STUDIES ON THE CONDITIONS OF HEALTH CARE AND SUPPORTING FACILITIES IN NASARAWA STATE, NIGERIA

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Abstract

This study examines and explains the conditions of modern health care and supporting facilities in Nasarawa State's rural and urban environments. The study relied on published secondary data collected from statistical and administrative reports of the Nasarawa State's Ministry of Health, Hospital Management Board as well as Local Government Areas' Primary Health Care Department. All the collected data were analyzed using descriptive statistics. Tables were used to provide additional descriptions and explanations. The study showed the disparity in the standard of health services between rural and urban areas. In fact the more urbanized Local Government Areas have better access to and better quality of health services when compared with predominantly rural Local Government Areas. The spatial variation in these percentages allows pinpointing spatial inequalities. The study recommends that: Decision and policy makers should correct inequalities in access and make every effort to optimize the use of scarce resources. One way to do this is focusing interventions in areas identified by this study, where impact would be greatest.

Keywords: *Health care facilities, descriptive statistics, Nasarawa State.*

INTRODUCTION

Financial resources for implementing health policies and programmes in Nasarawa State come from a variety of sources, including budgetary allocations from government at all levels (Federal, State and Local), loans and grants, private sector contributions and out of pocket expenses. The value of contributions from the private sector and out of pocket expenditure has not been determined. According to a World Bank source (2005), per capita public spending for health is less than US$ 5 and is as low as US$ 2 in some parts of Nigeria. This is far below the US$ 34 recommended by WHO for low income countries. The reduction in health spending in the late 1980s was due to the Structural Adjustment Programmes (SAP) which de–emphasized spending on health and social services. At its lowest point in 1989, federal government health expenditure was 77 % less in real terms than it was at the height of the oil boom in 1980. Though there was some recovery in the 1990s, health expenditure in 1999 was still 32% less than in 1980 (Anderson & Davidson, 2000; Bin–Juhi, 2001; Pannarunothai, 2001). In per capita terms, the decline in health expenditure was even more precipitous, 82 % between 1980 and 1989; 57 % between 1980 and 1999, due to continued rapid population growth. Although the federal government recurrent health budget showed an upward trend from 1996 to 1998 and 1999 to 2000, available evidence indicates that the bulk of this expenditure goes to personnel. Recurrent health expenditure as a percentage of total federal recurrent expenditure was 2.55 % in 1996, 2.96 % in 1997, 2.99 % in 1998, 1.95 % in 1999 and 2.5 % in 2000. This is an indication that the bulk of government funding is still not to the health sector (Acuna, 2000; CBN, 2010). In an effort to mitigate the low per capita funding to health, the government has embarked on a series of initiatives such as revolving fund schemes for some services in hospitals and the National Health Insurance Scheme (APRM, 2008; Gumber, 2009; World Bank, 2009).

Donor assistance for the health sector also experienced a decline during the 1990s. External funding declined when many bilateral donors, including the United States and the United Kingdom, stopped aid in response to the anti–democratic military regime. While UN agencies continued to provide modest assistance to the health sector throughout the 1990s, wider donor assistance did not resume until the return to civilian government in 1999 (WHO, 2001). Although the major factors identified interact and are important, the spatial allocation of health facilities has always played a major role, and it has been of particular interest to medical geographers and environmental health planners. The importance of spatial allocation of health facilities in the consideration of equity and social justice is well emphasized by Adamu (2003).

Nasarawa State continues to suffer outbreaks of cholera, cerebrospinal meningitis, measles, yellow fever and Lassa fever, with significant human losses due to weak emergency preparedness and response mechanisms. According to the Nasarawa state Ministry of Health (2002), between 1996 and 2002, Nasarawa State experienced seven severe yellow fever epidemics. Cholera outbreaks were recorded between 1996 and 1999, affecting more than six Local Government Areas and claiming over 900

