Effects of a refugee-assistance programme on host population in Guinea as measured by obstetric interventions

Wim Van Damme, Vincent De Brouwere, Marleen Boelaert, Wim Van Lerberghe

Summary

Background Since 1990, 500 000 people have fled from Liberia and Sierra Leone to Guinea, west Africa, where the government allowed them to settle freely, and provided medical assistance. We assessed whether the host population gained better access to hospital care during 1988–96.

Methods In Guéckédou prefecture, we used data on major obstetric interventions performed in the district hospital between January, 1988, and August, 1996, and estimated the expected number of births to calculate the rate of major obstetric interventions for the host population. We calculated rates for 1988–90, 1991–93, and 1994–96 for three rural areas with different numbers of refugees.

Findings Rates of major obstetric interventions for the host population increased from 0·03% (95% CI 0–0·09) to 1·06% (0·74–1·38) in the area with high numbers of refugees, from 0·34% (0·22–0·45) to 0·92% (0·74–1·11) in the area with medium numbers, and from 0·07% (0–0·17) to 0·27% (0·08–0·46) in the area with low numbers. The rate ratio over time was 4·35 (2·64–7·15), 1·70 (1·40–2·07), and 1·94 (0·97–3·87) for these areas, respectively. The rates of major obstetric interventions increased significantly more in the area with high numbers of refugees than in the other two areas.

Interpretation In areas with high numbers of refugees, the refugee-assistance programme improved the health system and transport infrastructure. The presence of refugees also led to economic changes and a "refugee-induced demand". The non-directive refugee policy in Guinea made such changes possible and may be a cost-effective alternative to camps.

Lancet 1998; **351:** 1609–13

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Introduction

When refugees arrive in a country in large numbers, they are generally moved into camps where they can get relief assistance.[1,2] Several studies have shown that such refugee assistance may have a negative impact on the quality of health services offered to the host population because of the diverting of human and financial resources towards the refugee health services.[3–5] Encampment, however, is not always inevitable, nor the only appropriate solution.

Since 1990, 500 000 refugees from Liberia and Sierra Leone have moved to the Forest Region, Guinea, west Africa. The government of Guinea allowed the refugees to settle wherever they thought they had the best chance of survival. The refugees settled in the border areas, where they generally outnumbered the host population.[6] Most moved into existing villages and towns in which the host populations were similar in culture and ethnic origin. Others created new rural settlements. A small proportion settled in refugee camps created by the United Nations High Commissioner of Refugees (UNHCR).

From early 1990 onwards, the Guinean government, its Ministry of Health, UNHCR, and non-governmental organisations launched a programme to assist the refugees. The programme provided basic food and improved water and sanitation. The policy was to give the refugees free access to the Guinean health services, which were reinforced and extended where necessary. UNHCR covered the cost of refugees' health care on a fee-for-service basis, whereas native Guineans had to pay for most services themselves.

The refugee policy in Guinea has been in sharp contrast to the more common refugee camps with parallel refugee health services.[7] With the resources of the refugee-assistance programme, the implementation of the coverage plan for health centres was accelerated, and many new health posts were created where refugees settled.

We investigated whether the host population benefited from the refugee-assistance programmes by assessment of rates of major obstetric interventions to monitor useful and relevant use of a referral hospital.

Methods

Study areas

Guéckédou is a rural prefecture (county) in the Forest Region of Guinea of 4157 km^2 that had a population of about 200 000 inhabitants in 1990. The rural population belongs mainly to the Kissi ethnic group, and is ethnically, socially, and economically homogeneous. In 1991–92, more than 200 000 refugees from Sierra Leone and Liberia arrived in Guéckédou. Most refugees settled in the southern part of the prefecture along the border with Sierra Leone and Liberia, where assistance was organised (figures 1 and 2).

We used population data for 1994 from the District Medical Officer for native Guineans. The birth rate was estimated at 4·5% per year, and natural population-growth rate at 2% per year in rural areas. Data showed no changes in these rates during the study period. We estimated data for the refugees because official refugee data were not accurate.

