

Comparative study of the primary healthcare systems in China and Mali

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Abstract

Background: Community health centres (CHCs) are an important component of the health system in Mali and China. Despite patient support and commitment from the authorities, the management and the quality of care of these structures need to be improved. This research aimed to compare the management style of the relevant boards with users' satisfaction pertaining to CHC services in Mali and China.

Method: Between September 2009–January 2010, a study was conducted in eight CHCs in Mali and in 16 CHCs in China. A total of 480 householders, [60 (Mali) and 320 (China)]; and 24 management committee members (Mali) and 48 management committee members (China) were interviewed. An in-depth interview technique was used on members of the management committee, while a structured interview was carried out to collect data during face-to-face contact with householders in their residences. In residences in which there were two or more households, the first willing householder was interviewed. Questions about the level of satisfaction were coded from 1–5 and ranged from “excellent” to “very bad” respectively.

Results: The CHCs in China were managed by the government, whereas in Mali, they were overseen by the local population. The most satisfied people in both countries were those living in the poorest socioeconomic conditions, the elderly, and those who attended the healthcare meetings. Chinese households were more satisfied with the quality of the CHC services than those in Mali. The Chinese management boards proposed standardisation of rules and more funding, whereas those in Mali advocated that government provide more funding and human resources allocation.

Conclusion: A high level of satisfaction regarding the CHC services was observed. However, users reported on deficits in the quality of care, whereas management suggested a need for greater resource allocation.

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Introduction

Since the jointly hosted World Health Organization (WHO) and United Nations Children's Fund (UNICEF) conference on primary health care at Alma Ata in the USSR in 1978, both China and Mali have been engaged in implementation or reinforcement of their respective primary health systems. Primary health care is defined as “essential health care based on practical, scientifically sound and socially acceptable methods of technology, made universally accessible to individuals and families in the community. (This is achieved) through their full participation, and at a cost that the community and country can afford to maintain at every stage of development in the spirit of self-reliance and self-determination”.¹

The primary health system in rural China served as a reference for the conference. In urban China, implementation of a primary health system is relatively new. In fact, the first

urban CHC officially opened in Beijing in January 1999. It was set up in one wing of Zhong Guan Cun Hospital, and was named the Zhong Guan Cun Community Health Centre.²

The Mali public healthcare system has its roots in the 37th regional committee of WHO, when African ministers of health undertook an initiative to implement the Bamako Initiative in 1987. This commitment had a mobilising effect on external partners and in involving people in management of their health, while promoting international non-proprietary name (INN) drugs. In March 1989, in Bamako, the first CHC was established, based on the initiative of a group from the Bankoni Community Health Association. From then on, the number of CHCs increased steadily, from 11 in 1993 to 801 in 2006, and to more than 1 000 in 2009.³

Many studies have been conducted in both countries with regard to patients' satisfaction with the services provided by

the CHCs, but most of them did not include users' opinions about the CHC management, nor board management members' experiences of and opinions about current CHC policy.^{4,5} Consequently, the aim of this research was to identify an understanding of CHC policy and users' opinions on CHCs in Mali and China.

Background

The objectives of this study were to:

- Compare the management and experience of the structures running CHCs in both countries.
- Compare users' opinions and suggestions on the management system and the services provided in the CHCs of both countries.
- Point out the strengths and weakness of the two systems.
- Make some suggestions concerning what both countries might learn from each other.

Method

The study took place in Mali from September-October 2009, and in China in January 2010. In Mali, the study was conducted in eight CHCs in three districts, Kolokani, Fana and Kolondièba, and in the capital, Bamako. Three of the CHCs were in rural areas, and five, in urban areas. In China, the study was conducted in Chengdu City and Deyang City, Sichuan Province. A total of 10 CHCs from urban areas and six from rural areas were involved.

We interviewed users (householders) and the board managers of the CHCs. In Mali, we interviewed 160 householders and 24 management committee members, while in China we interviewed 320 householders and 48 management board members. The interviewees were at least 18 years old, had visited the CHC and gave their consent to participate.

