

CENSUS OF HEALTH FACILITIES IN UDAIPUR DISTRICT, RAJASTHAN

*Study carried out for the National Commission on
Macroeconomics and Health, MOHFW, Government of India*

Action Research & Training for Health (ARTH)
Udaipur

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Final Report

Background

Udaipur is a predominantly rural district of southern Rajasthan, with a population of 26,33,312 (Census 2001). The district has 11 rural blocks or panchayats samitis. All tehsils (revenue units) of the district are co-terminus with blocks (development units), except for Girwa tehsil, which comprises two blocks. Udaipur City has a medical college with 4 associated hospitals, 4 nursing colleges, 2 dental colleges with dental superspeciality facilities, an Ayurvedic college with 4 hospitals and a Homeopathic Medical College with hospital. Most medical facilities, especially those in the private sector, are concentrated in Udaipur city, which is a municipality with 50 wards.

Objectives

The National Commission on Macroeconomics and Health (NCMH) commissioned a study on health care facility mapping in eight districts of as many states of India, with a view to understanding the availability, geographical spread and capacity of government and private sectors in the country. Specific objectives were:

- To map the availability and distribution of all health facilities in the district
- To assess the potential for participation of private providers in public health care programmes

Action Research & Training for Health (ARTH), a private non-government organization based in Udaipur, carried out this study in Udaipur district in the latter half of 2004.

Methodology

Human resources: For data collection and supervision, we deployed one medical research associate (MBBS doctor), two social research associates (postgraduate social scientists with survey experience) and five field investigators. The entire team reported to and was supervised by a Principal Investigator with a background in public health. At the time of field training, two persons were discontinued when they did not meet performance standards and one field investigator subsequently resigned for personal reasons. The MRA undertook training and field supervision. One other research associate of ARTH additionally contributed about 8 days to this effort.

Translation and adaptation of forms: The form was received in English; it was translated and adapted to make it bilingual and more user friendly. We additionally developed provider listing formats and consent forms, both in Hindi and English. In addition, a glossary of medical – technical terms was developed for use by non-medical investigators. Copies of the forms used in Udaipur district have been enclosed with this report (hard copy).

Listing of providers: In order to ensure complete enumeration, we collected a map and lists of wards with their boundaries for Udaipur city from the Municipal Council, and from each

panchayats samiti headquarters, we collected a list of gram panchayats. Detailed route plans for covering individual wards and panchayats were developed. Investigators contacted chemist shops in the city and chemists and other shops in each gram panchayat to inquire about health care providers. In rural areas, listing was followed by a personal contact to verify eligibility of the provider, after which consent was taken. If consent was granted, an interview followed. In urban areas, listing was followed by personal contact for data collection by a few days to weeks. All listed facilities were entered in an Epi-Info 6.02 database.

Data collection: Investigators visited clinics or hospitals during working hours. They made up to three repeat visits as per respondent's convenience. The MRA (a medical doctor) personally accompanied investigators to all large hospitals or where they faced difficult respondents. Data has been collected over 2 to 3 rounds in Udaipur city and 2 rounds in the blocks. For mobility, investigators have used two-wheelers in rural areas, and a combination of two, three and four wheelers in Udaipur city.

Ineligible facilities: A facility picked up on listing was considered to be ineligible under the following circumstances. This facility was then removed from the denominator for calculating completeness of coverage.

1. If the provider did not have any formal medical or paramedical training.
2. If the provider was a serving (ie. not retired) government paramedic who was additionally practicing from home
3. If the facility was a "home clinic" run by a serving govt or private doctor who simultaneously had a job in another hospital or health centre

Ethical considerations: The study was reviewed and approved by the Institutional Ethics Committee of ARTH. Although we used introductions from the CMHO and District Ayurvedic Officer to their constituent health facility managers, and appeals from the Presidents (Indian Medical Association and Medical Practitioners' Society), participation of doctors or persons in charge of facilities was voluntary, after verbal consent and handover of forms. Two ethical problems emerged early during the data collection process – one was a tendency for respondents to either ask for a form to keep and fill after a day or two, or to dictate responses that should be written in the form. The other was that, some respondents repeatedly delayed giving an interview by asking investigators to telephone or visit in person, after two-three days each time. The latter problem was by and large with some private doctors of Udaipur city. We took the help of the District Collector in mailing request letters to such facilities. With that intervention we were able to contact and interview almost all doctors.

Data coding and cleaning: This was carried out by the MRA and one research associate. Errors and inconsistencies were discussed with the respective investigator, after which corrections were made. Two data entry operators entered coded forms using the MS-Access database sent by NCMH. Double data entry was carried out for all forms, followed by validation and revision of the data set.

The tabular report: We have reported the number of facilities listed in the first instance. Some (28%) of these were found to be ineligible (because they were staffed by persons who were not doctors or who had no formal training in health). Another 5% providers mentioned by key informants could not be located despite asking several persons in the vicinity. These too, were removed from the list of facilities to be covered. All the remaining eligible facilities were visited. Of these, 1.4% facilities were locked and in 1%, a responsible respondent was not available at the time of the visit. Another 4% of respondents refused to participate – i.e., they refused consent. For those who gave consent we filled the form, which was either completed

(98.5%), or, in case they did not answer some questions or professed not having data (in 1.5%), remained incomplete.

