COSTING OF HEALTH AND WELLNESS CENTRES

A CASE STUDY OF GUJARAT

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ABSTRACT

The National Health Policy 2017 recommended the establishment of Health and Wellness Centres (HWC) as the primary platform to deliver comprehensive primary health care in India and emphasised that about two-thirds of the health budget of the government should be invested on primary care. In February 2018, the government announced its plan to create 1,50,000 HWCs under the Ayushman Bharat initiative by transforming the already existing Sub Centres (SCs), Primary Health Centres (PHCs) and Urban PHCs (UPHCs) as HWCs by 2022. The operationalisation of HWC has been planned in a phased manner. However, for scaling up and replicability, it is imperative for the government to know how much to budget for this initiative, so that there are no interruptions in the smooth flow of services.

Taking Gujarat as a case study, the study took a sample of eight HWCs one of each kind from two districts for estimating the total and per-unit costs for each type of HWC using OPD footfalls as an indicator for measuring output, estimated the incremental unit costs – the difference between the pre- and post-conversion unit costs - to understand the cost implications of the conversion, and estimated the possible total costs in relation to the health budget of the state to understand the financial implication of scaling up HWCs.

The results indicated that though the costs have gone up after conversion, OPD footfalls have also increased at all facilities, but most significantly for the SCs, resulting in costs per OPD footfalls coming down significantly. For nearly all the centres, there has been a fall in the incremental costs indicating that the conversion to HWC been quite economical.

It was estimated that a total of about INR 713 crores will be spent on running 1500 HWCs in the year 2020-21; however, the incremental costs of scaling up would be significantly less at about INR 93 crores, with the lowest incremental costs for SCs.

More research with additional data points would be required to confirm these tentative findings, but the results could be used as a baseline for future such studies.

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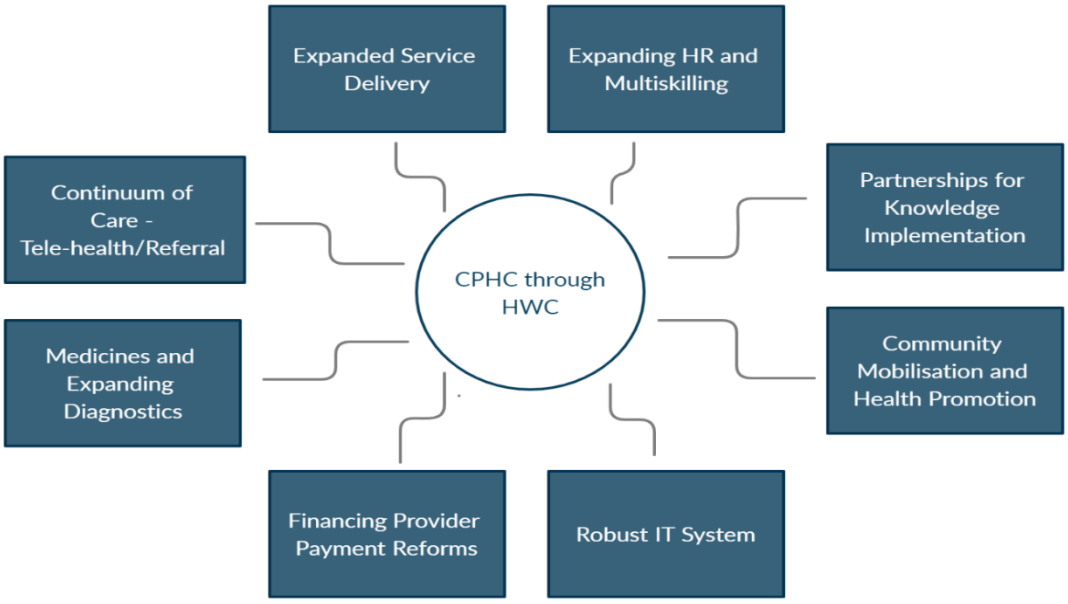
1 INTRODUCTION

The Report of the Task Force on Comprehensive Primary Health Rollout, Ministry of Health and Family Welfare (MoHFW, 2015) stated that primary health care is the only affordable and effective path for India to Universal Health Coverage (UHC). The National Health Policy 2017 recommended the establishment of Health and Wellness Centres (HWC) as the primary platform to deliver comprehensive primary health care in India and also emphasised that about two-thirds of the health budget of the government should be invested on primary care.

Since then, HWCs under Ayushman Bharat have been the focus of government policy to strengthen primary care in the country. HWCs are envisaged to deliver Comprehensive Primary Health Care (CPHC), with a broad range of services that go beyond maternal and child health care to include care for non-communicable diseases, palliative and rehabilitative care, oral, eye, ENT care, mental health and first-level care for emergencies and trauma, including free essential drugs and diagnostic services (MoHFW, 2018).

To deliver CPHC through HWCs, the government envisioned a paradigm shift at all levels of the health system, shown in the diagram below.

Figure 1: Ensuring Comprehensive Primary Health Care through HWC



Source: Operational guidelines for CPHC through HWC, MoHFW, 2018

In February 2018, the government announced its plan to create 1,50,000 HWCs by transforming the already existing Sub Centres (SCs), Primary Health Centres (PHCs) and

Urban PHCs (UPHCs) as HWCs by 2022. In metropolitan cities, some PHCs being managed by the Municipal Corporation, called Corporation Urban PHCs (CUPHCs) were also proposed to be converted to HWCs. It was also proposed that such care could additionally be provided/ complemented through outreach services, Mobile Medical Units (MMUs), camps, and home-based as well as community-based care.

The operationalisation of HWCs has been planned in a phased manner till the year 2022; as of 25th September 2020, a total of 45,895 HWCs have been established, consisting of 24,963 SCs, 17,324 PHCs and 3,608 UPHCs (MoHFW National Health Portal).

At the Centre, the National Health Mission (NHM) is administratively responsible for looking after the activities of the HWCs. For each state, the state HWC Cell is the key body responsible for conversion of the health centres to HWCs.

The expanded range of services at HWCs comprise a comprehensive and exhaustive list but has been planned in an incremental manner and comprise the following:

- Care in pregnancy and childbirth.
- Neonatal and infant health care services
- Childhood and adolescent health care services.
- Family planning, Contraceptive services and Other Reproductive Health Care services
- Management of Communicable diseases: National Health Programmes
- Management of Common Communicable Diseases and General Out-patient care for acute simple illnesses and minor ailments
- Screening, Prevention, Control and Management of Non-Communicable diseases and chronic communicable diseases like TB and Leprosy
- Basic Oral health care
- Care for Common Ophthalmic and ENT problems
- Elderly and Palliative health care services
- Emergency Medical Services
- Screening and Basic management of Mental health ailment

However, as a first step, screening, prevention, control and management of non-communicable diseases and chronic communicable diseases like tuberculosis and leprosy has been introduced at HWCs. Although significant progress has already been made with respect to the HWCs

operationalisation, some proposed activities like mental health are in the process of implementation.