The questionnaire for the management committee members recorded the identity and function of the person interviewed, the formation process, membership and functioning of the management committee, human resource management, services provided by the health centre, the relationship of the health centre with the local authority, and the management style of the management committee members of the health centre. The questionnaire for the users concerned their identity, their opinion on the management style of the management committee, their involvement in the different activities, and the user's opinion about the services provided (EUROPEP questionnaire).⁶ We used an in-depth interview technique for members of the management committees and a structured interview to collect data in face-to-face contact with the householders in their residences. In residences in which there were two or more households, the first willing householder was interviewed. The questions about the level of satisfaction were coded 1 to 5, from excellent to very bad, respectively.

The Statistical Package for the Social Sciences (SPSS) version 18.0 was used to analyse the data.⁷ As the data on the householders' satisfaction were not normally distributed, we used chi-square, the Kruskal-Wallis test and the Mann-Whitney test to carry out statistical tests. The following results were obtained.

Results

This research found that the establishment of CHCs in Mali was initiated in all cases by the traditional authority figures and community health associations, whereas in China, the government initiated the establishment of the health centres in 81.25% of cases. The most frequent problem faced by the health centre's operation was financial: 100% in Mali, while it was 97.8% in China.

Table I shows that there are two models of membership of the health centres in both countries. In China, membership could be obtained as a household (75%) and individually (25%), whereas in Mali, people can become members as a family (75%) or as a household (25%).

In Mali, people became a member of the management committee by a vote in 88.0% of cases, whereas in China nomination is the most frequent way to achieve membership of the management board. The meetings of the health centres' leaders were generally held monthly: 100% in Mali, and 56.2% in China.

Table I: Health centres' membership and management committee operation

Variable	Mali		China	
	Frequency	%	Frequency	%
Adherence mode				
Per family	6	75.0	0	-
Per household	2	25.0	12	75.0
Per person	0	0.0	4	25.0
Management committee renewal periodicity				
3 years	6	75.0	-	-
5 years	2	25.0	-	-
Frequency of general meetings				
6 months	1	12.5	-	-
1 year	7	62.5	-	-
Mode of election of management committee members				
Vote of the health association members	7	87.5	0	-
Nomination	1	12.5	9	56.2
Other (election by the leaders of the owner hospital)	0	-	7	43.5

In China, the most represented category of worker was physicians, with a mean of 27 per health centre, whereas there was less than one physician per health centre in Mali. The physicians' salaries varied from US\$45 to US\$376 in China, and from US\$230 to US\$518 in Mali.

The services provided by all the CHCs in both China and Mali included medical consultation, vaccination, antenatal consultation, postnatal consultation, health promotion, pharmacy provision and family planning. Mali did not offer surgery among its services, with medical imaging comprising 12.5% of cases; and laboratory tests, 75% of cases. In China, less frequently provided services were surgery (62.50%) and obstetrics (75%). Financial (50% of cases) and geographical (37.5% of case) factors prevented the frequent use of CHCs by the patients in Mali. In China, the reasons given for this were socio-political (31.2% of cases) and geographic (337.5% of cases).

All the CHCs in both countries had an annual development plan. In China, in 64.6% of cases, management board members affirmed having achieved 100% of their yearly management plan, whereas in Mali, 54.2% of the management board members affirmed having achieved 50% of their plan. Financial drawbacks and a lack of human resources were cited as the main drawbacks regarding implementation of their plans. The figures for this were 87.5% and 20.8% respectively in Mali, and 56.7% and 72.9% respectively in China.

In Mali, in 75% of cases, the president and treasurer were in control of monetary withdrawals, whereas in China, in 50% of cases, the accountant assumed this responsibility. In Mali, in 50% of cases, the president or the administrative secretary was in charge of purchasing, whereas in China, in all cases, the government or the CHC's owner hospital was responsible for purchasing. In 50% of cases in Mali, internal financial control could be performed any time. In China, monthly control occurred most frequently (50%).

In both countries, there were more women householders than men in our sample: 56.9% in China and 56.3% in Mali (see Table II). In Mali, the most represented age range was 30-40 years old, with a rate of 27.5%, whereas in China, the most represented range was 60 years old and older, with a rate of 29.4%. Housewives featured more in Mali (41.9%), whereas farmers did so in China (27.5%). In Mali, the most common level of education was primary education level (42.5%), whereas in China it was secondary level (47.5%).

Most of those interviewed had lived in the CHC area for more than three years in both countries (85% in Mali and 79.4% in China). In Mali, 55.6% of the people thought that the community owned the CHC, whereas in China most people cited the government as the owner of the CHC (45%).

