

How has the introduction of a national insurance scheme affected hospital attendance in a rural Ghanaian hospital?

Introduction

In 2004 the Ghanaian government introduced the National Health Insurance Scheme (NHIS) with the aim of reducing the inequality of health care within their country and hopefully allowing access to health care to even the very poor. This was to replace the previous 'cash and carry' system, in which people had to pay for health services at the point of delivery, therefore rendering poorer rural populations effectively without medical care. The idea was that every adult would instead pay a yearly contribution (unless they were very poor) and could then access certain health care services as they needed them.

How can a Ghanaian become insured?

If a Ghanaian is employed they can chose to have their health insurance contributions taken out of their wages. As well as paying their income tax, they then also pay NHIS contributions. Unemployed individuals can visit their local regional ministry of health office and chose to pay their contributions for a year as a lump sum or in twelve monthly instalments. If they elect to pay in twelve instalments, they are issued with a book containing their ID number and twelve receipts; they can then pay each instalment into banks or designated pharmacies along with their receipts. The contributions they are expected to pay depend on their socioeconomic status and are shown in table 1. The

individual will then be issued with a health insurance card six months following their payment, this card entitles them to free access to many health care services. They must renew this every year. Ghanaians also pay a 2.5% health insurance levy on selected goods and services which helps to fund the NHIS.

There are some exceptions to these rules. Pregnant women currently receive free insurance in Ghana. They must have their pregnancy diagnosed and collect a maternity card. They can then take this card to the regional ministry of health office, where they will be issued with a health insurance card which will take effect immediately and last until three months after their child has been born. Their infant will also be covered on the mother's card for the first ninety days of life. Children under eighteen are insured if their parents or guardians are paying health insurance. However, in order for a health insurance card to be issued for the child, the parents must visit their regional ministry of health office and present the child's birth certificate and their own health insurance cards. These measures are intended to reduce infant and maternal mortality in Ghana.

What does health insurance include?

This scheme is intended to improve the access of the poor to basic health care. As such it includes the basics such as antenatal care, accidents and acute conditions (see Table 2). This scheme is just in its infancy and therefore there has to be limits on what can be provided from the national health insurance fund. Overly expensive treatments for rarer conditions would benefit few people and would not be sustainable. As such, expensive treatments for more chronic conditions and oncology treatments cannot be provided.

Similarly antiretroviral drugs are very expensive and so cannot practically be covered by insurance. However, the government does subsidise antiretroviral drugs, meaning that sufferers only have to pay about 6 Ghana Cedi a month (about 3 pounds). This subsidy brings the drugs onto most people's price range and there is also additional help available from specialist charities.

What percentage of the Ghanaian population have health insurance?

Prior to the introduction of the national health insurance scheme pilot studies suggested that the Ghanaian people would be willing to make annual contributions in return for free healthcare at the point of need. Asenso-okyere *et al* (1997)ⁱ found that over 90% of the respondents in their study about willingness to participate in a national health insurance scheme would be happy to do so.

This has been borne out by the high uptake of the scheme in Ghana. Figures from the Ministry of Healthⁱⁱ show that just one year after its introduction in 2004 around 20% of the population were insured. The uptake has steadily increased since then and according to the latest data from 2007, 11,279,678 people were insured. This amounts to 55% of the total population. With the recent introduction of free health insurance for pregnant mothers and aggressive marketing this figure is only set to increase.

What problems have arisen with introduction of the national health insurance scheme?

This scheme is the first of its kind to be implemented in Africa. It has been very successful, with more people accessing health care and patients presenting with more

minor conditions. Furthermore patients are presenting far earlier with serious conditions allowing for more successful treatment (USAID reportⁱⁱⁱ).

However, this new scheme has not been without its problems. The very success of the scheme is its biggest threat. The uptake of healthcare in Ghana has increased substantially over the last few years. For example, visits to the Outpatients Department (OPD) increased from around 3 million in 2005 to over 6 million by September 2007, more than doubling in just two years (Ghanain ministry of health report, 2008ⁱⁱ). Inpatient attendance has increased as dramatically. However, the health care infrastructure and service availability have not grown in proportion to this increase in utilization. This means that the institutions providing care are rapidly becoming overstretched, and without appropriate funding may not be able to maintain an appropriate standard of care.