Note: Over and above these facilities, on a clarification from NCMH we additionally enumerated all 629 government sub-centres in the district. Only minimal data on location, human resources and year of establishment have been reported in a second version of the data-base. Sub-centres do not have physicians, nor do they usually function as independent practice sites. Hence they and numbers related to them have not been included in the narrative report below.

Table 1: Coverage of health facilities in Udaipur district

	Area >>>	Udaipur city	Rest of Udaipur district	Total
A	Total facilities listed	515	538	1053
B	Less ineligible facilities	213	80	293
C	Less facilities not found	48	9	57
D	<i>Net facilities to be covered (A-B-C)</i>	254	449	703
E	Facilities found locked	0	10	10
F	Facilities in which provider could not be contacted despite two visits	0	6	6
G	Facilities for which provider refused to participate	8	20	28
I	Facilities for which provider gave consent (i.e. form was filled)	246	413	659
J	<i>Facilities for which forms were completed</i>	238	411	649
K	Facilities for which forms remained incomplete	8	2	10
M	Forms coded	238	411	649
N	Data entered (double-entry)	238	411	649
	Data collection coverage (% of eligible providers)	97%	92%	94%

The above table shows that we achieved 94% overall coverage. The remaining eligible providers either were not available despite two visits (three or more in Udaipur city) on two different days, or refused to participate.

Results

Udaipur district comprises ten tehsils, one of which (Girwa) includes Udaipur city. The tehsils in alphabetical order are Dhariawad, Girwa, Gogunda, Jhadol, Kherwada, Kotra, Mavli, Sarada, Salumbar and Vallabh Nagar (table 2). Udaipur city (Population 3,83,498, census 2001) has a municipality divided into 50 wards. The listing of health care providers was done for each ward.

Table 2: Udaipur district (rural): Tehsils with gram panchayats and population (census 2001)

Name of tehsil	Number of gram panchayats	Population
Dhariawad	49	2,14,098
Girwa	73	7,40,863
Gogunda	40	1,51,575

<i>Name of tehsil</i>	<i>Number of gram panchayats</i>	<i>Population</i>
Jhadol	45	1,93,810
Kherwada	62	2,68,976
Kotra	36	1,83,504
Mavli	47	2,13,796
Sarada	46	2,23,380
Salumbar	48	2,12,492
Vallabhnagar	52	2,30,818
Total	498	26,33,312

Udaipur city, the largest urban area, forms part of Girwa tehsil. The towns of Kherwada (Kherwada Tehsil), Mavli (Mavli Tehsil), Bhinder (Vallabhnagar), Kanod (Vallabhnagar), Fatehnagar (Mavli), Rishabhdeo (Kherwada), Dhariawad (Dhariwad) and Salumber (Salumber) have municipal bodies and are regarded as urban areas by the census.

Comparative study of the type of facilities

In the district as a whole, 44% of the facilities are operated by government and the rest (56%) by the private sector (table 3). However, 65% of all private facilities are concentrated in urban areas, mostly in Udaipur city, whereas 84% of government facilities are located in rural areas. By disaggregating these facilities by the type of provider, we find that non-physicians were running as many as 44 (35%) of the 125 rural private facilities, while 35 (14%) of the 242 rural government facilities (excluding sub-centres) did not have a regularly posted physician.

Table 3: Total number of health facilities in Udaipur district

<i>Location</i>	<i>Government</i>	<i>Private</i>	<i>Total</i>
Rural	242	125	367
Urban	46	236	282
Total	288	361	649

Table 4: Health facilities in Udaipur district by tehsil and location

<i>No.</i>	<i>Tehsil</i>	<i>Description</i>	<i>Govt facilities</i>		<i>Private facilities</i>		<i>Total</i>
			<i>Rural</i>	<i>Urban</i>	<i>Rural</i>	<i>Urban</i>	
1	Dhariawad	Interior tribal	17	2	2	3	24
2	Girwa	Urban & peri-urban	43	32	50	208	333
3	Gogunda	Rural	16	0	15	0	31
4	Jhadol	Interior tribal	25	0	12	0	37
5	Kherwada	Tribal	20	4	3	7	34
6	Kotra	Interior tribal	14	0	7	0	21
7	Mavli	Rural	25	2	11	3	41
8	Salumbar	Rural	25	2	8	3	38
9	Sarada	Rural	33	0	6	0	39
10	Vallabhnagar	Rural	24	4	11	12	51
	Total		242	46	125	236	649

Table 4 above provides a break up of government and private facilities by tehsil. It is clear that urban and peri-urban areas (Girwa block) have more health facilities in both sectors and in both, urban and rural areas. By contrast, remote, interior tribal areas like Kotra, Jhadol and Dhariyawad lack health facilities, and the private sector is poorly developed.