lives. Sporadic complex emergencies from petrol explosions, floods and civil unrest are becoming common occurrences with significant human and material losses (Abubakar, 2010). There is growing incidence and prevalence of non–communicable diseases as well, such as hypertension, coronary heart disease, diabetes and cancer as well as illnesses related to stress, behavior and lifestyle. In 1999, a state–wide survey revealed that 12,000 people had mild hypertension, 6,000 had moderate hypertension and 2,100 had severe hypertension. The prevalence of hypertension is generally estimated at 4 – 5 % for rural and 5 – 6 % for urban communities. The proportion of smokers is 0.1 %, and the prevalence of diabetes mellitus is 0.9 % (Nasarawa State Ministry of Health, 2002). Genetic diseases such as sickle–cell anaemia and, glucose–6–phosphate dehydrogenase affect an appreciable proportion of the population. In Nasarawa State, 0.8 – 1 % of the population have sickle–cell disease, while the prevalence of glucose–6–phosphate dehydrogenase is estimated at 5 % for males and 0.7 % for females. Control efforts in respect of non–communicable diseases have generally received little attention in the state (Nasarawa State Ministry of Health, 2002). In recent years, the State has responded positively to global initiatives such as Roll Back Malaria (RBM), HIV/AIDS control, Polio Eradication Initiative (PEl), directly–observed treatment short–course (DOTS) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Notable progress has been made towards eradication of guinea–worm disease, resulting in a decrease in the number of cases from over 5,000 in 1996s to about 1,000 per year in the late 2000s. In addition, the state has reached the World Health Organization (WHO) leprosy elimination target of less than one case per 10,000 populations (Nasarawa State Ministry of Health, 2002). For some of these initiatives, state level strategies and plans have been developed.

The problems of disease occurrence have been compounded by poor quality of services and facilities provided at the health institutions and aggravated by lack of skilled personnel in the state (State Ministry of Health, 2003). Studies by Abubakar and Abdullahi (2012) revealed that there was one hospital bed per 2,124 people in Nasarawa State. During the same period, the patients/doctor ratio deteriorated, from 1,082 to 54,288: 1, whereas the patients/nurse ratio was 2,878:1 in Nasarawa state (Abubakar and Abdullahi, 2012). Consequently, the health care status of the indigenes is poor and grossly inadequate, and this is an indication that some important policy objectives of the National Health Policy Initiative have not been realized. This study will attempt to answer the question: Has the condition of healthcare and supporting facilities in Nasarawa State enabled its indigenes to be successful in meeting the health services needs of the state's residents in the face of the National Health Policy goal and Millennium Development Goals?

MATERIALS AND METHODS

Study Area

Nasarawa State came into existence on 1 October 1996 and was curved out from Plateau State. Its population is 1.87 million in the year 2006 (NPC, 2007). The state presently consists of thirteen Local Government Areas with a total land area of about 26,666.02 $km^{2.}$ It is bounded in north by Kaduna State, in the northeast by Plateau State, in the east by Plateau and Taraba States respectively, in the south by Benue and Kogi States, and to the west by Federal Capital Territory Abuja, between latitude 7^0 and 10^0 N.

Methodology

Data sources and acquisition

The study relied on secondary data source. Global Positioning System (GPS) device was used to collect the coordinates of the location of healthcare and supporting facilities used for this study in both urban and rural locations in Nasarawa State. The first step was to compile an exhaustive list of all Health Care Facilities (HCFs) in statistical and administrative reports of the Nasarawa state's Ministry of Health, Hospital Management Board as well as the Local Government Areas' Primary Health Care Departments. The study further took an inventory or census of all these HCFs. This is because administrative reports sometimes included facilities that are no longer in operation; or they give an overly optimistic picture of the quality and quantity of service supply. The study focused on producing complete, accurate data on a number of key variables: On the number of different hospital types (Primary, Secondary and Tertiary), and a number of key health personnel and facilities (Doctors, Nurses, Beds, Laboratories, Hours of consultations and General medicine) existing in each of the Local Government Areas.

Processes of Analysis

Descriptive statistics was largely employed (Buba, (2006). Tables were used to provide additional descriptions and explanations.