Also, there have been significant administration issues with the NHIS. There have been substantial delays in the money from the National Health Insurance Fund reaching the health care providers. This has meant that many hospitals have sunk into debt after providing services they have not been paid for. This inevitably leads to hospitals not having the resources to buy the necessary equipment and drugs, and so lowering their standard of care. Furthermore, the government runs the very real risk of the healthcare providers not honouring the insurance scheme, and charging everyone whether they have insurance or not, simply because they cannot afford not to.

Investigating how utilisation of health care has altered with increasing uptake of health insurance.

During our medical elective in rural Ghana we decided to investigate how utilisation of outpatient health care services in our small hospital had been changed by the steadily increasing uptake of the national health insurance scheme. We hypothesised that the number of patients attending outpatients would have increased in past 2 years, and that this would correlate with an increase in the number of insured attendees. We also investigated whether the increasing uptake of insurance altered the demographics of the population attending the outpatients and whether it altered which conditions they were presenting with.

Table 1 – Table showing the contributions Ghanaian people must make to the health insurance scheme depending on their socioeconomic status.

Name of Group	Who they are	Minimum contributions
Core Poor	Adults who are unemployed and do not receive any identifiable and constant support from elsewhere for survival	Free
Very Poor	Adults who are unemployed but receive identifiable and consistent financial support from sources of low income,	7.2 Ghana cedi
Poor	Adults who are employed but receive low returns for their efforts and are unable to meet their basic needs.	18 Ghana Cedi
Middle Income	Adults who are employed and able to meet their basic needs	18 Ghana Cedi
Rich	Adults who are able to meet their basic needs and some of their wants	48 Ghana Cedi
Very Rich	Adults who are able to meet their needs and most of their wants	48 Ghana Cedi

Table 2 – Table showing what is and what is not included under the National Health Insurance Scheme

Included	Not Included
Outpatient Services	Rehabilitation other than physiotherapy
General consultations including reviews	Appliances and prostheses, including optical aids and hearing aids, orthopaedic aids and dentures.
Specialist consultations including reviews	Cosmetic surgeries and aesthetic treatments
Requested investigations	HIV antiretroviral drugs
i. Laboratory Investigations	
ii. X-rays	
iii. Ultrasound Scanning	
Medication i.e prescription drugs on the National Health Insurance Scheme Drug list.	Assisted reproduction, e.g. artificial insemination and gynaecological hormone replacement therapy
HIV/AIDS symptomatic treatment for opportunistic infections	Echocardiography
Outpatient/Day surgical operations	Photography
i. Hernia repairs	
ii. Incision and Drainage	
iii. Haemorrhoidectomy	
iv. Minor excisions e.g lipoma	
Outpatient physiotherapy	Angiography
Inpatient Services	Orthoptics
General inpatient care	Dialysis for chronic renal failure
Specialist inpatient care	Heart and brain surgery other than those resulting

	from accidents
Requested investigations i. Laboratory investigations ii. X-rays iii. Ultrasound scanning	Cancer treatment other than that for cervical or breast cancer
Medication, i.e. prescription drugs on the National Health Insurance Scheme Drug list	Organ transplantation
Cervical Cancer treatment	All Drugs that are not listed on the National Health Insurance Scheme Drug list
Breast Cancer treatment	Diagnosis and treatment abroad
Surgical Operations	Medical examinations for purposes of visa applications, educational institutions and driving license applications
Accommodation in general ward i. feeding	VIP ward accommodation
Oral Health Services	Mortuary services
Pain relief which includes incision and drainage, tooth extraction and temporary relief	Blood Products
Dental restoration which includes simple amalgam fillings and temporary dressing	
Eye Care Services	
Refractions	
Visual Fields	
A – Scan	
Keratometry	
Cataract removal	
Eyelid surgery	
Maternity Care	
Antenatal Care	
Deliveries i. Normal Vaginal Deliveries ii. Assisted Vaginal deliveries iii. Caesarean Sections	
Postnatal care	
Emergency Care	
All medical emergencies	
All surgical emergencies including brain surgery due to accidents	
All paediatric emergencies	
All Obstetric and Gynaecology emergencies, including caesarean section	
Road traffic accidents	
Industrial and work place accidents	
Dialysis for acute renal failure	

Methods

Data was collected during a student elective at St Anthony's Hospital, Dzodze in the Volta Region in eastern Ghana. Data was available from January 2007 to May 2008. In order to investigate whether attendance had changed over this period, monthly outpatient attendance figures were gathered. These were subsequently broken down into insured and non-insured attendees. This data was displayed as a bar chart.

