

Original Article

Trend in utilization of mobile health services, morbidity pattern & health seeking in Uttarakhand.

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Abstract

Introduction: Mobile Health services is unique approach and are being offered to the community living in far-flung, difficult mountainous outreaches in a bid to supplement the existing public health facilities with the aim of providing minimum basic primary health care. Objective: To provide quality diagnostic & curative care through mobile health clinics at select mountainous outreaches of Uttarakhand state & impart basic health education and community based sensitization towards preventive and promotive health and hygiene through community endorsed Behaviour Change Communication (BCC).

Methodology: Prior to service delivery Community Needs Assessment was done. A movement & operational plan was formulated in which a team of service providers from various specialities and supporting staff was recruited. The team provided 10 days' extensive bimonthly mobile health services on a 'fixed day, fixed time and fixed place' schedule along pre-designated service locations across the three districts. Data generated during 1st implementation quarter i.e. March-May 2007 was assumed as baseline for the trend in utilization of mobile health services, morbidity pattern & health seeking in Uttarakhand. Generated data was collated and analysed in the Department of Community Medicine, HIHT.

Result: Data analysed show that in terms of trend in utilization of mobile health services, 27723 clients sought mobile health services during the period & central tendency was 3465 (12.5%) as against baseline of 4899 (17.7%) clients. Mean of clients seeking mobile health services for key morbidities was highest for Musculoskeletal disorders i.e. 790 (22.8%) followed by clients with Gastrointestinal (GI) disorders i.e. 688 (19.8%), Genitourinary system disorders i.e. 621(17.9%) and Respiratory system disorders i.e.286 (8.2%).Average number of clients provided investigative facilities in all the 8 quarters were 3465 out of which majority was investigated in laboratory (70.6%) for haemogram & urogram including blood glucose estimation followed by Ultrasound (13.2%), X-ray (10.8%) and ECG (1%).

Provision of mobile health services has certainly increased the outreach of health care services to the hitherto underserved & unserved regions of the state.

Keywords: Mobile Health Clinic, Morbidity, Service Utilisation, Community Need Assessment.

Introduction:

The state of Uttarakhand was formed in 2000, carved out of the former state of Uttar Pradesh. It accounts for 1.6% of the land area and supports 0.86% of the country's population. Geographically, it can be broadly divided into three zones, the upper Himalayan reaches, the mid Himalayas and the foothills. The total population, according to the 2011 census is 1,01,16,752. The state of Uttarakhand has 13 districts, which are thinly populated and characterized by scattered presence of small and ill connected hamlets. As these hamlets lack road connectivity and communication facilities, for many inhabitants, even reaching the road head can prove to be a backbreaking mountainous journey taking 3-6 hours. The state is virtually without

any railway network due to atypical geo-topography that adds to the 'vulnerability' of the entire population vis-à-vis access to essential health care and services. The problem of health care is more acute in the areas where rate of literacy is comparatively low and lack of infrastructure impedes the delivery of services.

In context to Morbidity the National Health Policy 2002 states, "The bulk of the increase is likely to take place through migration resulting in slums without any infrastructure support. Even the meager public health services, which are available, do not percolate to such unplanned habitations"¹.

Thus determinants of health care delivery in Uttarakhand, namely, small-sized and scattered villages (hamlets/ majras) with dispersed populations, challenging geographical terrain, poor road connectivity,

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poor access to transport etc. required that the state adapt the NRHM guidelines in accordance with the local need and socio-epidemiological parameters. The state health policy too did not take cognizance of the sparsely populated, scattered, mountain 'hamlets' or 'Majras' and linking these with services; also, norms laid down by the government did not consider such population settlements while defining an 'urban' area². The census definition for an urban area in hill setting is inappropriate. In view of this perspective and particularly severe limitation of conventional 'fixed-location' healthcare facilities by inaccessibility due to adverse topographical conditions, 'Mobile Health Clinic' was initiated to supplement the existing public health facilities with the aim of providing minimum basic primary health care services to the community living in far-flung, difficult outreaches³.