The systems of medicine practiced in Udaipur district are Allopathy, Ayurveda, Homeopathy, and Unani. The table 5 below shows responses from respondents as to which system of medicine they practiced. In the case of private facilities, several respondents reported that they practiced more than one system of medicine. Hence the number of responses exceeds the number of private facilities. In the case of government facilities, we confirmed the system of medicine on the basis of the department to which the facility was affiliated; hence each facility was considered as practicing only one system of medicine.

Table 5: System(s) of medicine practiced by health facilities, based on providers' responses

<i>Area</i>	<i>System of medicine followed</i>	<i>Government</i>	<i>Private</i>	<i>Total</i>
Rural	Allopathic	87	99	186
	Ayurvedic	156	52	208
	Homeopathic	2	7	9
	Unani	0	0	0
	<i>Sub-total (rural)</i>	245	158	403
Urban	Allopathic	28	195	223
	Ayurvedic	16	33	49
	Homeopathic	1	33	34
	Unani	1	1	2
	<i>Subtotal (urban responses)</i>	46	262	278
	<i>Total responses</i>	288	420	708
	<i>Total facilities</i>	288	361	649

Table 6: The break-up of facilities with and without doctors

<i>Type of Facility</i>	<i>Provider</i>	<i>Government</i>	<i>Private</i>	
Rural	Medical Practitioners	207	82	367
	Paramedics	35	43	
Urban	Medical Practitioners	46	217	282
	Paramedics	0	19	
Total		288	361	

1. Rural picture

We found that in government owned facilities, ayurvedic dispensaries were in a majority. They formed 60% of the total; allopathic facilities formed almost 40% and a negligible number were homeopathic or unani. In the private sector, we discovered a different situation – 81% of the facilities reported that they practiced allopathy, 24% reported ayurveda and 11% reported practicing homeopathy (percentages exceed 100% because of multiple responses).

1.1 Government Facilities

Ayurvedic dispensaries have a staff of three, including a registered ayurvedic doctor, an ayurvedic compounder and cleaner. The majority (82%) of government dispensaries belonged to the ayurveda department, and they were located in rural areas (table 7). Out of a total of 155 rural ayurvedic dispensaries, we found 26 without a doctor¹. Compounders were running these dispensaries – they were trained but are not registered with any council.

Table 7: Location of government dispensaries by system of medicine offered (n=189)

<i>System of medicine</i>	<i>Rural</i>	<i>Urban</i>
Allopathy	4	14
Ayurveda	155 (82%)	12
Homeopathy	2	1
Unani	0	1
Total	161 (85%)	28 (15%)

We were able to cover 72 out of 76 PHCs (4 PHCs were locked), 17 CHCs, and 3 rural allopathic dispensaries in the district. Table 8 shows the number of PHCs and CHCs covered per tehsil.

Table 8: Numbers of CHCs & PHCs covered by the study

<i>Tehsil</i>	<i>PHC</i>	<i>CHC</i>
Dhariawad	7	2
Girwa	12	2
Gogunda	4	0
Jhadol	8	2
Kherwada	8	2
Kotra	6	1
Mavli	8	2
Sarada	8	2
Salumbar	7	1
Vallabh Nagar	4	3
Total	72	17

We found 9 PHCs (13%) without a regularly posted doctor², where the nursing staff or ward-boy were providing clinical treatment. There were two government homeopathic dispensaries. In both, the doctor's post was vacant and the compounder was providing treatment.

1.2 Private Facilities

Of the 125 rural allopathic facilities, 34% did not have a doctor – they were staffed by male or female nurses functioning as private practitioners, or by ANMs who were by and large providing maternal services. There was a dispensary attached to a large, former public-sector

¹ We subsequently verified non-posting of the physician at the time of visit at these sites, from the office of the District Ayurveda officer, Udaipur

² The doctor had not been posted, had resigned recently (common in the case of contract doctors) or was working elsewhere against this post. This has been verified from the office of the CMHO, Udaipur

company (Hindustan Zinc Pvt. Ltd.) as well as two dental colleges with their attached dental hospitals (at Loyara & Debari, both in Girwa tehsil). In addition there were nine NGO/trust managed allopathic health clinics. In the Ayurvedic sector, we found several retired ayurvedic doctors practicing from their homes, and 5 NGO/trust managed ayurvedic facilities. The homeopathic sector by and large had solo private practitioners, and one private homeopathic Medical College associated hospital. The table below shows the proportion of private facilities as per their ownership. It is clear that most facilities are singly owned, that non-profit facilities are few in the district, with only 14 being located in rural areas, and that the corporate sector has a limited presence as of now.