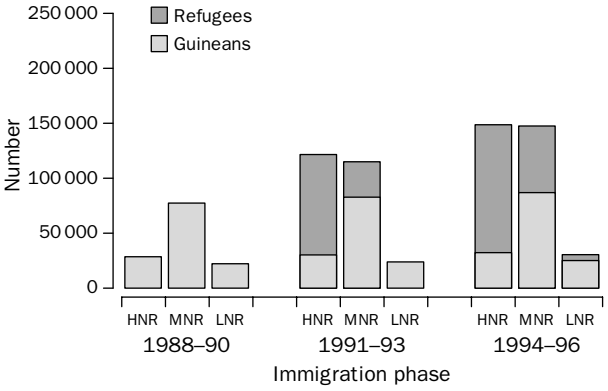

Figure 1: **Refugees and Guineans in study areas**
HNR=high numbers refugees; MNR=medium numbers refugees; LNR=low numbers refugees.

We separated rural Guéckédou into three areas by number of refugees (figure 2). High numbers were in the south-west far from Guéckédou city; the area had about 32 566 inhabitants in 1995, and the number of refugees eventually reached 3·53 for every one Guinean. There were low numbers of refugees in the north-west, at a similar distance from Guéckédou city, with 25 176 inhabitants in 1995; refugees numbered 0·20 for every one Guinean. The area with medium numbers of refugees was closer to Guéckédou city, and had 87 095 inhabitants in 1995 and 0·69 refugees for every one Guinean. We excluded the city of Guéckédou and its subprefecture from the study.

More than 90% of pregnant women attend antenatal clinics in the Forest Region of Guinea.[8,9] Despite this high coverage, few women from rural areas deliver in the hospital. They present to the maternity ward only when an obstetric complication is already present. Relatives or traditional birth attendants attend most deliveries. If they perceive a problem during the delivery, they may or may not decide to seek medical care. Generally, they seek care first at a peripheral first-line health facility. Referral to the district hospital can be a lengthy collective decision. Once referral is accepted money must be collected for transport, hospital care, and living expenses in the city, and transport must be found. Often the whole process takes too much time, and the woman dies during transfer, or is very ill on arrival.[10]

Intervention

In Guéckédou, many changes were made to the general environment and the health system. Economic liberalisation and improved road infrastructure increased transport and trade. The district hospital in Guéckédou was repaired, staff were trained, and supplies and equipment improved. The number of first-line health services, including health centres and health posts in rural Guéckédou increased from three in 1990, to 28 in 1995, mostly in the areas with high or medium numbers of refugees. In the heart of the region with high numbers of refugees, a 30-bed rural hospital with a full-time doctor was opened in early 1992. Surgical cases, including caesarean sections, were referred to the district hospital. To facilitate such referrals, an ambulance was stationed at the rural hospital (figure 2).

Assessment of intervention

We took the rate of major obstetric interventions to be the number of deliveries by caesarean section, craniotomy, and intervention on a ruptured uterus (breach repair or hysterectomy) divided by the expected number of deliveries for a study area in a defined period of time.[11,12] We chose this rate as an indicator for use of health services for several reasons. First, the rate of major obstetric interventions is an indicator for coverage of obstetric need[13–15] with a high specificity, at least in sub-Saharan Africa, where most of such procedures are carried out for life-threatening maternal disorders,[16] which applied to 93% of major obstetric interventions in Guéckédou.[17] Second, the rate is sensitive to show improved access to health services.[18] Third, rates of major