Condition of Health Care and Supporting Facilities

In all, a total of 504 Health Care Facilities were sampled, 300 in rural and 204 in urban areas. Table 1(a,b&c) shows that, around 30 % of Primary Health Care Facilities (PHCF) were classified as "dirty/very dirty", while only 10 % of Secondary Health Care Facilities (SHCF) and Private Health Care Facilities (Priv–HCF) were classified as such. Primary Health Care Facilities in rural Nasarawa State were cleaner than those in urban areas of Nasarawa State: 70 per

cent of the former but only 56 per cent of the latter were assessed to be "clean" or "very clean". The difference between the two areas was much smaller for other types of facilities. Substantial proportions of almost all types of facilities were in poor repair. About half of the buildings of Primary Health Care, Secondary Health Care and Priv–Health Care Facilities had a leaking roof. Again, Primary Health Care Facilities in rural areas were in better shape than those in urban areas: 44 % of the former but 56 % of the latter were observed to have leaking roofs. About half of Primary Health Care and Secondary Health Care buildings had broken doors/windows, while nearly 70 % of Priv–Health Care Facilities had this problem, perhaps because the majority of them were in urban areas, where facility maintenance appears to be poorer. About 40 % of the Secondary Health Care and Priv–Health Care Facilities had cracked floors and this was 50 % for Primary Health Care Facilities. Broken doors/windows were far more prevalent in Primary Health Care Facilities, a number of Secondary Health Care Facilities, and Priv–Health Care.

Table 1: Condition of HCF by Type of Facilities (in %)
(a) State–wide

Condition	PHCF (n = 288)	*SHCF* (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n =504)
Dirty/very dirty	29	10	–	10	**20**
Clean/very clean	70	87	100	88	**78**
Cleanliness unspecified	1	3	–	2	**2**
Total	**100**	**100**	**100**	**100**	**100**
Leaking roof	45	49	100	51	**47**
Broken doors/windows	46	50	100	69	**51**
Cracked floors	50	37	–	42	**45**
Working toilets for patients	**23**	**53**	**100**	**71**	**41**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(b) Rural areas of Nasarawa State

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Dirty/very dirty	29	4	–	10	**20**
Clean/very clean	70	96	–	83	**75**
Cleanliness unspecified	1	0	–	0	**1**
Total	**100**	**100**	**100**	**100**	**100**
Leaking roof	44	48	–	100	**45**
Broken doors/windows	43	22	–	100	**39**
Cracked floors	52	43	–	–	**49**
Working toilets for patients	**21**	**52**	**–**	**100**	**27**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(c) Urban areas of Nasarawa State

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Dirty/very dirty	33	13	0	10	**50**
Clean/very clean	56	83	100	87	**25**
Cleanliness unspecified	11	4	0	3	**25**
Total	**100**	**100**	**100**	**100**	**100**
Leaking roof	56	49	100	51	**51**
Broken doors/windows	78	64	100	74	**69**
Cracked floors	33	34	0	46	**39**
Working toilets for patients	**44**	**53**	**100**	**77**	**62**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

Facilities in urban areas were compared with rural areas. Cracked floors presented a more complex picture: their prevalence was slightly higher among Primary Health Care Facilities in rural areas (52 %) than in urban areas (33 %). Secondary Health Care Facilities were fairly similar, but Priv–Health Care Facilities in urban areas were in much poorer repair than in rural: 46 % had broken doors/windows; compared to only 17 % in rural areas and 74 % had broken doors/windows, compared to only 33 % in rural areas. The overall impression is that facilities are better maintained in rural areas than in urban areas. Having a working toilet for patients was predictably low (23 %) for Primary Health Care Facilities, rising to half of Secondary Health Care Facilities to three–quarter of Priv–Health Care Facilities. On this dimension, Modern Health Care Facilities in urban areas have a better record than rural areas: 44 % of Primary Health Care Facilities in urban areas as compared with 21 % in rural areas had working toilets. Secondary Health Care Facilities were fairly similar, but amongst the Priv–Health Care Facilities, 77 % had working toilets in urban areas as compared with 33 % in rural areas. This may be partly because of far higher availability of piped water in urban areas (Tables 1 – 2).

Most facilities were working in the previous three months at the time of the investigation. Primary Health Care Facilities perhaps, a little less than others of those which had not been working in the past three months, only a few Primary Health Care Facilities provided reasons. The reasons were all related to issues of health personnel – non–payment of salary by the local government or the facility's proprietor, strike organized by staff, departure of staff in–charge, either voluntarily or due to a dispute.

Condition of Health Care Facility Amenities in Nasarawa State

Three–quarters of Secondary and Private Health Care Facilities have "protected" sources of water, compared with only a quarter of Primary Health Care Facilities. Two–thirds of Primary Health Care Facilities rely on rivers/streams/open sources for their water supply (Table 2a,b&c).