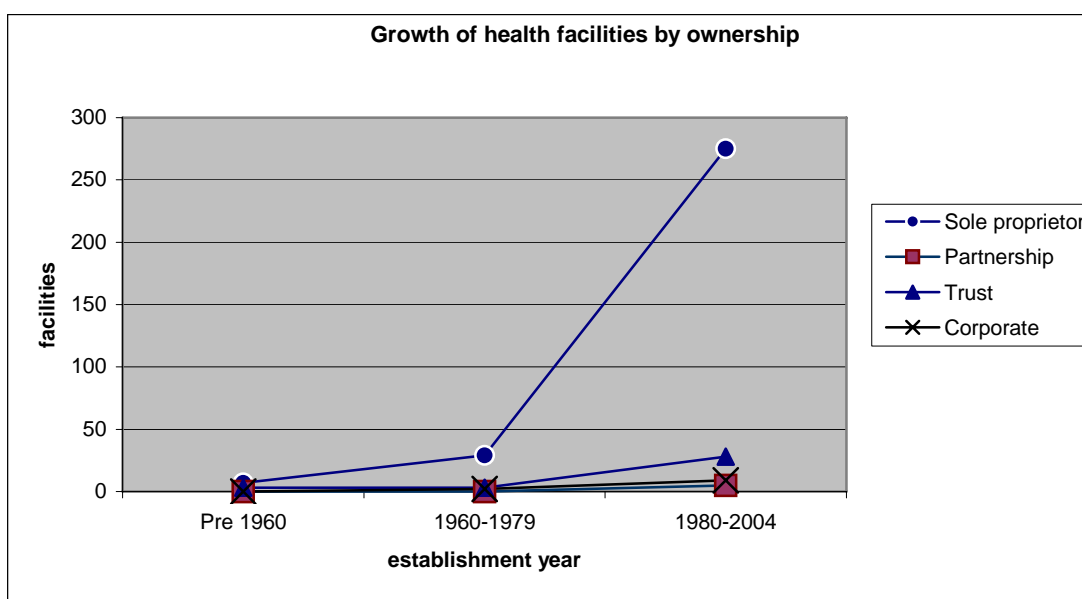
Table 9: Type of Ownership of private health facilities (urban and rural)

Type	Urban	Rural	Total (%)
Sole proprietorship	201	110	311 (86%)
Partnership	4	1	5 (1.4%)
Trust	20	14	34 (9.4%)
Corporate	9	2	11 (3%)
Total	234	127	361 (100%)

A look ownership by year of establishment reveals that there has been explosive growth of sole proprietor private facilities in the last 25 years. The same holds true for trust and corporate facilities too.

Table 10: Ownership of private facilities by year of establishment

Ownership	Pre-1960	1960-1979	1980-2004
Sole proprietorship	7	29	275
Partnership	0	0	5
Trust	3	3	28
Corporate	0	2	9
Total	10	34	317



2. Urban Picture

The urban picture featured a dominance of allopathic facilities in both government and private sectors and a significant presence of homeopathic facilities as compared to rural areas.

2.1 Government facilities

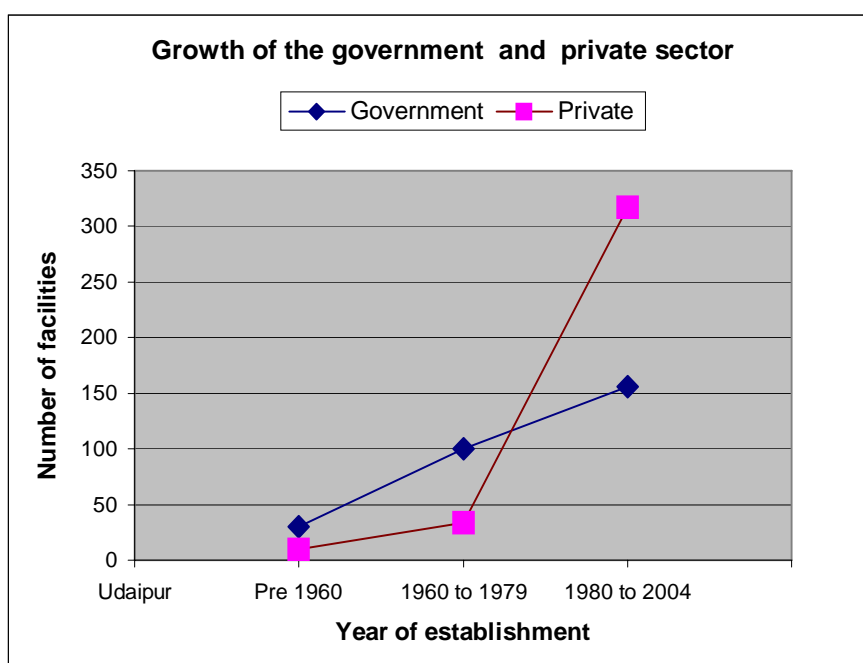
Government facilities included 5 hospitals associated with medical colleges, one railway and two satellite hospitals in Udaipur city, 13 dispensaries (2 railway, 2 ESI dispensaries and 9 of the state Government dispensaries). Some CHCs are located in urban areas, even though their basic purpose is to serve the rural population. Major ayurvedic facilities included 16 hospitals or dispensaries. Lastly, we also studied 1 government homeopathic dispensary (table 7).