People in both countries frequently attended the information meeting (23.8% in Mali and 4.7% in China). In Mali, 62.5% of people declared having never attended any meeting regarding the management of the CHC, whereas in China this figure was 93.8%.

Table II: Socio-demographic characteristics of the householders interviewed

Variable	Mali		China	
	Frequency	%	Frequency	%
Sex				
Male	70	43.8	138	43.1
Female	90	56.3	182	56.9
Age				
≤ 20 years	13	8.1	11	3.4
20-30 years	36	22.5	35	10.9
30-40 years	44	27.5	52	16.3
40-50 years	33	20.6	61	19.1
50-60 years	22	13.8	67	20.9
60 years and older	12	7.5	94	29.4
Profession				
Salaried	28	17.5	48	15.0
Housewife	67	41.9	30	9.4
Working class	28	17.5	50	15.6
Farmer	19	11.9	90	27.5
Other (retired, student and unemployed)	18	11.3	102	31.9
Education level				
Illiterate	54	33.8	31	9.7
Primary	68	42.5	100	31.3
Secondary	34	21.3	152	47.5
University and higher	4	2.5	37	11.6

Table III shows that householders were more satisfied with the doctor-patient relationship in China (74.4% described it as "good" or "excellent"), whereas in Mali, the householders were more satisfied with the medical care (80.06%). Householders were less satisfied with the accessibility of care in both countries. Fifty-six per cent in Mali, and 48.3% in China described it as "good" or "excellent".

From the statistical analysis (see Table IV), it was found that there was statistical correlation between the gender of the householder and his/her level of satisfaction with

Table III: Householders' opinions about the categories of services provided by the health centres in Mali and China (in percentages)

Variable	Country	Excellent	Good	Fair	Bad	Very bad
Doctor-patient relationship	Mali	10.3	66.1	15.6	6.9	0.4
	China	24.2	50.1	16.4	4.9	0.1
Medical care	Mali	14.2	66.3	15.4	3.4	0.0
	China	15.1	52.9	18.3	1.5	0.1
Information and support	Mali	4.7	61.2	14.4	11.1	0.0
	China	18.9	49.8	12.5	4.4	0.0
Organisation of care	Mali	7.3	50.0	13.5	3.8	0.0
	China	19.2	52.2	19.7	2.8	0.0
Accessibility	Mali	21.8	34.3	10.0	4.8	0.6
	China	15.0	33.2	16.2	2.2	0.2

Table IV: Comparison of householders' satisfaction according to socio-economic and demographic factors, using a univariate analysis (Kruskal-Wallis test)

Dependent variables	Independent variables									
	Sex (df = 1)		Satisfaction with CHC's management (df = 2)		Residence duration (df = 2)		Profession (df = 4)		Education level (df = 3)	
	X ²	P-value	X ²	P-value	X ²	P-value	X ²	P-value	X ²	P-value
Doctor-patient relationship	0.27	0.60	41.01	0.00	1.12	0.56	4.60	0.33	1.08	78
Medical care	1.61	0.20	17.36	0.00	6.65	0.03	9.98	0.04	8.44	0.03
Information and support	4.45	0.03	33.05	0.00	7.68	0.02	2.93	0.56	0.13	0.98
Organisation of care	4.45	0.03	33.05	0.00	7.68	0.02	2.93	0.56	0.13	0.98
Accessibility	0.00	0.94	11.60	0.00	0.33	0.84	4.78	0.31	10.59	0.01

information and support (p-value = 0.035) and organisation of care (p-value = 0.035). There was a statistical correlation between the householders' opinions about the current management of the CHC, and their level of satisfaction with all the health care components. There was also a statistical correlation between the duration that the householders had been living in the CHC area, and their level of satisfaction with the medical care (p-value = 0.036), information and support (p-value = 0.021) and the organisation of care (p-value = 0.021).

There was statistical correlation between the profession of the householder and his/her level of satisfaction with the medical care (p-value = 0.041). There was also a statistical correlation between the education level of the householder and his/her level of satisfaction with the medical care (p-value = 0.038), and with accessibility (p-value = 0.014).