The aim of the expanded services is to provide medical facilities closer to people and to provide diagnostic services and essential medicines free of cost at the centres. This will facilitate last-mile connectivity, especially for the most disadvantaged and vulnerable populations. A continuum of care approach will be ensured at the HWCs by establishing a network of referral and back-referral linkages.

A Community Health Officer (CHO) placed at SC level AB-HWCs will facilitate the efforts of the primary healthcare team. The CHO is a B.Sc. / GNM Nurse or a qualified Ayurveda Practitioner, who additionally also undergoes training for six months in a Certificate Course in Community Health (CCCH). The CHO will lead the team comprising of frontline workers (MPHWs & ASHAs).

Performance Linked Payments (PLPs) have been introduced to ensure the efforts of the Primary Health Care team at SC level AB-HWCs, in terms of providing outreach services, population-based screening and service delivery. This is aimed towards improved health outcomes. PLPs have been built for the primary healthcare team for rewarding the hard work and to encourage and motivate the team including ASHAs (Accredited Social Health Activists – the world's largest health volunteer workforce) to perform better.

The operationalisation of HWC has been planned in a phased manner. However, for scaling up and replicability, it is imperative for the government to know how much to budget for this initiative, so that there are no interruptions in the smooth flow of services. Before this study, there has not been a comprehensive economic costing of the HWCs that take into account the different conversion approaches, based on the initial condition of primary care services.

This research aimed to estimate the recurrent and incremental costs of running HWCs across different models of conversion in the state of Gujarat.

OBJECTIVES AND RATIONALE

a. Literature review of functional models of primary care globally with a focus on costs
b. Analyse the different HWC types functioning in the state of Gujarat based on a sample of HWCs

c. Estimate the total and per-unit costs for each type of HWC, using a suitable indicator for measuring output, and analyse the differences across types of HWC, for pre-conversion and post-conversion costs
d. Estimate the incremental unit costs – the difference between the pre- and post-conversion unit costs to understand the cost implications of the conversion
e. Based on the results, indicate an estimate of total costs of scaling up HWCs in the state of Gujarat

Gujarat has been implementing various reproductive, maternal, neonatal, child, and adolescent health (RMNCH+A) programmes along with a focus on prevention and control of non-communicable diseases, mental health problems and malnutrition. Gujarat has also been a front- runner in the response to the Government of India's announcement to create HWCs by transforming existing primary health care facilities in urban and rural areas. Thus, the state has undertaken upgradation of building and facilities of existing SCs and PHCs in rural areas, and UPHCs in urban areas, and initiated training of Mid-Level Healthcare Providers (MLHP), also known as community health officers (CHO). Thus, it was deemed appropriate to take Gujarat as a case study for the costing exercise.

As of 2020, the state has an infrastructure of 11,114 primary health care facilities across its 33 districts. This includes 1475 PHCs and 9231 SCs in rural areas, 198 UPHCs across 159 Nagarpalikas in towns, and 210 CUPHCs in eight municipal corporations in big cities (Government of Gujarat).

As per the approved plans for Gujarat, nearly all PHCs and CUPHCs, and half of the SCs and UPHCs are proposed to be converted into HWCs by the end of 2021. It is important to note that 1475 SCs are located on the premises of their PHCs and need not be separately converted as HWCs. Therefore, while all SCs are planned to be converted, the ones located within a PHC are not separately included in the number. Excluding these, the number of SCs is 7756. Of these, around two-thirds are planned to be converted during 2018-2021.

At the time of this research, all phase-1 and most of the phase-2 HWCs are operational with a filled position of a community health officer (CHO).

Based on the 2019 MoHFW report *Ayushman Bharat Health and Wellness Centres* (MoHFW, 2019b) on HWCs, it is evident that compared to most large states, Gujarat has a higher number of operational HWCs, higher footfalls at HWCs, and more yoga/wellness sessions conducted.

Thus, it was decided that given an overall functional health care system and substantial focus on primary care as well as progress made on HWC, Gujarat would make a suitable case study for the costing exercise.

2 COSTS OF INTEGRATED PRIMARY CARE: EVIDENCE FROM LITERATURE REVIEW

One of the first costing studies in Africa is from Burkina Faso in 1999 (Mugisha, Kouyate, Dong and Sauerborn, 2002). The objective of the study was to estimate sector-wide disease-specific cost of health care interventions at primary health facilities in Nouna, in rural Burkina Faso. The collected data was categorised as recurrent expenditure (drugs, salaries and maintenance), resource consumption data (staff time, drugs, and building space) and equipment, disease data, and also by distribution of costs by source. Costs were estimated using a step-down cost accounting procedure which was based on observation of the facility's production processes to be able to associate costs to specific outputs. The study found that staff resources accounted for 32% of the annual costs, equipment for 25%, recurrent revenues for 39% and building costs for 4% of the total annual costs.

A costing study from Pakistan (Green, Ali, Naeem and Vassall, 2001) with the objective of estimating the cost per OP visit to Basic Health Units (BHU) in the province of Khyber Pukhtonkhwa and Federally Administered Tribal Areas of Pakistan was conducted for the year 2005-06. Costs were reported in two formats: as a list of costs broken down into different components such as salaries, medicines and maintenance etc., and also per capita costs. A selection of BHUs was taken across districts in the study region and for each unit, expenditures were taken from the district health office for salaries, equipment, furniture, medicines and other supplies, and utility bills, and these were then split into total costs and recurring costs. Recurring cost included all costs except building, equipment, furniture and major repairs. The study reported that staff salaries and building cost were the two major cost components of the total costs, constituting 52% and 28% of the mean total cost respectively. Additionally, looking at just the recurrent cost, staff salaries constituted 90% of the mean recurring cost across centres. The investigators looked at previous costing studies in Pakistan and concluded that the share of salaries in the total cost of a BHU had increased from 86% to 90% from 1995 to 2006. They used these results to draw certain conclusions about the cost efficiency of the health centres.