2.2 Private Facilities

Allopathic facilities included clinics, diagnostic centers, small nursing homes, and single and multi-specialty hospitals. Most of the last category were trust or corporate in terms of ownership (table 9). Eight per cent private allopathic facilities did not have a doctor – in such instances, nurses or compounders provided health services from within small clinics.

Health facilities in the private sector

1. *Location of facilities:* A large part of the growth in health facilities has been in Udaipur city. As a result, our census found that in 2004, 84% of urban facilities were in the private sector. Girwa tehsil has the bulk of private facilities (88% of total urban private facilities) – all of these are located in Udaipur city, which forms part of the tehsil. By contrast, about 66% of rural facilities are government operated



2. *Growth* has been maximum in the past 20 years, with the private sector having grown at twice the rate of the government sector. Just 20 years ago it was the reverse -- government health facilities were almost 2½ times more than private facilities. The private sector has grown almost 9 fold over the past 30 years.

3. *Size of the facility:* The total picture of the district shows that about 60% of the total 649 facilities have less than 1000 Sq feet in area. Thirty five percent of these have an area more 1000-10000 sq feet, while the remaining 5% of the facilities have an area more than 10,000 sq feet. We found that Girwa tehsil (to be more specific, Udaipur city) has maximum number of facilities with an area above 10,000 square feet, and that large private sector facilities (all allopathic) are greater in number than those in the government.

Table 11: Facilities with an area exceeding 10,000 square feet

Name of the Block	No. of the facilities with an area more than 10,000 sq feet	
	Government	Private
Girwa	6	12
Gogunda	1	0
Jhadol	1	0
Kherwada	1	0
Sarada	1	0
Vallabhnagar	3	0
Dhariwad	1	0

Out the 11 large private facilities, 9 are corporate owned and 2 are trust hospitals.

Comparative picture on availability of beds

We found that 60% of private facilities provide inpatient care in the private sector. Out of these, 74 facilities (87%) are in Udaipur city. Even though the private sector has far more inpatient facilities than the government sector, most of the rapid growth of the private sector appears to have been in terms of outpatient facilities – even now, government facilities continue to have twice the number (67%) of beds as compared to the private facilities. This is primarily because there is an allopathic medical college with 4 affiliated hospitals (The number of beds available here are above 1000 all together) and an ayurvedic medical college with one hospital. Given that medical colleges tend to concentrate human resources and equipment, this also explains the greater occupancy rate, number of outpatients and inpatients in the government sector.

Table 12: Numbers and types of inpatient facilities

Type of facility	No. of facilities
<i>Government sector</i>	
PHCs	19
CHCs, Referral hospitals	17
Satellite hospitals	2
Medical college associated hospitals, railway, etc hospitals (including ayurvedic hospitals)	10
<i>Private sector</i>	
Nursing homes	14
Hospitals	62

A look at the distribution of health facilities that provide inpatient care however reveals that the private sector is basically located in urban areas and that the government sector appears to have attempted to compensate (table 13 & 14). However, further disaggregation by bed

strength reveals that 73% beds are concentrated in one large private and 6 large government hospitals, while 94% of inpatient facilities have only 4 beds each, on average.

Table 13: Inpatient care by sector and location of health facility

<i>Location</i>	<i>Government</i>	<i>Private</i>
Rural	31	9
Urban	17	67
Total	48	76

While far more private facilities provide outpatient care compared to the government sector, government institutions have greater caseloads. The average daily number of patients seen by government institutions is 37, as compared to 18 by private facilities. We must however keep in mind the possibility of some under-reporting of inpatients by private facilities.

Table 14: Inpatient bed availability by sector and facility size

<i>Bed range</i>	<i>Government</i>			<i>Private</i>		
	<i>Beds</i>	<i>Facilities</i>	<i>Avg beds per facility</i>	<i>Beds</i>	<i>Facilities</i>	<i>Avg beds per facility</i>
Below 50	197	42	4.7	295	75	3.9
Above 50	1141	6	190	168	1	168
Total	1338	48	28	463	76	6

Comparative study of the specified medical services

The major medical services provided in both private & government sector are related to RCH (ANCs, delivery), child care (diarrhea, ARI, Immunization), treatment of tuberculosis, malaria, eye problems and STDs, hypertension, asthma, dental extractions, accidents and injuries (table 15). It is clear from tables below, that that far more government facilities report providing a wide range of primary health services, as compared to the private sector. By contrast, far more private facilities provide a range of specialized medical & surgical services.