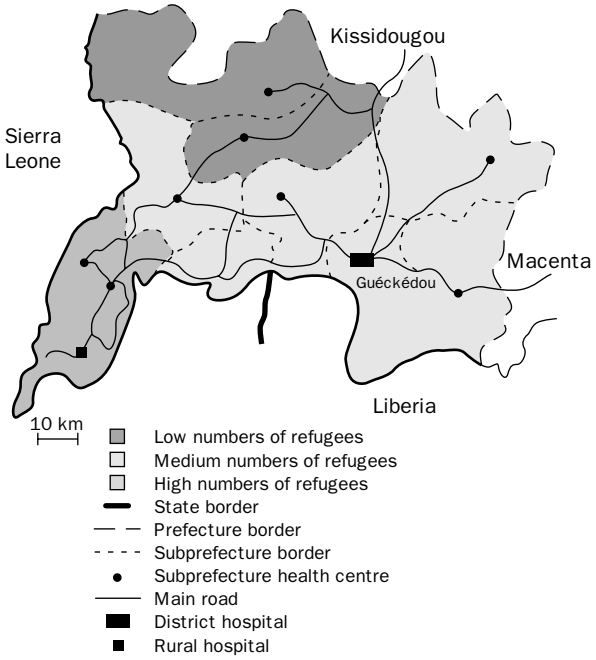

Figure 2: **Map of study areas in Guéckédou prefecture**

obstetric interventions can be assessed reliably, since the number of interventions and the expected number of deliveries can generally be estimated accurately.[15] Fourth, in areas with good access to health care, rates of major obstetric interventions for life-threatening maternal disorders were around 1%:1·1% in urban Kasongo, Congo-Kinshasa;[11] 0·98% in the district served by Albert Schweitzer hospital in Haiti (personal communication H Desenoncourt, 1997); 0·93% in urban Morocco;[13] and 1·14% in Guinea-Bissau.[19] Fifth, the rate of major obstetric interventions reflects the functioning of a district-health system. Peripheral clinics, referral systems, and a referral hospital have to collaborate smoothly for a timely obstetric intervention. Lastly, since in Guéckédou such interventions can be performed only in the district hospital, data could be collected from one source, and a differential bias in registration between the three areas seems unlikely.

We collected data retrospectively from patients' records and hospital registers. Each woman who had a major obstetric intervention between Jan 1, 1988, and Aug 20, 1996, was included. We noted the geographical origin of patients from the hospital register and patients' records.

We divided the study into three periods that corresponded to three phases in refugee migration and refugee assistance in Guéckédou. The first, from Jan 1, 1988, to Dec 31, 1990, was before the arrival of refugees and before the assistance programme started. By the end of 1990, only 16 000 refugees had settled in Guéckédou, and no new health facilities had been created. The second period, from Jan 1, 1991, to Dec 31, 1993, is the phase during which most refugees arrived and the assistance programme was set up, and many new health facilities were opened. The third period, from Jan 1, 1994 to Aug 20, 1996, was a phase of stabilisation of refugees, with little migration, and consolidation of assistance. Few refugees arrived during the last period and few new health posts were created.

Determinant	Factors*	Rate ratios (95% CI)	p
Area	HNR and LNR	. .	
	MNR	4·15 (2·46–7·01)	<0·001
Time period	Continuous variable	1·82 (1·52–2·18)	<0·001
Interaction effect	(MNR and LNR)* time period	. .	
	HNR* time period	1·67 (1·35–2·06)	<0·001

HNR=high numbers refugees; MNR=medium numbers refugees; LNR=low numbers refugees. *Poisson regression.

Independent determinants of rates of major obstetric interventions in rural Guéckédou, 1988–96

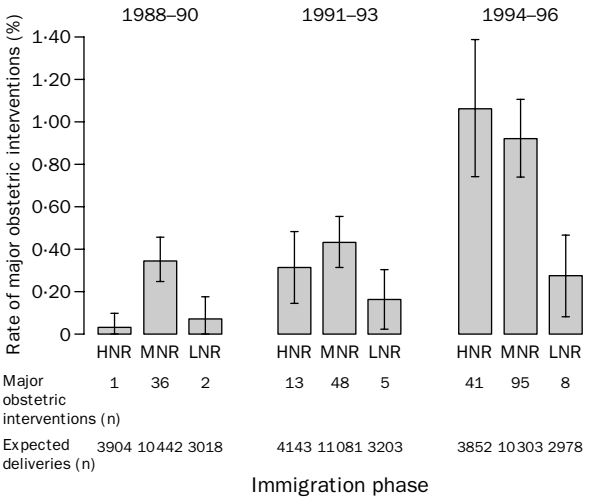

Figure 3: **Rates (95% CI) of major obstetric interventions by study area and period**

HNR=high numbers refugees; MNR=medium numbers refugees; LNR=low numbers refugees.