Next we investigated whether the demographics or presenting complaints of the attendees had changed over this period (during which the uptake of health insurance had increased). In order to do this data from January 2007 was compared with data from January 2008. The same month was chosen from each year as various conditions show a seasonal variation. Firstly the total outpatient attendance in these months was divided by age and sex. The data collected on patient age was grouped into uneven categories, and so was unsuitable for a bar chart. Therefore, the number of attendees in each category was divided between the years included in the category and this data was plotted on a line graph. Secondly the total outpatient attendance in these two months was divided by presenting complaint. This was plotted as a bar chart.

All the data were analysed using Microsoft Excel.

Results

Change in outpatient attendance from January 2007 to May 2008.

Figure 1 shows that total outpatient attendance approximately doubled over the analysed period. The number of uninsured patients attending did not notably change, and increase in attendance was shown to be due to an increase in the number of insured attendees.

Change in age and sex of outpatient attendees between January 2007 and January 2008

Figure 2 shows the difference in age and sex of outpatient attendees between January 2007 and January 2008. In both years attendance of children is a greater than that of adults. In addition, peaks are seen in infants less than one year of age and in adolescents aged fifteen to nineteen. This adolescent peak is reduced in size in January 2008 compared to January 2007.

Change in morbidity of outpatient attendees between January 2007 and January 2008.

Fourteen diagnoses were recorded in outpatients attending in January 2007 and January 2008. The percentage these contribute to the total number of recorded diagnoses is shown in figure 3. No large changes in recorded diagnoses are seen between the two years.