A study from Indonesia (Abdullah, Hort, Abidin and Amin, 2012) aimed to develop a simple and transparent costing tool that would enable health planners to calculate the unit costs of

providing basic health services. Based in the Aceh province, the approach used a normative costing approach that estimated costs on the basis of the activities and inputs that were considered to be required to achieve performance outputs, enabling a clear linkage between costs and outputs. The costing model was developed in phases from 2007 to 2010 during which data and information was sought from programme managers and health officials at various levels of the government, and also from the staff of the health facilities. The model was tested at various stages to verify the extent to which the activities matched actual programmes and the quality of data available, and then refined to be made as accurate as possible. The results indicated that the unit costs of providing basic health services derived from this costing model were relatively similar to findings from other studies.

Two more recent studies that depict different costing models are a 2016 study in Ghana and another one in Haiti in the same year.

The objective of the first study (Dalaba, Welaga and Matsubara, 2017) was to estimate the cost of providing health care in PHC facilities such as Health Centres (HCs) and Community-based Health Planning and Services (CHPS) in Ghana. The cost heads included were personnel costs, administrative costs (or overheads), medicine and consumables costs, equipment costs and vehicle costs. Building costs were not included due to lack of reliable data on these costs. The study collected data for the calendar year 2015 across 9 facilities, and found that personnel costs accounted for the largest proportion of the total annual cost for both types of facilities – 75% for CHPS and 64% for HC. Medicines and consumables accounted for 15% of the total costs at CHPS and 25% of the total cost at HC. Additionally, by estimating the total cost of running the primary health facility during a one-year period the study was also able to estimate the unit cost per OPD visit (total cost divided by total OPD attendance) and the unit cost per capita (total cost divided by total population covered by the facility).

The objective of the Haiti study (McBain et al., 2018) was to implement a costing analysis in five out-patient departments of healthcare facilities in Haiti, in order to provide a basis for a cost-effectiveness analysis. The study used a time-driven activity-based costing approach which takes the patient, not a clinical department, as the unit of analysis. Data was collected during 2014-15 on patient characteristics, patient arrival time, patient wait time, patient consultation time, primary diagnosis, medicines prescribed, and laboratories ordered time stamps for consultation times. To estimate the cost of the selected outpatient services, the capacity cost rate for each type of resource, personnel, equipment and space used during a

health-care visit, was calculated by dividing the annual cost of each resource by the total number of minutes that the resource could be used per year. To obtain the total cost of care for a patient, the reported minutes for each resource used was multiplied with its associated calculated capacity cost rate and presented as a total sum of the patient visit. The study found that the cost of care for the same conditions varied widely across the five facilities, due to heterogeneity in staffing and resources. Comparing the findings across facilities led to insights on good and bad practices followed at the different facilities and allowed the investigators to suggest alternative best practices as well a clear understanding of managing and allocating resources.

In India, studies on costing of primary care are few.

One of the first costing studies in India was to estimate the distribution of costs incurred in a Primary Health Centre in Chhainsa, Haryana (Anand, Pandav, Kapoor, Kumar and Nath, 1995). The study calculated the total costs incurred in running the PHC for one year and then apportioned those costs under different activity heads on the basis of time and space utilisation. Capital and recurrent costs were calculated separately; with the land, building, equipment with a life of more than a year, furniture and vehicle costs being taken as capital expenditure, and salaries, drugs and consumable equipment, and maintenance costs being a recurrent expenditure. The study calculated costs for the financial year 1991-92 and found that salaries were 62% of the total annual cost, drugs and supplies were 14% and capital costs were 21% of the annual cost.

Another study to assess the total annual and per capita cost of delivering the package of health services at the PHC and CHC level was conducted across a number of facilities in three North Indian states – Haryana, Punjab and Himachal Pradesh (Prinja et al., 2016). This study used a bottom-up costing method for the collection of data on all resources spent on the delivery of health services in the selected health facilities. For the FY 2012-13, the capital resources identified comprised building, equipment and other non-consumables which lasted for a period of more than one year. Trainings which were not likely to be repeated within a one-year period were also treated as capital costs. Recurrent costs comprised staff salaries, drugs, consumables and overheads such as water, electricity bills etc, as well as incentives paid under various health schemes and other annual maintenance grants. The study found that on an average for a PHC, human resources accounted for 53% of the total annual cost, drugs and consumables for 22%, and the remaining were split between capital costs and maintenance costs. Similarly, on an

average for a CHC, human resources accounted for 59% of the total annual cost, drugs and consumables for 11%, and government scheme fund accounted for 10% of the annual costs. Building costs, lab expenses, overheads, equipment and furniture, stationery and IEC costs, and cash benefits together accounted for the remaining 20%. The study also went on to estimate unit costs per service for each type of service provided at the facilities.

3 METHODOLOGY AND DATA

A. APPROACH TO COSTING

Approaches to estimating costs in healthcare have been broadly categorised into two categories: top-down and bottom-up. The top-down or standard costing approach calculates the total health care expenditure of a health facility in terms of both capital and recurrent costs and divides it by a measure of total services provided by the facility, to determine a cost per patient. The bottom-up or micro-costing approach requires all of the resources that are used by individual patients to be identified. This type of costing requires comprehensive knowledge of the treatment and services provided to individual patients. This includes the value of drugs and supplies used in treating the patient, physician or nursing costs for the patient, cost of equipment used by the patient, and cost of infrastructure and maintenance as a function of each patient. While micro-costing is more accurate, it also is more expensive and time-consuming. It is possible to combine the two approaches to come up with a healthcare costing plan that is optimal for the situation.

Currently, the estimated costs used for allocation of resources in India generally follow line-item based budgeting: in other words, the usual budget lines of personnel, equipment, drugs etc. required for converting to HWCs are being costed by department and funds allocated. It is possible in this structure to miss other costs which can be elicited only by understanding how each type of HWC functions and using an approach based on functional categories. This, for example, would allow the inclusion of shared costs including costs of drugs and medicines that are being drawn from other government programmes.

Economic costing differs from financial costing in three main ways: (a) inclusion of costs of the goods/services whose price do not correctly reflect their value if used elsewhere, (b) inclusion of the value of gifts and donations and (c) suitable discount rate for annualising capital costs. In addition, economists also include shared costs, comprising of costs of

personnel, consumables and equipment used that come from sources other than the main programme being analysed, for instance, physicians whose salaries are being charged to other projects but give some of their time to the programme as well.