Statistical analyses

Since major obstetric interventions can be assumed to be distributed as a Poisson event, we calculated Poisson confidence intervals (95%) for rates, and used Poisson regression analysis to estimate the trend over time in each area. We estimated rate ratios for the three areas, comparing each time-period with the previous one. To test the hypothesis of the equality over time in the different areas, we included the main effects of time and area in the model, together with an interaction term (time* area).

Results

During the study period, 981 major obstetric interventions were performed in Guéckédou hospital. Interventions on 464 urban residents, 249 refugees, and 19 women from outside the prefecture were excluded from analysis. For 1994–96, rates of major obstetric interventions for refugees in rural areas of Guéckédou were estimated at 0·83%. These were not further analysed.

We analysed 249 major obstetric interventions carried out on Guinean women living in rural Guéckédou (figure 3). During 1988–90, before the arrival of the refugees, intervention rates were very low in all rural areas. After the refugees arrived, the rates of major obstetric interventions rose from 0·03% (95% CI 0–0·09) to 1·06% (0·74–1·38) in the area with high numbers of refugees, from 0·34% (0·22–0·45) to 0·92% (0·74–1·11) in the area with medium numbers, and from 0·07% (0–0·17) to 0·27% (0·08–0·46) in the area with low numbers. The estimated rate ratios over time were 4·35 (2·64–7·15) for the area with high numbers of refugees, 1·94 (0·97–3·87) for the area with low numbers, and 1·70 (1·40–2·07) for the area with medium numbers of refugees.

In a Poisson regression analysis (table), a model that included time and the area with medium numbers of refugees as main effects and a term for the interaction between time and area (high numbers *vs* medium and low numbers) provided the best fit (goodness of fit χ^2=7·22 for five degrees of freedom). The area with medium numbers had an independent effect on intervention rate, and there was an overall time trend. Most importantly, there was a significant interaction with time for areas with low and medium numbers compared with the area with high numbers, in which the effect on the rate of major obstetric interventions over time was significantly greater than the base rate (rate ratio 1·67 [1·35–2·06]). Although the area with medium numbers of refugees had initially higher rates of major obstetric interventions than the areas with low and high numbers, the presence of refugees and the refugee-assistance programme were associated with a significantly greater increase in intervention rates in the area with high numbers of refugees compared with the two areas with lower numbers of refugees.

Discussion

Our data show that the use of referral health services by the rural population of Guéckédou increased substantially over time. The only obvious difference between the areas with high and low numbers of refugees was the impact of the refugees and the refugee assistance programme.

It seems unlikely that bias could explain the differences we found. We tried to avoid misclassification of refugees as Guineans, although some Guineans may have registered falsely as refugees to obtain free medical care. Such misclassification, if it occurred, was, however, more likely in the area with many refugees than in areas with lower numbers of refugees. False refugees would thus lower the observed increase in intervention rates for Guineans in the area with many refugees.

During the study period, independent of the refugees and the refugee-assistance programme, important changes took place in the Guéckédou health system and in the general environment. These changes decreased certain obstacles to timely obstetric care. The Guinean Ministry of Health and the German Development Cooperation have improved the quality of care and the financial accessibililty at the hospital of Guéckédou, and have developed a network of first-line health services in the prefecture. During the same period, economic liberalisation resulted in more access to money and higher availability of transport. These changes could have improved the access to the hospital, and may explain why the rate of major obstetric interventions increased in all study areas, including the area with low numbers of refugees in which the impact of the refugee-assistance programme was weak.