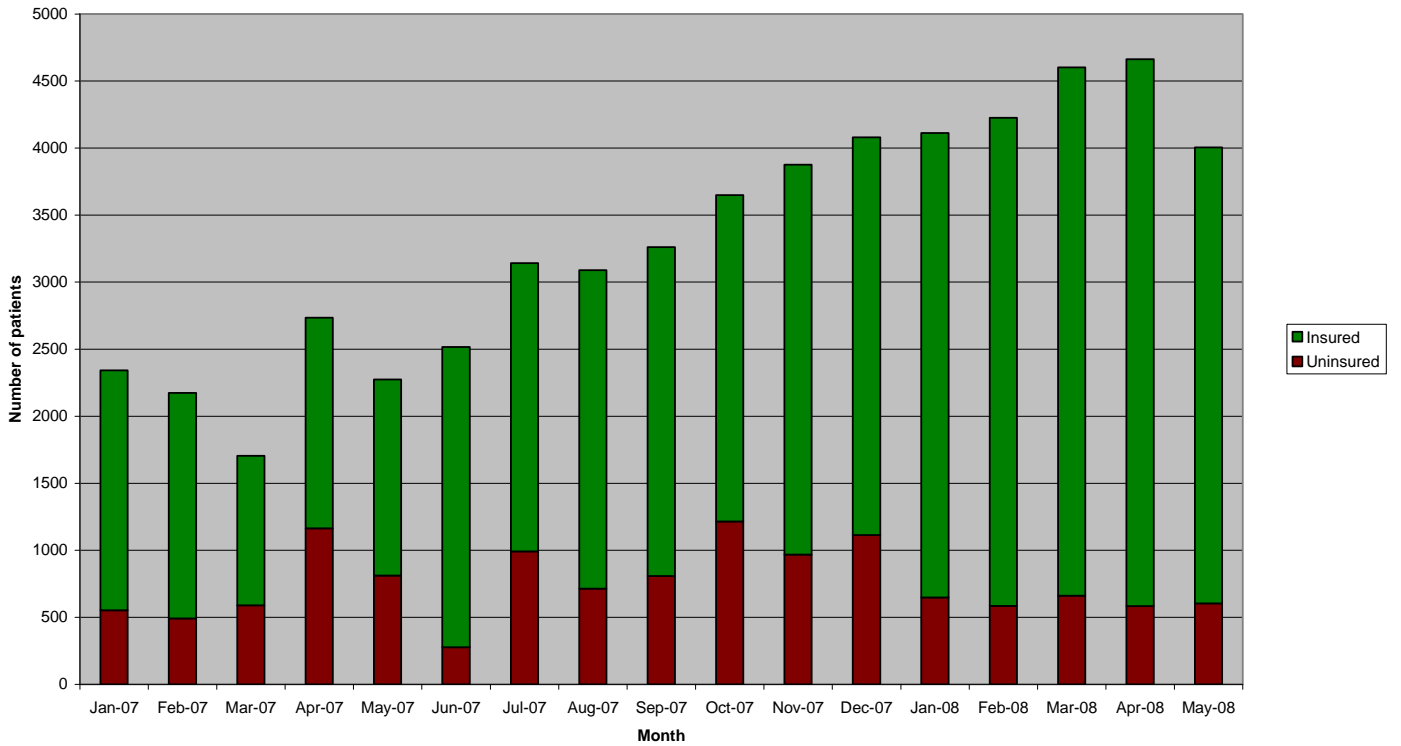


Figure 1 – Total monthly attendance at outpatients from January 2007 to May 2008. Totals are divided into insured and uninsured patients.

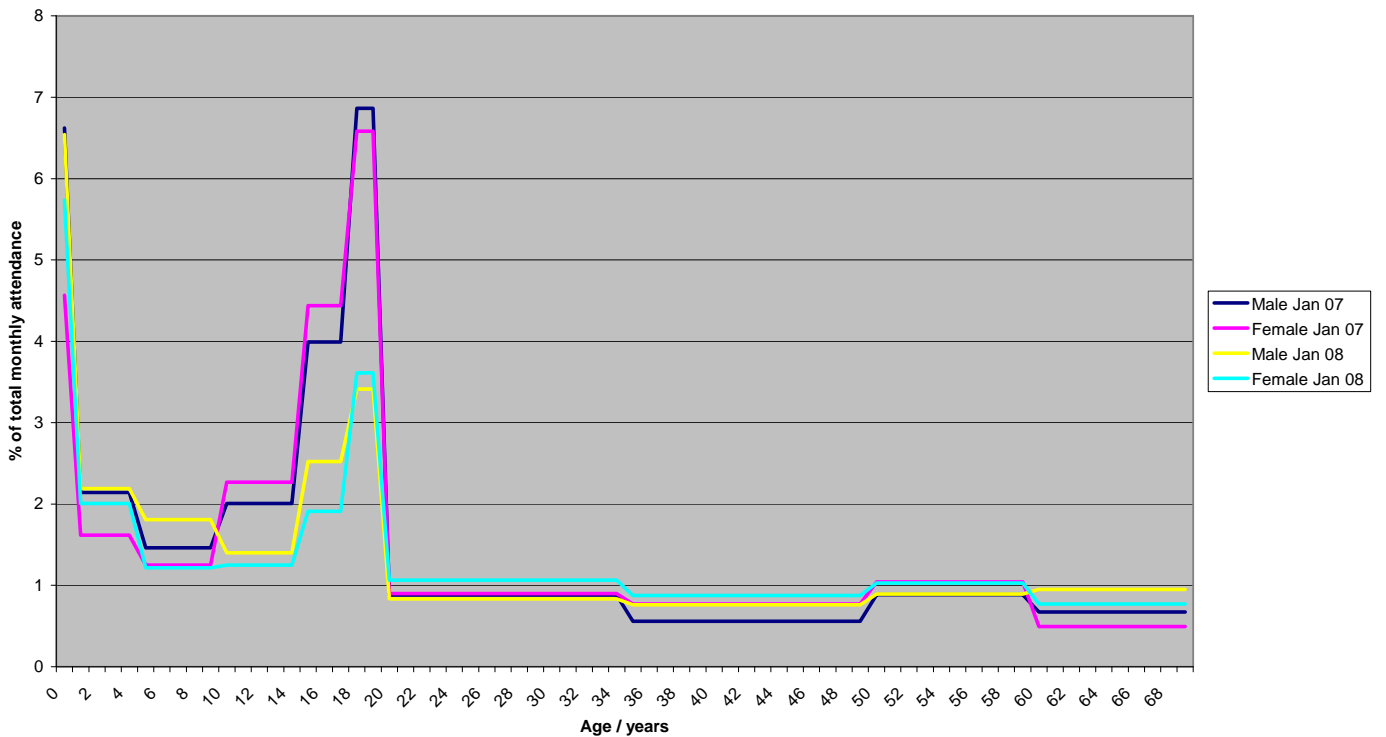


Figure 2 – Demographics of outpatient attendees. Monthly attendance was divided by age and sex and compared between January 2007 and January 2008.