Table 15: Range of primary health services offered

<i>Medical services offered</i>	<i>Government facilities (%)</i>	<i>Private facilities (%)</i>
ANCs	55%	34%
Deliveries	50%	24%
Childhood diarrhea	99%	76%
Childhood ARI	98%	73%
Childhood immunization	36%	10%
New tuberculosis cases	46%	34%
Malaria	97%	77%
Dental extractions	52%	20%
STD cases managed	73%	49%
Eye care	91%	56%
Minor surgery	74%	47%
Hypertension	81%	58%
Asthma and COPD	97%	72%

Notes on range of general services provided

- i. These % have been given for all the facilities, with and without doctor. These have been taken together as they provide the healthcare service.
- ii. Government ayurvedic & dispensaries in rural areas, do not carry out lab tests, but treat malaria (based on symptoms). They also provide treatment for hypertension, asthma, diarrhea, ARIs, and minor Injuries. These are included in our data above. Only some these facilities in the rural areas were equipped to carry out wound suturing. Ayurvedic & homeopathic dispensaries do not have immunization facility, however some participate in the Pulse Polio program.
- iii. Some rural ayurvedic facilities report that they provide antenatal care and conduct deliveries on field as well as at the facility.
- iv. Ayurvedic & Homeopathic facilities do report providing treatment under the broad terms of ENT care, dental care, urological symptoms and diabetes, however we have not included these in the report.
- v. Almost all types (allopathic, ayurvedic, homeopathic) of facilities report that they provide eye care but this does not mean that cataract surgery is available there.
- vi. Private practitioners in the rural sector mainly provide treatment for diarrhea, ARIs, malaria, hypertension, and asthma. Female nurses provide antenatal care & delivery service.

Specialized services: The numbers of the institutions have been given below (not all services are offered at all the private facilities). Institutions providing specialized services are more in the private sector.

Table 16: Range of specialized services offered

<i>Specialized service</i>	<i>Number of government facilities</i>	<i>Number of private facilities</i>
MTPs	30 (10%)	40 (11%)
Caesarean section	6 (2%)	35 (10%)
Hysterectomy	5 (2%)	34 (9%)
Leprosy treatment	90 (31%)	57 (16%)
HIV testing	9 (3%)	60 (17%)
Male sterilization	32 (11%)	22 (6%)
Female sterilization	30 (10%)	29 (8%)
Major general surgeries	10 (3%)	29 (8%)
Acute myocardial infarction	1 (0.3%)	20 (6%)
Coronary angiography	1 (0.3%)	2 (0.6%)
New cancer cases diagnosed	25 (9%)	88 (24%)
Cancer patients for radiotherapy	1 (0.3%)	0
Cancer patients for chemotherapy	2 (0.7%)	4 (1%)
Dental care: root canal treatment	1 (0.3%)	28 (8%)
ENT: ear Surgery	1 (0.3%)	9 (3%)
ENT: tonsillectomy	1 (0.3%)	11 (3%)
ENT: nasal Surgery	1 (0.3%)	10 (3%)
Orthopedics: open fracture cases managed	4 (1%)	18 (5%)
Orthopedics: closed fracture cases managed	15 (5%)	23 (6%)
Orthopedics: dislocations managed	8 (3%)	20 (6%)
Orthopedics: surgery under GA	3 (1%)	17 (5%)
Neurology: new CVA cases treated	2 (0.7%)	12 (3%)
Neurology: Coma cases managed	2 (0.7%)	6 (2%)
HIV testing	9	58
Endoscopy - upper GI	1 (0.3%)	11 (3%)

<i>Specialized service</i>	<i>Number of government facilities</i>	<i>Number of private facilities</i>
Endoscopy - lower GI	1 (0.3%)	9 (2%)
Urology: prostate surgery	3 (1%)	13 (4%)
Urology: Kidney/Ureter Surgery	1 (0.3%)	13 (4%)
Scopies	1 (0.3%)	8 (2%)
Lithotripsy	1 (0.3%)	5 (1%)
Adult Diabetes on insulin	27 (9%)	60 (17%)
Childhood diabetes on insulin	8 (3%)	28 (8%)
Accidents /injuries	220 (76%)	139 (39%)

National health programs

- **RCH programs:** The majority of the facilities provide ANC and delivery services. These are done in homes as well as in facilities. For MTPs, caesarean section and hysterectomy an equipped operation theatre with trained professionals is required, this is available at select locations, mainly urban.
- **Leprosy control & Tuberculosis control program:** All the government allopathic institutions have drug supply for leprosy & tuberculosis control. Some ayurvedic facilities reported that they treat TB cases after patient had ceased taking allopathic treatment.
- **HIV Tests:** The numbers given are of numbers of centers getting HIV tests done. HIV tests are done only in Udaipur city.
- **Surgeries:** Minor surgeries do not require an elaborate theatre setup. This perhaps explains the large number of allopathic and ayurvedic facilities carrying out minor surgery.
- **Major surgery** requires specialists (general surgeons) and supportive human resources, hence, this facility exists only at some locations. It may be noted that major surgeries as defined here exclude cesarean sections and hysterectomy, which have been reported separately.
- Similarly for ENT care, we enquired about for surgeries, which can only be performed by professionally trained ENT surgeons. Such centers are restricted to a handful, in the medical college teaching hospital and in the private sector. Although the same holds true for orthopedic care, it is notable that far more facilities manage closed fracture. Non-orthopedic doctors too, have reported closed fracture management. However only specialists can manage open fractures and carry out orthopedic surgery under general anesthesia. This facility is available only in Udaipur city. Patients suffering from a cerebro-vascular accident or coma require an inpatient facility, laboratory back-up and strong neurological clinical skills. These are available only in Udaipur city.
- Most doctors (allopathic, ayurvedic and homeopathic) responded affirmatively about treating sexually transmitted disease, by and large without doing any laboratory tests.
- Endoscopies require equipment and expertise, which are available only in Udaipur city.
- **Endocrinology:** Only pediatricians treat childhood diabetes, hence this facility is available where they practice.
- Similarly, conditions like kidney or ureter surgery, cystoscopy, lithotripsy and prostate surgery require a professionals and a setup available only at the district HQ.
- **Cancer screening and treatment:** Cancer diagnosis appears to have been interpreted broadly by respondents, and has not been equated to arriving at a definite diagnosis or