Table V: Comparison of householders' satisfaction with the different components of the quality of health care in Mali and China, using a univariate analysis (Mann-Whitney test)

Dependent variables	Independent variable (country)		
	Mean rank		P-value
	China	Mali	
Doctor-patient relationship	221.87	276.49	0.000
Medical care	213.61	294.27	0.000
Information and support	225.55	270.39	0.001
Organisation of care	225.55	270.39	0.001
Accessibility	242.51	236.48	0.651

A score between 1-5 ("excellent", "good", "fair", "bad" and "very bad" respectively) was recorded regarding the level of satisfaction. In other words, the higher the mean, the greater the dissatisfaction felt. Consequently, in Mali, with the exception of accessibility, householders were more dissatisfied than those in China with regard to all health care components.

Discussion

The mean duration of being member of the management board was 5.3 years in Mali, whereas it was 7.9 years in China. The mean population per health centre was 26 579 in

Mali and 625 991 in China. Most of the management board members had a primary school education in Mali, whereas in China most of them had university education or higher. This may be due to the fact that members of the management boards in Mali were elected by the CHC members (the population), whereas in China they were nominated by the local authority (the government), or by the director of the owner hospital.

In Mali, in general, the CHCs were established by the community health association, whereas in China, the government initiated the establishment. These results are consistent with the rules of CHC governance in both countries. In fact, the local populations were empowered during establishment of the management process of CHCs in Mali. This is in contrast to China, where the government led these tasks. The results from Mali are consistent with the principles of the Bamako Initiative and the government's five-year health programme II (PRODESS II), in terms of which the local population is given access to more transparency with regard to decisions that affect their health.^{8,9} After the health centre's opening, the most frequently faced problems were financial, administrative and geographic.

In Mali, people became members of the management committee through a vote in 87.5% of cases, whereas in China nomination was the most frequent way in which to become a member of the management board. This is consistent with the standardised status of CHCs, issued by the government in collaboration with the federation of community health associations (FENASCOM). In China, there was no fixed mandate for management board members, and no general assembly was established for health centre members discuss the health centre management process. This result is consistent with the governance rules for CHCs in China, where the management board members are appointed. This means that no fixed-term office duration applied to the Chinese board members before their substitution was appointed.¹⁰

The CHCs in Mali consisted of a general assembly, the board of directors, the management committee, and the supervision committee. There were no differences in the type of management structure, but the number of members

varied from one CHC to another. For example, the number of management committee members varied from five to twelve. In China, the management apparatus ranged in type and number of members from one CHC to another. The usual hierarchy included one president, two or three vice-presidents (for some sections), and an accountant.

There was a mean of 27 physicians per CHC in China, whereas in Mali, there was less than one per CHC. The physicians' salaries varied from US\$45 to US\$376 in China, and between US\$270 and US\$518 in Mali. The mean number of physicians per CHC was higher than the mean number of nurses per CHC in China. This result is consistent with the doctor-nurse ratio in China, which was equal to 2.5:1 at national level, about 1.2:1 in CHCs and 1.3:1 at health stations. In 2008, the number of doctors per 100 000 people was 15.4.¹¹ The low number of senior qualified workers is consistent with national data in Mali. In fact, in 2007, Mali had a ratio of 1 doctor:10 389 inhabitants (the World Health Organization ratio is 1 doctor: 10 000 inhabitants), a ratio of 1 nurse:3 365 inhabitants, and a ratio of 1 midwife: 21 615 inhabitants. In 2007, the 801 CHCs in the country were serviced by 103 doctors, 46 midwives and 734 nurses only.¹²

In China, some urban CHCs do not provide an obstetric service as this is usually catered for by specialised centres, referred to as children and women health care centres. In Mali, some rural CHCs do not have laboratories because of a lack of funding. No surgery service was offered in any CHC in Mali, which is consistent with the intention of the Bamako Initiative, which defines the different components of primary health care in its Minimum Package of Activities.⁸

In Mali, the management board members affirmed that the commune frequently offered administrative help, whereas in China, the most frequent help given was material in nature. These results from Mali are not consistent with the spirit of decentralisation. In fact, according to the Mutual Assistance Convention (CAM) signed between the Ministry of Health and the local authorities, the communes should allocate seven per cent of their local development taxes to the health sector by paying the salaries of some workers, helping the community health associations through construction and by purchasing equipment, and by supporting the health centre with mass campaigns.^{13,14}