The presence of many refugees in certain areas of Guéckédou has, however, led to additional social and economic changes. First, economic changes have been more important in the refugee-affected areas. The presence of and assistance to refugees has transformed the economy in remote rural areas. The presence of freely settled refugees meant cheap labour and increased exploitation of agricultural resources. Relief food was sometimes resold, which substantially increased trade and circulation of money in the area. Some Guineans registered as refugees and obtained free food, and, therefore, economic assets. Agencies assisting the refugees employed hundreds of staff, which introduced more money into the local economy. These changes may have enabled better access to cash for the Guinean rural population of the refugee-affected areas. Patients commonly mention lack of access to money as the main constraint when seeking emergency medical care.

Second, transport infrastructure was substantially improved. Roads and bridges were repaired, mainly to allow food aid to be transported to the refugee settlements. Consequently, many more cars arrived in the area. The ambulance permanently stationed at the rural hospital in the area with many refugees undoubtedly facilitated referral to the district hospital in Guéckédou

and decreased the need for money. The ambulance was free of charge for refugees and Guineans. Since the ambulance started operating in 1992, it transported most of the obstetric emergencies to the district hospital. Efforts to improve the road infrastructure were also made in the area with low numbers of refugees, but much less was achieved than in the area with high numbers.

Third, there was probably a "refugee-induced demand" for health care. Before the war, health services in Liberia and Sierra Leone were better and more advanced than in Guinea, and the population used them more often. When confronted with a serious disorder, therefore, refugees living in close contact with the Guineans may have encouraged them to use the health services.

Lastly, more health services were developed in the areas into which refugees moved. When the first refugees arrived, serious efforts to upgrade first-line and second-line health services, were underway in Guinea, based on cost-recovery schemes.[20] Between 1988 and 1995, a health centre was opened in most sub-prefectures of Guinea. In the refugee-affected areas this process was faster and more widespread. Full coverage with health centres was already achieved in 1992, and many additional health posts were created.

Rates of major obstetric interventions in the area with high numbers of refugees were still low in 1991–93, and the changes took several years to become effective. This delay probably shows that there is an important time lag between the introduction of improvements in the health system, and increased use by people living in remote rural villages.

The greater increase in rates of major obstetric interventions in the area with many refugees than in the other two areas is probably because of the more intensive refugee assistance programme and the presence of refugees. We could not identify fully, however, what part each of these factors played, nor whether we identified all important factors. The combination of factors probably contributed to the increased use of referral health services by the host population. The changes that were introduced, however, decreased only partly the obstacles to timely obstetric care. Rural people still face important financial, logistic, and cultural barriers to such care. Efforts are being made in Guéckédou prefecture to set up small-scale health-insurance schemes to overcome these barriers.

None of the changes made in the refugee-affected areas was specific for obstetric interventions. All health services were general and the ambulance transported any patient referred to the hospital. Therefore, access probably improved for all disorders, not only for obstetric care.

The approach to refugees in Guinea made this positive effect on the host population possible. Refugee assistance followed the refugees to where they settled and supported the refugees' own coping mechanisms. Several factors were favourable to such a non-directive approach to refugee settlement and assistance. The refugees arrived gradually, in several waves, and were spread over a large area. The administrative and health authorities were not therefore, overwhelmed by the influx. Moreover, many refugees were culturally related to the host population in Guinea, with whom they had had contacts before arrival. This cultural proximity facilitated assistance by the host population. With between 15 and 20 inhabitants per km^2 the Forest Region of Guinea is not densely populated and has a relative abundance of underused agricultural resources. The population is generally positive towards strangers, who are perceived as an economic asset for villages.[21] The refugee-affected areas were also far from the capital, Conakry, and the refugees were not thought to be a threat to national security by the government of Guinea.