This outreach delivery approach under a project sponsored by Directorate of Science and Technology (DST) through Technology Information Forecasting and Assessment Council (TIFAC) follows a 'fixed day, fixed time and fixed place' schedule to provide health care services in remote, hard-to-reach and poorly served hilly areas in the State.) Such an initiative was started in 6 districts (Champawat, Nainital, Almora, Bageshwar, Pithoragarh and Chamoli) of Kumaon division with the help of Birla institute, Bhimtal and is being run by State and Government of India (Gol) since October 2002⁴.

Similar initiative undertaken by HIHT, Dehradun since March, 2007 with extension of coverage into 3 more districts (Dehradun, Tehri, and Pauri) is presently into 9th quarter of its implementation.

Objective:

The objective of initiative was essentially to provide:-

1. Quality diagnostic & curative care through mobile health clinics at select mountainous outreaches of Uttarakhand state.
2. Basic health education and community based sensitization towards preventive and promotive health and hygiene through community endorsed Behaviour Change Communication (BCC) to all community beneficiaries and stake holders.

Methodology:

Prior to service delivery the Department of Community Medicine, HIHT under took a Community Needs Assessment. A methodology based on rapid assessment procedures (RAP) and participatory learning action (PLA)/ interactive sessions were used

because this permitted quick but systematic & valid data collection. Opinions, attitudes, constraints and suggestions on health care status and unmet needs of respective areas were obtained from opinion leaders, PRI's and significant others of the community. Interactive sessions with pre-structured interview instruments were held.

A movement & operational plan was formulated in which a team of service providers from various specialities (Orthopaedics, Medicine, Radiology, Gynaecology & Community medicine) and supporting staff was recruited. The team would provide 10 days' extensive bimonthly mobile health services on a 'fixed day, fixed time and fixed place' schedule along pre-designated service locations across the three districts .

Prioritised services were provided according to findings of the Community Needs Assessment done during the first implementation quarter through Out - patient Clinics including diagnostic facilities & an effective referral mechanism that involved a proactive informed community and liaison with Health Facilities / FRUs (Public or Private). Clients were assured of subsidized tertiary care at Himalayan Institute Hospital Trust.

Qualitative methods of communication like Focus Group Discussions (FGD)/ Interactive group sessions were conducted to sensitize the community on its health needs and priorities, impart health education and counselling on relevant themes including distribution of health education materials.

Data generated during 1st implementation quarter i.e. March-May 2007 was assumed as baseline for the trend in utilization of mobile health services, morbidity pattern & health seeking in Uttarakhand. Generated data was collated and analysed in the Department of Community Medicine, HIHT

Coverage:

S.N.	Camp site	District	Coverage (Camp-site Catchment)
Route A			
1	Nainbagh	Tehri	3500
2	Lakhamandal	Dehradun	1750
3	Barkot	Uttarkashi	1350
4	Dhontri	Uttarkashi	4500
5	Partap Nagar	Tehri	2750
6	Dunda	Uttarkashi	6500
7	Kandi Saud	Tehri	2750
8	Chamba	Tehri	7500
Route B			
9	Dugadda	Pauri	3000
10	Chalusain	Pauri	1750
11	Satpuli	Pauri	5000
12	Gandiyal	Pauri	2750
13	Tilwara	Rudraprayag	6000
14	Nand Prayag	Chamoli	3250
15	Pipal Koti	Chamoli	3250

Observation:

Implementation results over a period of 24 months (8quarters) showed that of the total 27723 clients seeking mobile health services during the period ,

central tendency was 3465 (12.5%) as against baseline of 4899 (17.7%) clients. Mobile health services were provided along two routes bimonthly for 8 quarters, route I registering slightly higher average of 1818 (52.5%) clients as compared to 1647(47.5%) clients for route II. Mean of clients seeking mobile health services for key morbidities was the highest for Musculoskeletal disorders i.e. 790 (22.8%) with a range of 409(11.8%) – 1236(35.7%) followed by clients with Gastrointestinal (GI) disorders i.e 688 (19.8%) with a range of 317(9.1%) – 1621(46.8%), Genitourinary system disorders i.e. 621(17.9%) with a range of 253 (7.3%) - 2188 (63%), Respiratory system disorders i.e.286 (8.2%) with a range of 169(4.9%) -542(15.6%). Clients seeking services for ENT problems ,Ocular disorders , Dermatoses, Orodental problems, CNS disorders, Cardio/Peripheral vascular disorders ,Metabolic disorders ,Anaemia etc were proportionately much less.