Table 2: Source of Water Supply by Type of Facility (in %)

(a) State–wide

Condition	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Piped water	5	26	75	29	**15**
Borehole	8	34	25	33	**20**
Protected well	10	17	–	16	**14**
Unprotected well	8	9	–	9	**8**
Rain collection	2	1	–	–	**2**
River, stream, open source	62	9	–	6	**36**
Other	5	4	–	7	**6**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(b) In Rural Areas

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Piped water	2	17	–	0	**4**
Borehole	7	22	–	17	**11**
Protected well	9	26	–	33	**13**
Unprotected well	8	9		0	**8**
Rain collection	2	4	–	0	**3**
River, stream, open source	67	22	–	33	**59**
Other	5	0	–	17	**4**
Total	**100**	**100**	**–**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(c) In Urban Areas

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Piped water	50	39	50	33	**32**
Borehole	14	44	40	36	**34**
Protected well	36	17	10	13	**16**
Unprotected well	0	0	0	0	**0**
Rain collection	0	0	0	15	**15**
River, stream, open source	0	0	0	0	**0**
Other	0	0	0	3	**3**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

There is a very large gap between rural and urban areas in availability of "protected" water sources, with rural areas far less privileged than urban areas not only in terms of total availability of protected water, but also the sources thereof. Between 82–88 % of Health Care Facilities of all types had protected water sources in urban areas – in fact, the higher figure of 88 % pertains to the urban areas' Primary Health Care Facilities, as compared with only 18 % for rural Primary Health Care Facilities. For Secondary Health Care Facilities the figures were 65 % and 83 % for rural and urban areas respectively, and for private–Health Care Facilities they were 50 % and 82 %. Moreover, most of the protected water in urban areas came from piped water and boreholes, which are sources preferred to the covered wells which account for a substantial proportion of rural area's protected water supplies. The gap was even wider between categories of Health Care Facilities for working electricity connections while most Secondary and Private Health Care Facilities (70 % and 89 %, respectively) do have this, only 15 % of Primary Health Care Facilities do (Table 3 (a,b&c)). Once again, rural areas were far less well–served. Only 11 per cent of rural Primary Health Care Facilities have working electricity connections while 67 % of those in urban areas have them. For Secondary Health Care Facilities the figures were 43 % and 83 % for rural and urban areas respectively, and for Private–Health Care Facilities they were 33 % and 97 %. There was a real shortage of working laboratories (Table 3): up to the Secondary Health Care Facility level, almost no Health Care Facilities have working laboratories, and only 11 % of Private–Health Care Facilities do. So all treatment of malaria, for example, must be on purely symptomatic grounds. Urban areas seem to have the edge here: especially among the Private–Health Care Facilities, 25 % of those in urban areas had working laboratories, while only 2 % of those in rural areas had them.

Table 3: Type of Facility and Associated Amenities (in %)
(a) State–wide

Condition	PHCF (n = 288)	SHCF (n= 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Working electricity connection (%)	15	70	100	89	**45**
Working laboratory (%)	2	3	100	11	**4**
Access to vehicle in emergency (%)	27	36	100	49	**34**
Working telephone/radio (%)	2	3	100	4	**2**
% of facilities working in past 3 months	85	92	100	98	**90**
Average number of beds	2	2	140	8	–
Functional fridge/freezer	**3**	**34**	**100**	**67**	**24**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(b) In Rural Areas

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Working electricity connection (%)	11	43	–	33	**18**
Working laboratory (%)	2	4	–	50	**4**
Access to vehicle in emergency (%)	27	61	–	50	**34**
Working telephone/radio (%)	2	0	–	0	**1**
% of facilities working in past 3 months	87	91	–	100	**88**
Average number of beds	2	3	–	9	**2**
Functional fridge/freezer	**1**	**22**	**–**	**17**	**5**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(c) In Urban Areas

Condition	PHCF	SHCF	THCF	Priv–HCF	All
Working electricity connection (%)	67	83	100	97	**87**
Working laboratory (%)	0	2	100	5	**4**
Access to vehicle in emergency (%)	33	23	100	49	**34**
Working telephone/radio (%)	0	4	100	5	**4**
% of facilities working in past 3 months	67	94	100	97	**92**
Average number of beds	0	2	140	7	**2**
Functional fridge/freezer	**33**	**40**	**100**	**74**	**53**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