However, in the case of HWC, none of the three main concerns is critical; since the costing is done from a programmatic point of view and not from a societal perspective, the shadow prices are not being used in any case. Secondly, there have been no gifts and donations involved in the HWC initiative. Finally, since the transition to HWC has been from existing primary care facilities, there has not been any significant capital costs involved except the initial start-up costs that are quite nominal. However, the most important methodological addition has been to include costs of resources used that come from outside the HWC programme but help in running of the HWCs. Thus, the recurrent costs of running the HWC becomes more relevant in this context. This will be discussed in more detail in the following section.

B. TOTAL RECURRENT COSTS, UNIT COSTS AND INCREMENTAL COSTS

While the aim was to do economic costing including capital costs, operationally, the capital costs involved in the HWC conversion were marginal and did not require calculations of present values. Thus, the estimated costs are the recurrent costs of running HWCs.

The aim was to compare pre-conversion and post-conversion cost data for each of the HWCs. This required one full year of cost data for each of these two phases and a suitable indicator for measuring performance of the facility.

The performance indicator data is available from the HMIS as well as the HWC portal. While a lot of detailed data on various indicators like screening, diagnosis and treatment for a number of conditions like hypertension, breast cancer, diabetes, oral cancer etc. could have been extracted, the analysis of costs required one summary measure that would reflect the overall performance of the facility. Thus, after much deliberation, it was decided to use OPD attendance data or total OPD visits from the HMIS as the denominator to total costs, to obtain unit cost data.

The incremental unit costs were estimated as the difference between the unit costs post-conversion and pre-conversion.

Incremental unit costs of conversion= $(TC_{post}/OPD_{post}) – (TC_{pre}/OPD_{pre})$, where

$TC_{post,}$ TC_{pre} are total costs, and $OPD_{post,}$ OPD_{pre} are total OPD visits, for pre- and post-conversion respectively.

Keeping this in mind, the following methodology and data collection steps were followed.

C. STUDY SITES AND SAMPLE SELECTION

As described earlier, in the first phase of the conversion of existing facilities into HWCs, 1,656 facilities were selected for transformation during 2018-19. The sample sites were selected from these phase-1 facilities to ensure a full year of data before and after the operationalisation of the HWCs. For the data collection purpose, eight HWCs were decided to be selected, one of each kind, from two districts. This ensured representation of all four types of facilities, a comparison across the districts, and ease of data collection. The criterion of having all four types of HWCs in a district resulted in the selection of Gandhinagar and Rajkot districts, as only those two districts could fulfil the requirement. Therefore, the sample sites were selected from these districts.

To ensure logistical feasibility of collecting a range of data from one taluka/block health office, it was decided to select rural sites of SC and PHC, and UPHC belonging to the same sub-district unit i.e. taluka level in both the districts. Therefore, Gondal and Kalol blocks of Rajkot and Gandhinagar were selected, respectively. Similarly, the selection of the SC was also from the sampled PHC for the ease of data collection and based on the post of community health officer being filled at the selected SC. The most functional CUPHC that was converted into HWC in the first phase was selected from the district headquarter of both the districts. The site selection process was carried out in consultation with the district health officials.

The details of the selected sites are given in the Table 1 below:

The costs cover three financial years 2017-18, 2018-19 and 2019-20 since different facilities have different dates of conversion to HWC. Expenditure data of three financial years i.e. 2017-18, 2018-19, and 2019-20 was collected. Annual costs were estimated by taking the date of conversion for each centre and calculating expenditure at each centre for one year before, and one year after this date of conversion. Wherever expenditure was monthly – such as staff salaries – monthly data was used, and for items like drugs or vehicle costs, annuals costs were totalled and averaged to calculate expenditure for the appropriate number of months for every centre. This enabled the comparison of annual costs before the operationalisation (TC_{pre}) and

after the operationalisation of the HWCs (TC_{post}). Capital costs being negligible, the recurrent costs of HWCs were estimated.

Table 1: Conversion year and population covered by the selected sites								
District	**Gandhinagar**				**Rajkot**			
Type	**SC**	**PHC**	**UPHC**	**CUPHC**	**SC**	**PHC**	**UPHC**	**CUPHC**
Name	Balva	Soja	Kalol	Sector-2	Daliya	Moviya	Gondal	NanaMauva
Conversion (Month-Year)	Mar-19	Nov-18	Nov-18	Aug-18	Mar-19	Aug-18	Nov-18	Nov-18
Population	10265	38085	63413	64000	3265	30602	55647	180000

Source: Authors' creation based on the data received from the HWC Cell, Gujarat and officials of the respective facilities

4 ANALYSIS

A. TOTAL COSTS AND TOTAL COST PER CATCHMENT POPULATION

Total costs of each of the 8 centres are given in Table 2 below.

The first result is that the total costs differ widely even within a category: apart from the two PHCs, where costs seem quite similar, in other cases, the costs differ significantly for each type of facility. For instance, total cost for Daliya is half of that of Balva, but both are SCs. As will be explained later, such difference in cost is largely because of the difference in catchment population i.e. the size of the targeted area and number of beneficiaries to be covered.

It was also found that across districts and for all types of centres, the costs have gone up after conversion to HWC. The maximum increase has been in the SCs in both the districts – with a 35 percent increase in Balva in Gandhinagar and a 45 percent increase in Daliya. The least increase has been in the PHCs.

Rajkot district has seen a higher increase in costs as compared to Gandhinagar district for all the types of centres except for the PHC.

Comparing the urban centres, there was a one-tenth increase in both the urban PHCs of Gandhinagar, i.e. Kalol UPHC and Sector-2 CUPHC. On the other hand, both the urban PHCs

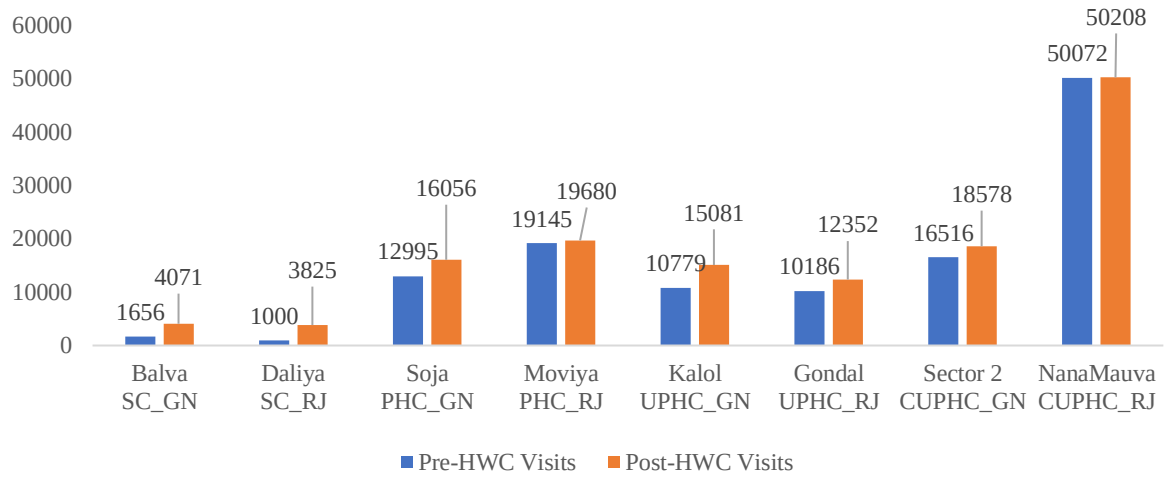
of Rajkot saw slightly more than one-fifth the increase with a 22 percent and 21 percent increase in Gondal UPHC and Nana Mauva CUPHC respectively.