Amongst the principal morbidities Low backache (37%) & Osteoarthritis (12%) were major contributors in Muskulo skeletal disorders & Acid peptic disease (76%) and Worm infestation (12%) for GI disorder, 'Others' including uterine prolapse & problems of unskilled perinatal care (57.2%) ,UTI (19.6%) & Renal stones (12.8%) for Genitourinary disorders while ARI (46%), COPD (15%) & TB (14%) were key morbidities for Respiratory system disorders.

Average number of clients provided investigative facilities in all the 8 quarters were 3465 out of which majority were investigated in laboratory (70.6%) for haemogram & urogram including blood glucose estimation followed by Ultrasound (13.2%), X-ray (10.8%) and ECG (1%).

Table 1: Trends in utilization of services by camp site

S. N.	Location	No of Patients registered								Avg
		Q1 Baseline	Q2	Q3	Q4	Q5	Q6	Q7	Q8	
1	Camp Site I	2491	1656	987	1876	3253	1041	1263	1978	1818
2	Camp Site II	2408	1323	1490	2297	1899	650	1342	1769	1647
Total		4899	2979	2477	4173	5152	1691	2605	3747	3465

Table 2: Provision of Diagnostic Facilities

Clinic based services were reinforced with provision of feasible diagnostic facilities.

SN	Location	Trend in Utilization of Diagnostic Facilities								Q1-8 Avg	%*
		Q ₁ Base	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇	Q ₈		
1	Ultra sound	588	581	407	648	865	314	00	250	456	13.2
2	X-Ra y	445	214	329	522	595	126	358	393	373	10.8
3	Lab investigation **	2509	2153	1953	2455	3394	1360	3196	2542	2445	70.6
4	ECG	97	24	15	30	31	5	42	29	34	1.0
5	No. of Patients Registered	4899	2979	2477	4173	5152	1691	2605	3747	3465	

* % shows number of clients utilizing diagnostic facilities out of total patients registered in OPD ; 4.5% of registered patients have not undergone any investigative method. ** Includes Hemogram, Urogram, Blood glucose estimation etc.

Table 3: Trend of Morbidity & service utilization in 8 quarters by camp site:

Morbidity	Trend of Health Seeking N= (27723)										
	Q ₁ Base	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇	Q ₈	Q1-8	Av g	%
GI Disorders											
Diarrhoea/ dysentery	49	19	54	19	65	25	59	140	430	54	8
Cholelithiasis	32	19	19	56	29	11	14	20	200	25	4
Worm infestation	65	48	60	150	102	38	76	130	669	84	12
Acid Peptic Disease & Others	1491	871	184	401	208	151	198	702	4206	526	76
Sub Total	1621	957	317	626	408	225	347	1003	5504	688	100
Musculo skeletal disorders											
Osteo arthritis	0	0	76	240	185	46	50	165	762	95	12
Rheumatoid arthritis	0	0	57	21	37	14	17	77	223	28	4
Cervical spondylitis	0	0	38	73	161	29	44	77	422	53	7
Low Backache	473	290	342	229	408	118	220	264	2344	293	37
Others	203	119	447	480	358	157	314	507	2585	323	41
Sub Total	675	409	951	1043	1236	357	550	1102	6323	790	100
Genitourinary system disorders											
Renal stones	10	11	40	254	109	35	43	132	634	79	12.8
UTI	275	209	83	154	88	40	86	40	975	122	19.6
RTI/ STD	0	0	50	0	372	30	51	10	513	64	10.3
Others	198	153	191	254	1619	147	207	71	2840	355	57.2
Sub Total	482	374	360	668	2188	253	390	253	4968	621	100
Respiratory system disorders											
ARI	161	105	54	255	83	88	175	133	1054	132	46
Tuberculosis	0	0	20	98	86	31	44	45	324	41	14
Bronchial Asthma	0	0	17	65	71	24	34	32	243	30	11
COPD	80	64	56	60	12	31	27	13	343	43	15
Others	0	0	69	65	47	42	57	42	322	40	14
Sub Total	241	169	217	542	296	219	337	265	2286	286	100
ENT	128	88	76	209	117	69	106	174	967	121	3.5
Ocular Disorders	193	123	80	250	167	69	107	158	1147	143	4.1
Dermatoses	482	257	110	167	121	83	128	176	1524	191	5.5
Oro-dental problems	16	6	8	42	52	21	33	38	216	27	0.8
CNS disorders	193	129	57	125	15	28	43	14	604	76	2.2
Cardio/ Periph. vascular disorders	257	117	61	83	81	27	41	235	902	113	3.3
Metabolic Disorders (Diabetes etc)	64	29	40	83	123	130	200	217	886	111	3.2
Anemia	177	117	101	209	15	101	156	75	951	119	3.4
PUO	225	99	23	42	54	56	87	32	618	77	2.2
ANC registered	145	105	76	83	279	52	80	4	824	103	3.0
TOTAL	4899	2979	2477	4173	5152	1691	2605	3747	27723	3465	100