On the other hand, access to transport vehicle for emergencies is almost not available to more than three–quarter of Primary Health Care Facilities, but available to a half of Secondary Health Care Facilities and three–quarter of Private–Health Care Facilities. While there are great inter–area differences between Primary Health Care Facilities and Private–Health Care Facilities in access to vehicles for emergencies, a far higher percentage of Secondary Health Care Facilities in urban areas had such transport available than in rural (61 % and 23 %, respectively). Even more sharply than the data on the condition of the facilities, the data on amenities suggest that rural areas have more active maintenance of health facility infrastructure under difficult circumstances, while urban areas are far better served in terms of public infrastructure such as

water and electricity – presumably because they are the commercial centres of the State.

Communication with the outside world is limited to direct contact in both areas, as almost no facility has working radios or telephones (Table 3). Most (91–97%) of Secondary Health Care Facilities and Private–Health Care Facilities in both areas had been working in the previous three months. Among Primary Health Care Facilities, the percentage was lower, especially in urban areas, where only 67 % of facilities had been working in the previous three months as compared with 87 % in rural areas. There is an average of two beds per Primary Health Care Facilities, and eight per Private–Health Care Facilities. The areas differ little on this score. Two–thirds of Private–Health Care Facilities have functioning refrigerators/freezers (Table 3) compared with one–third of Secondary Health Care Facilities and few Primary Health Care Facilities. Consistent with the differences in the availability of functioning electricity connections, a far higher proportion of urban areas' facilities had functioning refrigerators than rural areas. A third of urban areas' Primary Health Care Facilities had these, as compared with only 1 % of those in rural areas. Among the Secondary Health Care Facilities the value was 40 % in urban areas and 22 % in rural areas, while among Private–Health Care Facilities the value was 74 % in urban areas and only 17 % in rural areas.

For storing vaccines (Table 4 (a,b&c)), 40–50 % of each type of facilities used cold boxes/vaccine carriers. For Primary Health Care Facilities and Secondary Health Care Facilities, this was the main method of storage. Nearly half of Private–Health Care Facilities (44 %) also used electric refrigeration and freezers for storing vaccines. Non–electric refrigerators were virtually non–existent. The proportions of Private–Health Care Facilities and Secondary Health Care Facilities reporting using refrigerators/freezers for storing vaccines is around 20 % lower than the proportion reporting having functional refrigerators/freezers (Table 3a – b). Also, over a third of Primary Health Care Facilities and Secondary Health Care Facilities said the question of storing vaccines was "not applicable" – hopefully by this they meant that they didn't store them for any length of time because they used cold boxes and dispensed the vaccines as soon as they received them. The differences between the various types of facilities were statistically significant at 1 % level. Very few of the rural facilities, of any type, used refrigeration/freezers for storing vaccines – they reported either using cold boxes/vaccine carriers, or that this question was "not applicable". By contrast in urban areas, refrigerators/freezers were used for storing vaccines by 22 % of Primary Health Care Facilities, 17 % of Secondary Health Care Facilities and 49 % of Private–Health Care Facilities.

Table 4: Medium for Vaccine Storage (in %)
(a) State–wide

Medium	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Electric fridge/freezer	2	13	100	44	**13**
Non–electric fr/fr	–	1	–	–	**–**
Cold box/vaccine carrier	48	46	–	38	**44**
Non–refrigerated storage	3	1	–	2	**2**
Not applicable	38	36	–	13	**33**
Unspecified	9	3	–	2	**6**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(b) In Rural Areas

Medium	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Electric fridge/freezer	0	4	–	17	**1**
Non–electric fr/fr	0	4	–	0	**1**
Cold box/vaccine carrier	50	57	–	67	**51**
Non–refrigerated storage	3	0	–	0	**3**
Not applicable	38	35	–	0	**36**
Unspecified	9	0	–	17	**8**
Total	**100**	**100**	**–**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(c) In Urban Areas

Medium	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Electric fridge/freezer	22	17	100	49	**31**
Non–electric fr/fr	–	–	–	–	**–**
Cold box/vaccine carrier	22	40	–	33	**34**
Non–refrigerated storage	0	2	–	3	**2**
Not applicable	44	36	–	15	**29**
Unspecified	11	4	–	0	**4**
Total	**100**	**100**	**–**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

For sterilizing equipment (Table 4), all types of facilities rely heavily (67–87 %) on boiling. 11 % of Primary Health Care Facilities use chemicals for sterilizing equipment.