Table 2: Total Costs of the Centres: Pre and Post HWC (In INR)			
Name of the HWC, District	**Pre-HWC Costs**	**Post-HWC Costs**	**Increase (%)**
Balva SC, GN	18,15,676	24,51,778	35
Daliya SC, RJ	8,89,542	12,89,710	45
Soja PHC, GN	1,04,26,575	1,14,03,214	9.4
Moviya PHC, RJ	1,12,88,805	1,20,25,011	6.5
Kalol UPHC, GN	57,94,576	63,86,146	10.2
Gondal UPHC, RJ	25,45,008	30,98,848	21.8
Sector 2 CUPHC, GN	58,93,440	64,66,320	9.7
Nana Mauva CUPHC, RJ	73,27,035	88,71,772	21.1

B. TOTAL OPD VISITS

As discussed in the methodology, to arrive at unit costs, the selected indicator is total OPD visits, which would indicate the footfalls in the facility. Figure 2 shows the total OPD visits for the two relevant years for each of the facilities.

Figure 2 :Total OPD Visits (Allopathic+AYUSH): Pre and Post-HWC



OPD visits differed significantly across the different facilities, with SCs witnessing the lowest OPD visits. As can be seen from the figure below, the visits were largely comparable at both SCs, PHCs and UPHCs. Only at the two CUPHCS, the number of visits differed to quite a large extent at Nana Mauva and Sector-2.

However, the point of interest is to see whether the footfalls increased post conversion, and it does seem as though it did for all the facilities but especially for the SCs. This is because the position of a CHO was created with the intention of giving a boost to OPD where previously regular OPD services could not be availed.

c. Costs per catchment population and per OPD visits

The total costs vary depending on the patient load and population of areas, so it is more useful to look at costs per catchment population as well as per OPD visits. The catchment population is the theoretical maximum in terms of number of people who can visit a HWC facility. However, there is less than one-to-one correspondence between the two variables: while the catchment population is total number of people living in a particular area, the OPD visits are visits and not people. Thus, if OPD visits are 100, one cannot assume that 100 people visited the facility, because one person may have visited the facility multiple times. Nevertheless, since these facilities are mainly addressing primary care, it is possible that OPD visits closely mirror total individual visits.

In Table 3, we present both these variables to see if any patterns are discernible.

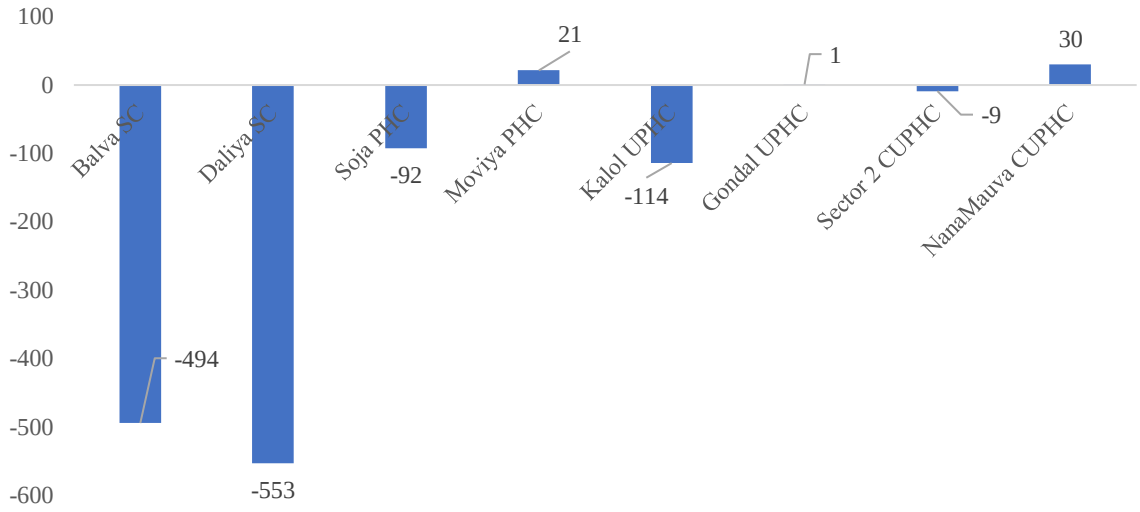
Table 3: Total cost per catchment population and per OPD footfalls pre and post HWC for all centres

Centre	Total cost/catchment population			Total cost/OPD footfalls		
	Pre HWC	Post HWC	Change (%)	Pre HWC	Post HWC	Change (%)
Balva SC	177	239	35%	1096	602	-45%
Daliya SC	272	395	45%	890	337	-62%
Soja PHC	274	299	9%	802	710	-11%
Moviya PHC	369	393	7%	590	611	4%
Kalol UPHC	91	101	10%	538	423	-21%
Gondal UPHC	46	56	22%	250	251	0%
Sector 2 CUPHC	92	101	10%	357	348	-2%
Nana Mauva CUPHC	41	49	21%	146	177	21%

What can be immediately gleaned from this table is that while cost per catchment population has gone up for all the facilities post-conversion, costs per OPD footfalls has actually come down significantly. This is especially true of the SCs. The only increase in costs per OPD footfalls is for the CUPHC at Nana Mauva. So, while at the SCs, there has been the most activities like expansion of HR and services, the additional footfalls still end up lowering the costs.

From this table, one can plot the incremental costs per OPD visit, which is essentially incremental costs divided by incremental OPD visits. These are shown in Figure 3.