Discussion:

The Uttarakhand state Health policy envisages bringing down key primary RCH indicators by 2010. Meeting

these goals is understandably linked to access and effectiveness of outreach. But the policy did not take cognizance of the sparsely populated, scattered,

mountain hamlets and linking these with services². Primary reasons for not utilizing the government health facility by the slum dwellers are Long distance and Long waiting time¹ but in mountainous outreach of Uttarakhand there were no provision of health care facility from government or private sector. In this perspective, provision of mobile health services has certainly increased the outreach of health care services to the hitherto underserved & unserved regions of the state³.

Disability viewed from socio-epidemiological perspective of Uttarakhand may be particularly related to health conditions that effect Quality of Life and Restrict Activities of Daily Living (ADL) and potential for productive ageing. In a study of self reported morbidity with 965 elderly females from 52 villages of Tehri district of Uttarakhand⁵, as many as 89% of the clients had 'kidney stones', 87% had some gynaecological morbidity, 70% had 'digestive' problems and 55% of the clients complained of 'walking' problem, its principal contributor being osteoarthritis. Findings of the present study corroborate this observation.

However, morbidity profile reported by a mobile health clinic in the plains⁶ was distinctly different from that of the mountainous terrain where Respiratory diseases ranked first (18.36 percent) followed by locomotor diseases (10.04 percent), Skin (9.86 percent), G.I.T. disorders (8.29 percent), Pyrexia (6.56 percent).

An analogy of Mobile service profile between Himalayan Institute Hospital Trust (HIHT) and Birla institute of Scientific research (BISR) over a period of 8 quarters i.e. 24 months showed that total patient registered with HIHT was 27723 as against 29239 with BISR. Out of the clients registered for any investigation by HIHT, ; 70.6% of clients were provided laboratory services followed by 13.2% for Ultrasound, 10.8% X-ray and 1% ECG corresponding proportion of clients provided investigative facilities by BISR was laboratory investigations (52%) followed by USG(25%), X-ray(14%) & ECG(4%). Laboratory investigations essentially for routine hemogram & urogram which relatively are easily affordable by the community and are effective complement to essential & limited curative health care, was provided to considerably more clients by HIHT in comparison to BISR³. Government of Uttarakhand has also initiated Mobile health services in PPP mode and encouraged by Mobile health services GoUK has implemented several innovations in the state to improve access to health services for the most vulnerable. Some of these interventions include the voucher system, the

108 emergency ambulances, and Rashtriya Swasthya Bima Yojana (RSBY) among others⁷.

Conclusion:

The present 'Mobile Hospital' is probably unique, as it has been designed to augment the diagnostic medical services of needy people located in far-flung inaccessible terrain of Uttarakhand and because this has been identified as a crucial requirement for further preventive and curative health care. In addition, the mobile clinic also collect data which may help in formulating health policies for the region.

Direct benefits of the project include quality diagnostic & curative care to the underserved & unserved mountainous outreach serving as a unique model to be replicated in other parts of the country.

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