reading a histopathologic slide. The large numbers of facilities giving a positive response reflect instances in which the doctor suspected cancer and made a referral, which confirmed the diagnosis. Only one center in Udaipur district has a radiotherapy unit, while chemotherapy is given though more centers in Udaipur.

- Dental care: Not all dental centers have facility for root canal treatment, which is performed only by certain trained dentists.

A picture of the government sector in Udaipur district

Primary Health Centres (PHCs)

Only 16% PHCs had an indoor facility. The rest offered consultations and dispensed drugs. Most PHCs carry out ANC check ups, deliveries, (at home or at the PHC), child care (treatment of diarrhea, ARI and immunization), diagnosis and treatment of TB, diagnosis and treatment of malaria, leprosy, asthma, hypertension, minor surgeries, eye care, STD treatment and dental extractions. They by and large refer most emergencies to the nearest CHC or to a medical college associated hospital in Udaipur.

CHCs

All the CHCs in the district have an indoor facility. They do not have facilities for blood transfusion, since a blood bank is available only at Udaipur, and there are no formal arrangements for blood storage in CHCs. Most CHCs are upgraded PHCs, however, a few like the one at Salumbar and Kherwara function like medium size hospitals.

Ayurvedic Dispensaries & Homeopathic dispensaries

Ayurvedic dispensaries are staffed by one Ayurvedic doctor, a compounder and a cleaner. The facility provides for consultation and dispensing of drugs. We found that ayurvedic (and also homeopathic providers) reported carrying out ANC check ups, deliveries (some ayurvedic dispensaries had a labor table and the doctor was helping to conduct deliveries, while some other ayurvedic doctors helped to conduct delivery on field), provided child care (diarrhea, ARI), and treated malaria, hypertension, asthma and STD. Some ayurvedic facilities were also equipped for minor surgery. There was no facility for carrying out laboratory investigations, however some of the doctors did refer patients for investigations. There was no immunization facility at ayurvedic dispensaries. Ayurvedic physicians reported referring patients requiring emergency care to PHCs or CHCs in the vicinity.

Government dispensaries (allopathic)

Government (allopathic) dispensaries have an MBBS or even a postgraduate doctor. The latter are to be found more in the cities, where it appears, a dispensary posting is a matter of convenience given that it is a primary care facility. They offer consultations and dispense drugs, and admit patients only for observation. Most dispensaries offer ANC check ups, child care (treatment of diarrhea, ARI and immunization), diagnosis and treatment of TB, diagnosis and treatment for malaria, leprosy, asthma, hypertension, facility for minor surgeries, eye care and STD treatment. Dispensaries may have facility for minor surgeries. Patients needing emergency care are referred to the Medical college associated hospital in Udaipur.

Satellite hospitals

There are 2 satellite hospitals in Udaipur city. They have specialist doctors, which include gynecologist, physician, surgeon, orthopedic surgeon, pediatrician, and dentist. The facility here includes consultation, drug dispensing, and inpatient care. Since they are located in Udaipur city that is dominated by the medical college hospital, their caseloads, especially for emergency services, are lower.

Medical college (affiliated Hospitals)

This is the major facility in the entire district – the four hospitals include a general hospital, a women’s hospital, a children’s hospital and a TB hospital. The last is located about 10 km outside the city. The remaining three are located in a common campus, and share several support services like laboratory, imaging, cardiology and plastic surgery services. While the government operates the medical college, private practice by faculty and consultants from their homes constitutes a major source of outpatient care in the city.

Private sector

Clinics and nursing homes

In the private sector, we found clinics, small nursing homes, single specialty hospitals, multi specialty hospitals and diagnostic centers. Clinics run mostly by general practitioners (MBBS), physician, pediatrician, or skin specialists who give consultation service and some of them also dispense drugs. There are some ayurvedic doctors who have developed a reputation for treating certain illnesses -- they dispense drugs for these and other conditions. Homeopathic doctors run some outpatient clinics and also dispense drugs.

Hospitals

Most private inpatient facilities in Udaipur had beds in the range of 6 to 29. All of these facilities had specialist doctors and operation theatres. They functioned either as single specialty or multi specialty hospitals. Single specialty hospitals predominantly were maternity homes (providing antenatal care, delivery, MTP, caesarean section and hysterectomy) children’s hospitals offering pediatric care, laproscopic surgical facilities, eye or ENT hospitals. Only some of these facilities had a complete laboratory services. Multi-specialty hospitals tended to have 2 or 3 regular specialties (generally, maternity, internal medicine or pediatric care). The remaining specialists would generally be on call – a recent trend seems to be to have a visiting expert from bigger and known hospitals from a city like Ahmedabad (outside our study area). Multi-specialty hospitals tended to have complete lab facilities, a well-equipped operation theatre set up and even a chemist shop on the premises.