Figure 3: Incremental costs per visit



The figure shows that in most cases, there has been a fall in the incremental costs indicating that the conversion to HWC has actually been quite economical. The exceptions are Moviya PHC, Gondal UPHC and Nana Mauva CUPHC, where the incremental costs have increased, but the increase have been very nominal.

For the two SCs, the incremental costs are significantly lower indicating possibly significant gains in the conversion of the SCs to HWC.

Another takeaway is that we can observe that increase in patients indicate that Rajkot CUPHC, UPHC and PHC resulted in lower per OPD patient cost compared to their counterparts in Gandhinagar. Now, when a new service is added, there is increase in cost but number of OPD footfalls are not increasing in the same proportion as they were already working close to the maximum capacity, all else remaining the same. The PHC at Moviya is an exception in terms of extra activities such as a herbal garden, and quality accreditation efforts may have resulted

in increase in cost and not the HWC conversion itself. So, the inference on the incremental cost increase of Rajkot based facilities except SC may be looked at with some caution.

D. SHARE OF THE COMPONENTS

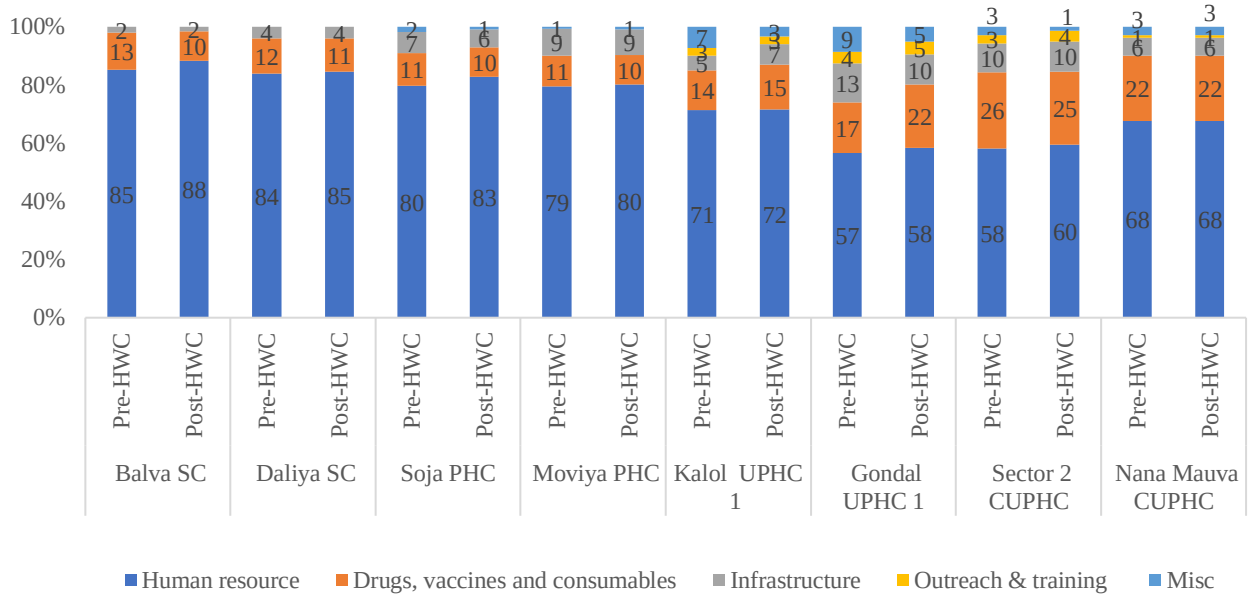
Figure 4 presents the shares of different components in total costs for the pre- and post-conversion periods. The components are (a) human resources, (b) drugs, vaccines & consumables, (c) infrastructure, (d) outreach & training, and (e) miscellaneous.

The main component was human resources for all the centres. Human resources consisted of staff salaries, staff incentives and fees paid to consultants, though staff salaries comprised the most significant portion. The share of human resources in the total share of the cost was highest for the SCs, coming to about 85-88 percent for both Daliya and Balva. The share of human resources was the least for the UPHCs, comprising about 58-60 percent for both Gondal and Sector-2.

The share of drugs, vaccines and consumables was at a much lower second place for all the facilities, being between 11 and 26 percent.

The most important result was that there was hardly any change in the shares of these components before and after conversion as can be seen from Figure 4.

Figure 4: Shares of major expenditure items across Centres- Pre and Post HWC (%)



In terms of categories that contributed to the increase in costs, human resources were the main cost drivers for the SCs and PHCs.

For the UPHCs and CUPHCs, increase in total costs of drugs, vaccines and consumables contributed significantly as well to the total cost increase (between 33 and 42 percent for all except 15 percent for Sector 2 CUPHC).

Looking deeper, items in this category were classified by the team into three sub-categories: drugs, vaccines, and consumables. The drugs were then further categorised into the various types of drugs based on what they were used to treat – Non-Communicable Diseases (NCD) drugs, Communicable Diseases (CD) drugs, analgesic drugs, respiratory drugs, gastrointestinal drugs, TB drugs, antimalarial drugs, nutritional supplements, and miscellaneous drugs. Miscellaneous drugs were those that could not be categorised into any of the above, and also those drugs that were locally purchased and for which a break-up could not be obtained. Additionally, portions of untied funds from routine NHM grants were also used for purchasing of drugs and were included as another separate sub-category.

Across the 8 centres, drugs accounted for almost 50 percent of the cost-share out of the three sub-categories, both pre- and post-conversion to HWC. Vaccines were a close second over one-third of expenses in this component, and consumables accounted for 16 percent of the cost pre-conversion and 12 percent post-conversion.

Figures 5a and 5b show the share of components, pre and post-conversion to HWC, respectively.

Figure 5a: Share of components pre-HWC

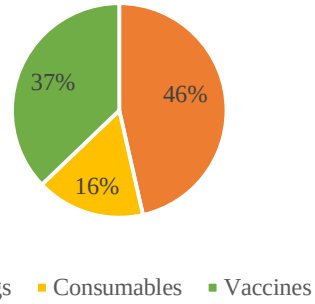


Figure 5b: Share of components post-HWC

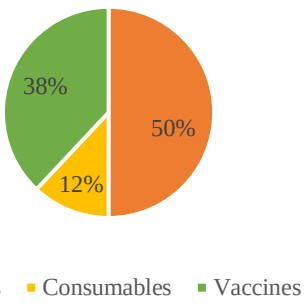


Table 4 gives the monetary value of expenditure on drugs, consumables and vaccines in the pre and post HWC periods, across all centres.