In Mali, the main problems cited were embezzlement, and loss of medicine or money. In China, management problems revolved around coordination, lack of autonomy and weak community commitment. The management board members in both countries planned, or suggested actions, to solve these problems. In Mali, the main strategy concerned enlargement of CHC capabilities through the creation of new services, such as laboratories, ultrasound and X-rays, recruitment of more skilled staff, bigger government subsidies and local authorities, and the improvement

of the management committee members' management capabilities. In China, suggestions included recruitment or training of health staff, standardisation of the management rules in all CHCs, more involvement of the local population in the CHC's issues, increased equipment and funding from government, additional management autonomy, and improvement of the health staff's medical attitudes and ethics. Therefore, in both countries, central government and the local authorities were expected to reinforce the management skills of the CHC leaders, and increase CHC funding to improve the quality and quantity of health staff, to purchase more equipment, and to enlarge the CHC's capacities.

An analysis of the data on householders' characteristics indicated that in both countries, there was a higher representation of women, which according to our research, can be explained by the fact that in both countries, they remain at home during the day more than men. Similar findings were reported by Margolis et al¹⁵ in relation to women in the United Arab Emirates, by Patro et al¹⁶ in New Delhi, and by Kanta¹⁷ in Segue (Mali).

In both countries, the most regularly attended meeting was the information meeting. In Mali, 62.5% of the respondents reported never to have attended any CHC management meeting, whereas in China, 93.8% said that they did not attend any meeting. The results in Mali are not consistent with the CHCs' rules, according to which there should be a general assembly of all CHC members at least once a year. During this meeting, the management committee is expected to present the financial results for the year, and important administrative and budgetary decisions are made.¹⁸ Therefore, more effort needs to be made to improve the involvement of people in the management and decision-making processes of CHCs in Mali.

In this study, householders' satisfaction was affected by gender, age, education level, profession, duration of time spent in the region, and satisfaction with the current CHC management. Less satisfaction was expressed by people experiencing high socio-economic conditions, considerable time spent in the CHC area, and the lowest levels of approval of the current CHC management. These findings are in line with the results of other studies.^{4,19,20}

Donahue et al²¹ and Fan et al²² reported that patients who had been consulting the same physician for a long time were more satisfied than those visiting the same physician for the first or second time. This situation might impact negatively on the frequency of use of the CHCs because patients who initially started to visit the CHCs might, over time, do so less often, and eventually stop going altogether.

People who had participated in CHC meetings were more satisfied than those who had not attended any of the meetings. This may be due to the shortage of exchanges between the CHCs' management boards and the local

population about the CHC. Consequently, the management board in both countries should reinforce dialogue with residents in the CHC area in order to improve their level of satisfaction with the services provided. This, in turn, might increase their visits to the CHC.

Chinese householders, rather than those in Mali, were more satisfied with all the healthcare components, with the exception of accessibility (p -value < 0.0001). This situation can possibly be explained by the poor quality of care provided by the Mali CHCs, and the fact that the Mali householders who were interviewed could have been more demanding about healthcare quality than those in China. Further research, comparing people of the same age group, might provide more insight.

In summary, in Mali, it might be beneficial to allocate more health staff, financed by the government, to CHCs; to increase the type of services provided by CHCs; and to reinforce government involvement in CHC management. In turn, China could learn from Mali that it would be valuable to reinforce the involvement of the local population in the management of the CHCs, and to standardise the CHC management rules.

Conclusion

A comparison of the health systems of two countries with considerable socio-economic, politic and demographic differences is not an easy task. This research revealed that the primary healthcare system in China was managed by the government, and that the composition of the management board and their management styles varied from one CHC to another. In Mali, the CHCs were determined by the local population, and the management committee composition and management style, in all the CHCs visited, was similar. From our study, it appears that people enjoying the best socio-economic conditions were less satisfied with their CHCs than those in poorer socio-economic circumstances. In both countries, the more frequently people visited the CHCs, the less they were satisfied with the services provided. The Chinese householders were more satisfied than those in Mali with regard to the doctor-patient relationship, medical care, information and support, and the organisation of care. Householders in Mali expressed more satisfaction than those in China with accessibility to the CHC.

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Conflict of interest

None.

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