At the time of the refugees' arrival the conditions prevailing in the health system were favourable to an integrated approach to refugee assistance. In most districts the Ministry of Health had launched new integrated health centres and was upgrading the hospital. With stocks of drugs and medical equipment readily available locally, new health facilities modelled on the national health policy could be created overnight. Médecins Sans Frontières was assisting the Ministry of Health in this development of health facilities in the Forest Region before the arrival of the refugees. The two organisations were, therefore, able to put a refugee-assistance programme together, which may have contributed to the local and national impression of control of the influx. Indeed, all medical refugee assistance was organised by the Ministry of Health and Médecins Sans Frontières, in collaboration with the other foreign health agencies already working in the Region. No new health agencies brought relief during the first years of the refugee influx. During the first months, the operational role of UNHCR was limited. The agencies present agreed that medical assistance to refugees should respect the overall policy of the Ministry of Health to avoid negative impact on the changing and still fragile national health system. Resources that became available through the refugee-assistance programme were partly invested to reinforce the overall health system.

The situation of the refugees in Guinea was, therefore different from that for many refugees, who generally arrive more quickly in larger numbers.[22] During such acute refugee emergencies, most attention is focused on decreasing the burden of the acute health crisis faced by the refugees. The scope of the crisis and the urgency of the necessary measures commonly mean that parallel refugee health services are organised by foreign relief agencies to deliver a standard package of emergency-relief measures. The relief is generally well managed by relief agencies[22] and has probably decreased death rates,[23] but logistic and military constraints might prevent timely implementation. Unfortunately, this relief approach is commonly perpetuated beyond the acute emergency, especially when refugees have been housed in camps.[7] The effects on the health services of the host country, which does not have enough resources to cope, are often negative[3] and all relief resources are used exclusively by the refugee health services. Relief organisations often recruit medical staff from the host country, which can hamper the functioning of the health services in countries with scarcity of such staff.[4] The health authorities that are supposed to coordinate relief measures in their area can be overwhelmed by new relief actors, further weakening the local health services. The host population may not be able to use the refugee health services, even if they are better staffed, equipped, and supplied than those of the host country. The quality of care available to the host population may, therefore, decrease as a consequence of the assistance to refugees.

In other countries, conditions for an integrated approach to refugee assistance may be less favourable. However, the positive effects for the host population documented in Guinea show that it might be worthwhile for host governments to consider such an approach whenever possible. Relief agencies involved should adapt

intervention methods accordingly. An integrated approach to refugee assistance is probably also more cost-effective. In Guinea, the overall yearly cost of medical assistance to refugees was estimated at US$4 per refugee.[7] This cost is much lower than the yearly cost of medical services in refugee camps—often US$20 per refugee.

The improved access to health care for the host population in our study should not give the impression that the refugee influx and the way it was dealt with was always beneficial to the host population. The refugees and the refugee-assistance programme in Guinea caused substantial social and economic changes. The absorption of such a large population increase in a rural area may also have had important consequences on the ecological equilibrium. These changes may jeopardise the long-term livelihoods of certain strata of the population. The poorest of the host population may be the worst affected by changes to the economy.[24] Labour opportunities may be lost because of the presence of cheap refugee labour, and increases in market prices and increased monetarisation of the economy may decrease their purchasing power. Although there are no data to support this hypothesis in Guinea, the benefits of better access to necessary hospital care may have favoured only Guineans who also benefited from economic change.

A non-directive approach to refugees has the potential to avoid the negative impact of emergency refugee relief on the health services of the host country, and to improve access to health care for the host population. Which conditions enable such approach and appropriate intervention methods should be studied in other refugee-affected areas.

Contributors

All investigators contributed to the study design, data analysis, and revision of the manuscript. Vincent De Brouwere and Wim Van Lerberghe had previous experience of the methods. Wim Van Damme collected data in Guinea as part of his doctorate study on refugee health care in sub-Saharan Africa.

Acknowledgments

We thank M L Yansané, D Fassa, K Marah, and D Diallo of the Ministry of Health in Guéckédou, Guinea, and B Verbruggen and G Michaux of Médecins Sans Frontières in Guinea for their collaboration during the field work; C Ronsmans and P Van der Stuyft for assistance with the Poisson analysis, R Eeckels for useful comments on previous drafts. The study was supported by a research grant from the Fund for Scientific Research, Flanders, Belgium (FWO-S 2/5-KV-E95), and from the European Union (IC18-CT96-0113).

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