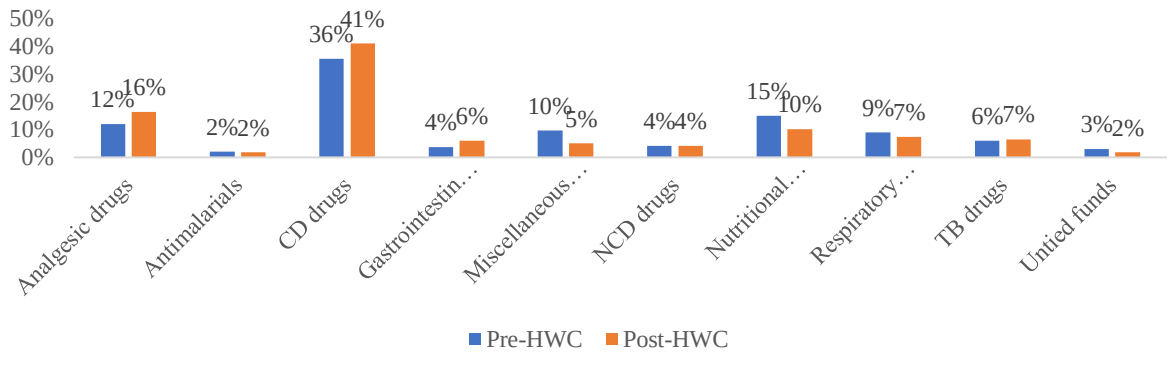
Table 4: Expenditure (in INR) on drugs, consumables and vaccines across centres, pre and post-HWC

Component	Pre-HWC	Post-HWC	Increase/Decrease (%)
Drugs	31,21,460	39,92,972	27.9
Consumables	11,01,457	10,00,902	-9.1
Vaccines	24,97,365	30,32,761	21.4
Total	67,20,281	80,26,635	19.4

Overall, between the two periods, expenditure on drugs increased by 28 percent followed by vaccines at 21 percent. There was a decline in the expenditure on consumables between pre- and post-conversion period by about 9 percent.

Figure 6 below shows the share of the cost of each component among drugs, pre- and post-conversion. Drugs for communicable diseases was the highest among all categories. Further inference is difficult because the value of drugs purchased is supply-driven and not based on demand, and would not reflect purchases based on disease burden. To reach any conclusion about what drives the values of drugs, one will have to look at trends in drug supply and changes in drug prices over several years. The possibility that communicable diseases are still an important source of disease burden resulting in greater demand on drugs related to these diseases cannot be ruled, if one considers the significant increase post-conversion of CD and TB drugs, which could be due to easing up of suppressed demand after the conversions to HWCs.

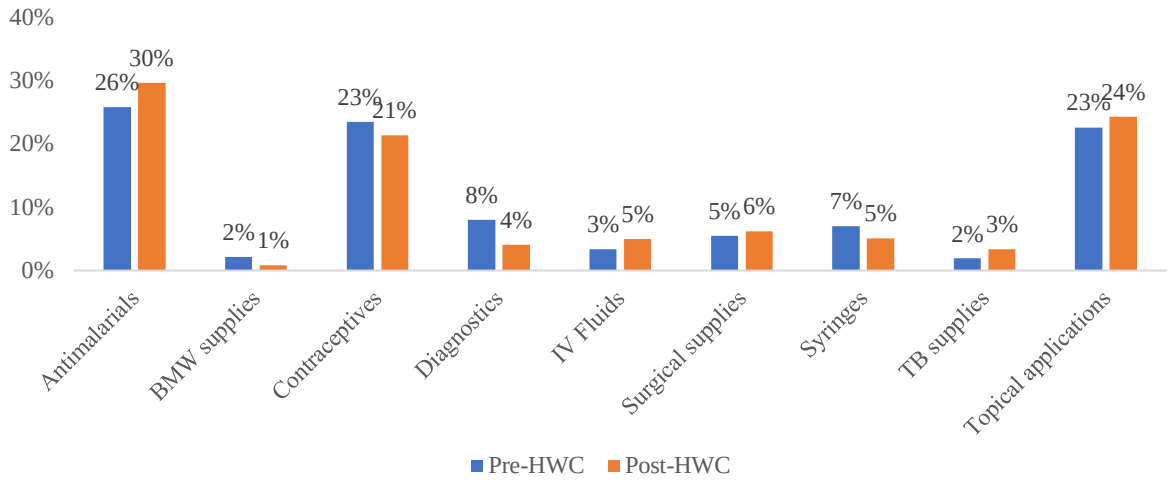
Figure 6: Share of drugs across sub-categories Pre and Post-conversion



The most amount was spent on CD drugs (36% pre-conversion and 41% post-conversion). Analgesic drugs accounted for 12% of the share of cost pre-conversion and 16% post-conversion. Most of the increase in drugs expenditures took place in these two groups post the conversion. Miscellaneous drugs and nutritional supplements saw a slight decline.

Figure 7 shows the percentage change in the cost share of each component among consumables, pre- and post-conversion. It can be seen that only antimalarials and topical applications saw an increase in share post-conversion, in addition to IV fluids and TB supplies. All other components saw a decrease.