Table 5: Method of Sterilizing Equipment (in %)

(a) State–wide

Method	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Autoclave	1	1	–	2	**1**
Steam	3	6	100	7	**5**
Boiling	74	67	–	87	**74**
Chemicals	11	3	–	2	**7**
Not applicable	7	17	–	2	**9**
Other	–	4	–	–	**1**
Unspecified	5	1	–	–	**–**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(b) In Rural Areas

Method	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Autoclave	1	0	0	0	**1**
Steam	3	4	0	33	**5**
Boiling	74	87	100	67	**10**
Chemicals	11	4	0	0	**6**
Not applicable	7	4	0	0	**–**
Other	–	–	–	–	**3**
Unspecified	4	0	0	0	**76**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

(c) In Urban Areas

Method	PHCF (n = 288)	SHCF (n = 15)	THCF (n = 2)	Priv–HCF (n = 199)	All (n = 504)
Autoclave	0	2	0	3	**2**
Steam	0	6	100	3	**5**
Boiling	78	57	0	90	**72**
Chemicals	0	2	0	3	**2**
Not applicable	11	23	0	3	**13**
Other	0	6	0	0	**3**
Unspecified	11	2	0	0	**3**
Total	**100**	**100**	**100**	**100**	**100**

PHCF (Primary Health Care Facilities); **SHCF** (Secondary Health Care Facilities); **THCF** (Tertiary Health Care Facilities); **Priv–HCF** (Private Health Care Facilities)

Although fairly similar percentages of facilities of different types reported "boiling" as the primary method of sterilization, the result for Private–Health Care Facilities were statistically significantly higher: at the 10 % level compared with Primary Health Care Facilities, and at the 5 % level compared with Secondary Health Care Facilities. 17 % of Secondary Health Care Facilities (and even 2 % of Private–Health Care Facilities) said this question was "not applicable", which is not reassuring. Interestingly, this response was concentrated in urban areas, where as much as 23 % of Secondary Health Care Facilities reported sterilizing equipment to be "not applicable" to their situation. The tertiary facility uses the more advanced technology of steam sterilization.

Availability of Other Facilities Nearby

Primary Health Care Facilities are considerably farther on the average from Local Government Area Headquarters and from the nearest referral centre than Secondary Health Care Facilities (SHCF) and Private–Health Care Facilities (Priv–HCF). Most facilities have other health facilities available within a 2 h walking radius. But compared with Secondary Health Care Facilities (SHCF) and Private–Health Care Facilities (Priv–HCF), Primary Health Care Facilities (PHCF) have half (or less) as many of these available on the average, largely because Secondary Health Care Facilities and Private–Health Care Facilities have a plethora of small private clinics available (8–10 on the average). In addition, the Private–Health Care Facilities have an average of 3 private secondary or tertiary facilities available within a 2 h walking radius.

Rural Primary Health Care Facilities are especially remote, with an average walking time of 9 h to reach the Local Government Area Headquarters – as compared to just over 0.5 h in urban areas. Similarly, they have an average walking time of nearly 4 h to the nearest referral centre, compared with only 1.6 h in urban areas. Urban areas also have a far higher density of private facilities available near public facilities of

CONCLUSION

Health care planning is a challenging field that depends on spatial data such as condition and characteristics of health centre demand, these are very important issues in local health planning. The present study has covered these issues by analyzing the conditions of Health Care and supporting facilities for rural and urban health centre in Nasarawa State. The results of this application are very useful for health planners because they evaluate the level of service provision at the selected areas. It is found that the existing health supply of rural areas of Nasarawa State and to some lesser extent urban areas of Nasarawa State was not matching the available demand. Decision making (policy makers) should make every effort to optimize the use of scarce resources by complete rehabilitation and provision of adequate supporting facilities. One way to do this is focusing interventions in areas identified by this study, where impact would be greatest. Therefore, health planners should give these areas the priority in health services and any extra resources that these centres would get in future should be directed towards improving the condition of the centre and the supply of adequate supporting facilities.

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