Teaching hospitals

At the time of the study, there were two dental colleges in the district, both private, which provided complete dental care with dental super-specialities. These dental colleges additionally had service outlets in Udaipur city through which they provided primary dental care. The colleges have a well equipped laboratory with indoor facility, and provided care for dental emergencies.

Diagnostic centres

A last category is that of diagnostic centers, devoted exclusively to carrying out laboratory investigations, radio-diagnosis and imaging. Such facilities do not have a clinical outdoor facility or dispense drugs. The availability of laboratory and imaging equipment has been depicted in the tables below.

Availability of laboratory facilities and equipment

Table 17: Availability of laboratory facilities and equipment

<i>Type of investigation</i>	<i>Government</i>	<i>Private</i>
Haematology	57	83
Urine	50	82
Stool	15	59
Biochemistry	4	58
Microbiology	3	28
Culture of specimens	2	15
X Rays	22	77
ECGs	17	71
Ultra Sonography Static	2	42
Ultra Sonography Mobile	1	7
CT Scan	2	3
Mammography		1
Doppler	1	12
Endoscopy	2	14
Angiography	2	1
MRI	0	1

It is evident that the private sector dominates in the field of laboratory and imaging services, and in some ways complements clinical and surgical services offered by government institutions. In the government sector, these services are essentially available in the Medical College, which has CT scan, ultrasound and angiography facilities. It is also clear that rural patients need to visit Udaipur city for specialist opinion backed by laboratory investigations.

Note: Hematology & urine tests normally include a wide range of test measurements. However, in this study, if the facilities reported doing even some blood and urine tests, they were counted among those offering the full range of tests. This is a limitation of the study.

Table 18: Number of facilities reporting availability of equipment

<i>Equipment item</i>	<i>Government</i>	<i>Private</i>
ECG machine	23	71
X Ray machine	23	77
Ultrasound machine	3	43
Instruments for laparoscopy	7	12
Dental chair	2	28
Newborn resuscitator	5	20
Incubator for newborn	7	16
Ventilator	4	11
Autoclave for sterilization	46	127
Refrigerator for vaccine	81	29
Refrigerator for general purpose	49	137
Boyles apparatus	23	72
Endoscopes	3	14
Foetal monitor	5	30

<i>Equipment item</i>	<i>Government</i>	<i>Private</i>
Testing of visual acuity	11	18
Labour table	92	51
Operation table	43	76
Ambu bag	38	90
CTScan machine	2	3
Doppler machine	1	12

The above table suggests that availability of equipment is far greater in the private sector, with most of it concentrated in Udaipur. *There is difference between the number of ECG, X-ray machines and endoscopes and the number of facilities with these equipment items. This is because some machines are not in working condition in a few government facilities. The number of facilities reporting ultrasound services (static or mobile) exceeds the number of USG devices because in case of a few facilities, the same owner had a machine in another separate facility in the vicinity and would send patients there. Such owner had however reported providing the service in-house.*

Conclusions

The following broad conclusions emerge from the study:

1. Udaipur district is marked by one well-connected and resourced headquarters city, surrounded by a poorly developed countryside. The imbalance between the district HQ and rural areas is reflected in the health systems, in terms of a concentration of health facilities of both government and private sectors.
2. The government medical college and its associated hospitals dominate the health facilities in terms of bed strength, availability and utilization of specialized services. Government doctors working in the medical college hospitals also practice, hence their service are both private and public. A wide range of laboratory and imaging services, mainly in the private sector, supports them.
3. The private sector has a greater concentration of specialized services as compared to the government. However these are concentrated in Udaipur city.
4. Rural areas have more government and fewer formal private services - this study did not cover untrained or informally trained providers, who however are known to have a wide-ranging practice. Government services are delivered through health centres - primary health centres and sub-centres, while private services are delivered by outpatient clinics. Hence there is a severe shortage of inpatient care. The inequity in distribution of services in rural areas is especially seen in remote and interior tehsils that have a higher concentration of persons belonging to scheduled tribes. Interior rural areas also suffer from the problem of provider absenteeism, which this study was unable to directly assess.
5. While the study focused on doctors as key providers, we found that non-physicians were operating 98 facilities. These included 35 government facilities wherein the doctor had not been posted, or had resigned or got transferred or deputed. In the case of private facilities, it was a case of qualified paramedics setting up shop.
6. Allopathic services dominate in urban areas. In rural areas, ayurvedic services are far greater in number than allopathic facilities. However, it is well known that ayurvedic clinicians tend to use allopathic medication in their practice. The study was unable to objectively assess this last aspect.
7. Inpatient services are concentrated in 7 large hospitals; the remaining facilities are small and have average bed strength of 4 beds each.