Figure 7: Share of consumables across sub-categories Pre and Post-conversion

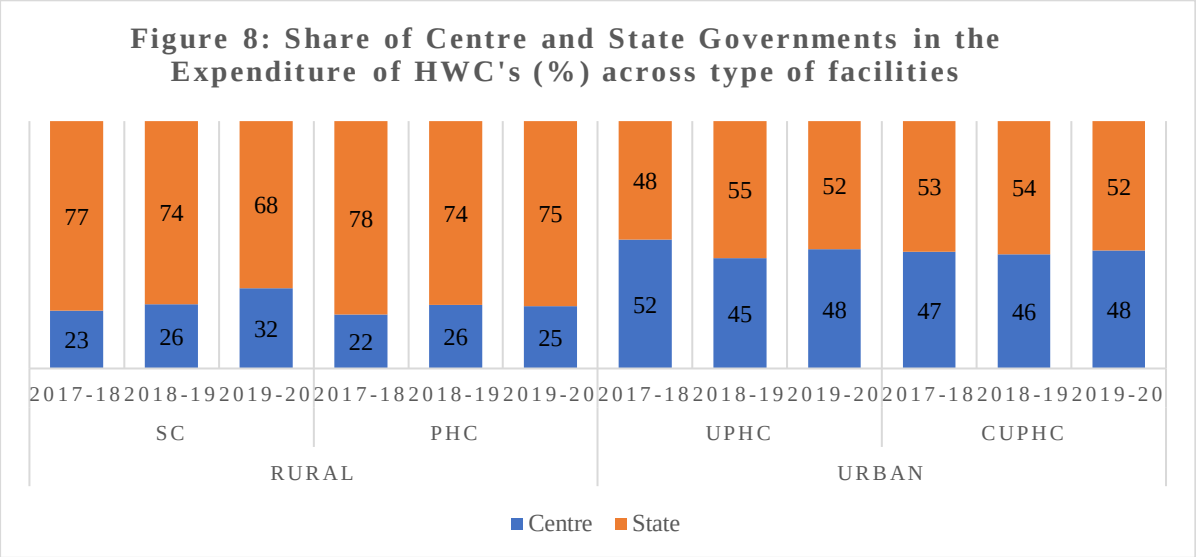


5 SCALING UP AND CENTRE-STATE SHARE IN COSTS OF RUNNING HWCS

From a policy perspective, it is important to assess how much the HWC initiative is going to cost the exchequer and what additional burden will be placed on the health budget of the state. The HWC model runs along the lines of NHM in terms of centre-state financing. For Gujarat, this means that the centre's share will be 60 percent and the state will bear 40 percent of the total costs

Figure 8 gives the percentage share of the centre and state governments of the total expenses on facilities. Despite the 40-60 share of NHM funds between states and the centre, operationally, the states end up spending more than 60% on total costs especially for rural

HWCs.



The shares are somewhat lower for the urban HWCs. In terms of scaling up, therefore, these shares would be important and will indicate how much of the total expenditure on HWCs the Gujarat state will have to bear.

In all, a total of about INR 713 crores will be spent on running 1500 HWCs in the year 2020-21; However, the incremental costs of scaling up would be significantly less at about INR 93 crores. The incremental costs are the most relevant information for the state government because it indicates the *additional* budgetary requirements. With target of 1000 SCs to be converted in 2020-21, the total cost of running these converted SCs would be considerably lower at INR 187 crores, compared to INR 472 crores for running 403 converted PHCs (Table 5, below), and the incremental costs would be much lower at INR 52 and 35 respectively. The incremental costs are lowest for CUPHC, followed by UPHC, PHC and SC respectively.

Table 5: Costs of scaling up, total and marginal (INR crores)

Type of HWC	Target HWC by 2020-21	Total cost (Average cost per type*target number)	Incremental cost (Incremental cost per type*target number)
SC	1000	187	52
PHC	403	472	35
UPHC	69	33	4
CUPHC	28	21	3
All/Total	1500	713	94

In 2018-19, the health expenditure of the Department of Health and Family Welfare in Gujarat was INR 8,34,182 lakhs, and the revised estimate for the 2020-21 budget was INR 9,03,741 lakhs. Based on the revised estimate, the total and incremental expenditure on HWC would be around 7.9% and 1% of the revised estimate for 2020-21, respectively. The additional allocation of 1% of total budget of the department towards HWC expansion seems a very reasonable allocation.

6 SUMMARY AND RECOMMENDATIONS

This research was undertaken essentially to understand the financial implications of the HWC initiative and scaling up the initiative for integrated primary care through the expansion of HWCs in India. The effort was also to understand whether the costs of running the HWCs differed across the type of conversion.

The results are comparable to the study on India reviewed before. The Prinja et al (2016) study indicated that the average total cost per PHC in 2012-13 is INR 88,00,000. This is in line with the average total cost per PHC (post-conversion) in our study of INR 1,17,14,113, accounting for inflation. On comparing costs in USD, the Prinja study total cost is USD 162,092 and this study gives a cost of USD 159,952, and the difference is likely due to a change in exchange rate. Comparing costs in USD, the Prinja study indicates a cost per catchment population of USD 3.14, which compares well with the present study cost of USD 4.72.

The results indicated that in terms of total costs, PHC-converted HWCs were most costly to run, followed by CUPHC-converted facilities. SC-converted HWCs were the least expensive, which were presumably under-utilised before the conversions, and saw increasing OPD footfalls with the conversion to HWC. Thus, while the incremental cost per catchment population seemed moderately high, deflating with total OPD footfalls changes the picture significantly: in terms of incremental costs per OPD visit, the HWC initiative seems quite economical. Of the 8 facilities studied, this cost was negative for 5, and only marginally positive for the other three. For the SC-converted HWCs, the incremental costs were most negative, indicating the success of the HWC initiative for the SCs.

In Gujarat, the NCD Programme, which includes NCD screening and regular treatment of patients with conditions like diabetes and hypertension has been operational up to the level of PHC, even before the launch of the HWC programme. This could explain why the data does

not show a drastic increase in the number of OPD visits; only the SCs show a significant increase as they did not have this service before.

Among other results, human resources continued to take up the major share of the total expenditure on HWCs. Also, the drug data indicated that communicable diseases still dominate the demand for medicines.

Based on the estimated costs and comparing to the revised health budget of the Department of Health and Family Welfare of Gujarat, it seems that the HWC initiative in 2020-21 would take up less than 8% of the total budget of the Department, but incremental costs would only account for 1% of the budget. For Gujarat, therefore, it does seem as though the HWC initiative is economical and useful.

An important caveat here is that there are a number of services that have not been fully scaled up yet. For example, mental health, dental health, ENT and Ophthalmic services are yet to be initiated fully, and once these are started, it can be expected that the total costs, as well as footfalls, may change substantially. Whether that would increase or decrease costs would depend on the rate of increase in costs and OPD visits. Currently, the adjustments made to convert facilities to HWC is somewhat incomplete, and differs by type of facility. Some facilities have been already working at their maximum efficiency whereas other less developed ones are evolving in terms of input volume and costs.

Also, expenditure on items like drugs and consumables are based on supplies and not on actual consumption due to data issues, and it would require at least 3 years of data to see any trends emerging from these numbers.

Another important point to bear in mind is that the way the samples were selected, only fully functional facilities could be included in the sample. There are areas in Gujarat – for example in remote parts of tribal districts – where the functionality of health facilities could be sub-optimal. The costing estimates in such areas may look much different than the sampled functional facilities of two relatively better-performing districts.

Clearly, one year each of pre- and post-conversion data with small sample size is not sufficient to fully understand the types of HWCs and their cost implications and one has to be cautious before attributing the modest incremental costs to the success of the HWCs. There could be other incidental reasons for the increase in footfalls like changing disease burden and other epidemiological reasons. More research with additional data points would be required to

confirm these tentative findings. However, being the first costing study on the HWCs in India, this study could provide a baseline for future such studies.

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