some, if not all, of the Public health facility are operated by RMA, and ECG reading is not part of the RMA curriculum, and other MBBS doctors are unable to read ECGs due to poor vision, which is one of the reasons.

Just two of the 57 Public health facility obtained health worker instruction in the investigation and treatment of respiratory illnesses linked to air pollution.



Discussion –

According to existing literature and our research results shows India suffers from a severe shortage of trained staff and inadequate diagnostic Public health facility, both of which contributed to the Public health facility' lower readiness scores in this study.

Where specialists doctors are required, please make them available at those Public health facility. Only medical colleges have PFT technicians because, according to IPHS guidelines, PFT technicians are only available at more than 500 beded hospitals. However, where the impact of air pollution is high, please make one PFT technician available at least at a district hospital. For example, in Chhattisgarh, the mean worker's readiness index is very low; in a CHC, there is a 25% shortage of lab technicians, and in a CHC, there is a 25% shortage of lab technicians.

Almost all drugs for cardiovascular and respiratory emergency care, as well as PHCs, are not readily accessible. The government should put a stronger focus on essential medication access at Primary Health Centers.

Diagnostic tests such as X-ray, ECG, sputum, and PFT should be made available in CHCs since this is the first referral service, and at the very least, CHCs should be equipped to handle respiratory emergencies before referring to district hospitals because CHCs are closer to a village than district and medical colleges, and Manual PFT machines should be made available at both PHCs and CHCs so that doctors can check how severe the condition is in community manually.

Mitanin also recommends further therapy. Follow-up patients should be a priority for the facility, which should monitor and maintain records of those patients in a dedicated

registry and contact them via either online or offline means. In the case of noncommunicable diseases, the government should place a greater emphasis on prevention rather than treatment. There is a very low percentage of community programmes in a community to raise awareness about the effects of air pollution and to keep track of new incidents, as well as to provide instruction to the population living near severely polluted hotspots on evacuation, first aid, and patient transfer in the event of respiratory and cardiovascular emergencies.

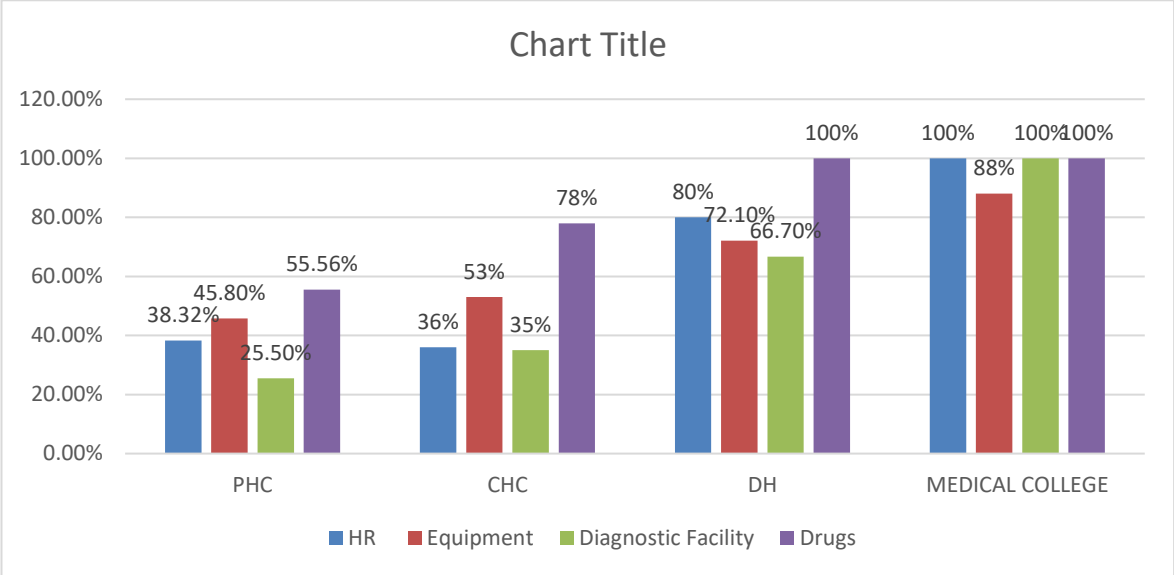
RMAs is in charge of the majority of Primary Health Centers, and their curriculum needed to be updated to reflect local needs, such as how to read ECGs and how to educate the public about the effects of air pollution on health and how to respond in a respiratory and cardiovascular emergency.

It was identified that, on average, tertiary hospitals were equipped to provide specialised treatment for patients with respiratory illnesses, but that there is still room for growth. Inhaler spacers, spirometer spacers, and IEC material, in particular, are in short supply.

Finding –

- There is a shortage of respiratory and cardiovascular emergency medications in PHCs and CHCs.
- Inhaler spacers, spirometer spacers, and IEC material, in particular, are in short supply.
- There is a need for health workers to be trained in how to deal with respiratory emergencies.
- The government should use a cascade model of training, in which first a trainer is trained on CRDs and how to diagnose and treat CRDS patients, and then a community trainer is trained on how to aware community about respiratory illnesses.

Conclusion –



Despite a slew of health-care initiatives, the Chhattisgarh healthcare system is still unable to effectively handle respiratory illnesses at the PHC and CHC levels. Despite the fact that tertiary hospitals are equipped to handle Respiratory Illnesses on average, they account for just 5.3 percent of the Public health facility surveyed. This information can be used to persuade policymakers and other stakeholders to improve the current Respiratory Illnesses service delivery strategy, especially what minimum services should be provided at the primary and secondary healthcare levels, and to advocate for an equitable distribution of Respiratory Illnesses services across India.

Limitation-

- Due to a lack of time and state-by-state lockout during the study period, the sample size is limited.
- A sample should include more CHCs, secondary and tertiary level hospitals.
- The study does not apply to all health care Public health facility in Chhattisgarh.

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Annexture- (1.5)

Rapid Assessment of Health Facility Readiness To Treat Patients for Respiratory Health

Date

yyyy-mm-dd hh:mm

Respondent

Designation

Name of Health Facility

Setting of Health Facility

- ◯ Urban
- ◯ Rural

Type of Health Facility

- ◯ Medical College
- ◯ Distrcit Hospital
- ◯ Community Health Center
- ◯ Primary Health Center

Do the health facility have human resources for managing Respiratory health?

- ☐ Doctor with MD (General Medicine)
- ☐ ECG Technician
- ☐ Radiographer (X Ray Technician)
- ☐ Pulmonary Function (Spirometry Technician)
- ☐ Lab Tecnician
- ☐ None

Is the Doctor Confident to read the ECG

- ◯ Yes
- ◯ No

Has the institution assured training/trainings for the health workers on investigation and management of respiratory health in association with air pollution?

- ◯ Yes
- ◯ No

How frequent are those training sessions?

_____

Which basic equipment are there in health facility for managing pulmonary illness in associated to air pollution ?

- [ ] Oxygen cylinder
- [ ] Ventilators
- [ ] Nebulizers
- [ ] Spirometer
- [ ] Spacer
- [ ] Pulse oximeter
- [ ] Health education material
- [ ] AMBU bag
- [ ] Tracheostomy Kits

Are these diagnostics tests available in the health facility?

- [ ] Blood Test
- [ ] X-ray chest
- [ ] ECG
- [ ] ECHO
- [ ] Pulmonary Function Test (Spirometry)
- [ ] Sputum CB NAAT/ True NAT
- [ ] Other

Others specify

_____

The health facility has following drugs for respiratory emergency?

- [ ] Salbutamol Inhaler
- [ ] Beclomethasone Inhaler
- [ ] Prednisolone
- [ ] Hydrocortisone injection
- [ ] Epinephrine injectable
- [ ] Rotahaler
- [ ] Rotacaps

The health facility has following drugs for Cardiovascular emergency?

- [ ] ACE inhibitor (e.g. Enalapril)
- [ ] AR Blockers (e.g.Telmisartan)
- [ ] Calcium channel blocker (e.g.amlodipine)
- [ ] Diuretics (Hydrochlorothiazide)
- [ ] Aspirin

Do you have referral services in the event of an emergency or second consultation to higher centers?

- ◯ Yes
- ◯ No

Is there a provision for 24*7 hr. ambulance service?

- ◯ Yes
- ◯ No

Follow up for the treatment is done?

- ◯ Yes
- ◯ No

Who does the follow up for the treatments advised?

- [ ] ANM (Auxiliary nurse midwife)
- [ ] Mitanin
- [ ] MPW
- [ ] None

How is the follow up done ?

- ◯ Home Visit
- ◯ Telephone
- ◯ Both

How often does the follow up visit happen through the health facility?

- ◯ Daily
- ◯ Weekly
- ◯ Monthly
- ◯ Quarterly

Are patient records filed for follow up care and reference for future purpose?

- ◯ Yes
- ◯ No

Does the health facility conduct any training to the community members on first aid, evacuation and transfer of patients in case of any respiratory emergency?

- ◯ Yes
- ◯ No

How frequent are those trainings ?

- ◯ Quarterly
- ◯ Half Yearly
- ◯ Annually
- ◯ Once

Are there any community activities or education performed to make people understand the impacts of air pollution?

- ◯ Yes
- ◯ No

19. Does the hospital conduct surveillance among the community for early identification of health threats associated with air pollution?

- ◯ Yes
- ◯ No

IIs the health facility openened for 24 hours?

- ◯ Yes
- ◯ No

Are people aware of 108 and 104 emergency contact numbers for ambulance facilities?

- ◯ Yes
- ◯ No

Point and shoot! Use the camera to take a photo

Click here to upload file. (< 5MB)

Record your current location

latitude (x.y °)

longitude (x.y °)

altitude (m)

accuracy (m)