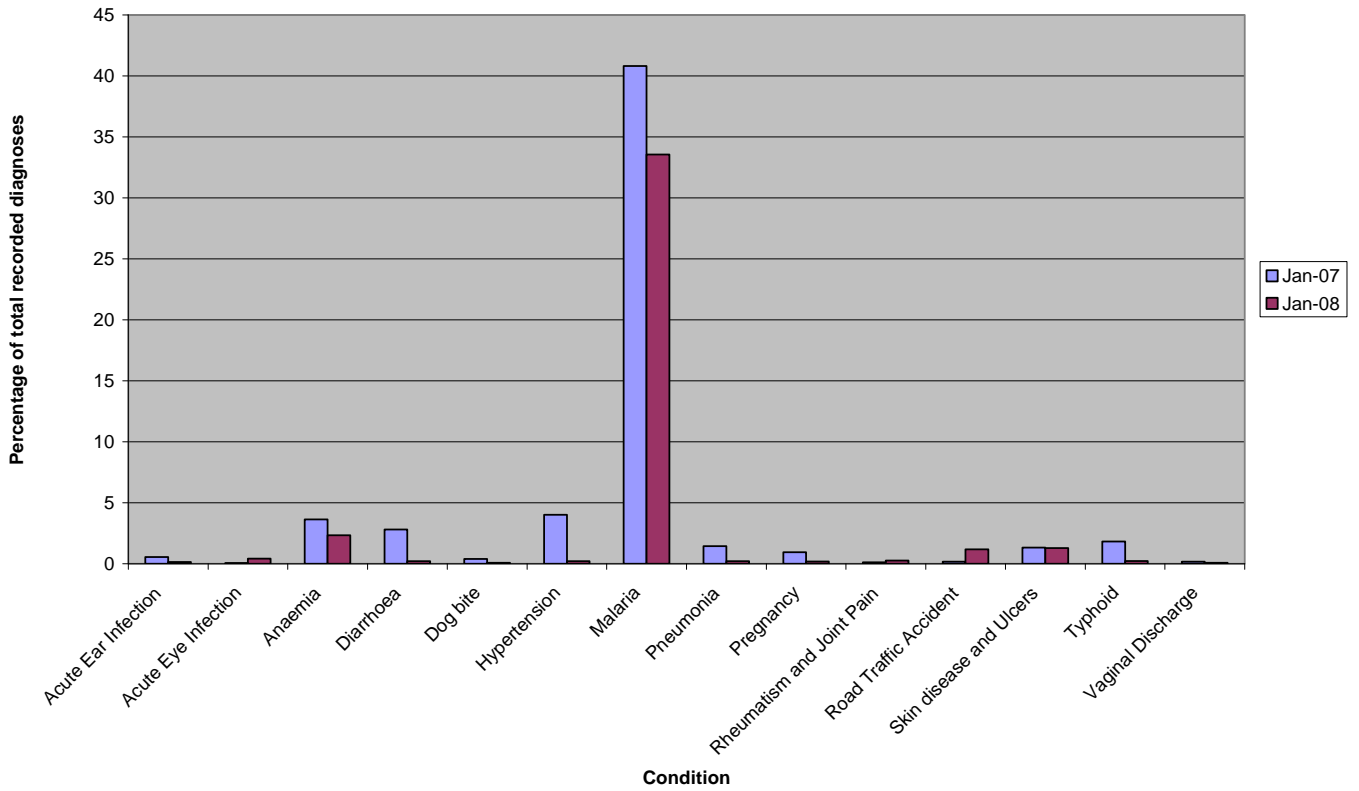


Figure 3 – Recorded diagnoses for patients attending in January 2007 and January 2008

Discussion

As can be seen in Figure 1 the attendance to outpatients has more than doubled in the observed period, from around 2000 patients per month to over 4000. This data supports our hypothesis that more individuals are attending due to greater uptake of health insurance during this period. However, it could also be due to increases in morbidity or other confounding factors. The former situation is made more likely by the fact that while the numbers of uninsured patients attending did not really change over the 17 month period, the numbers of insured attendees tripled. Indeed, the bar chart shows that all of the increase in attendance to outpatients is by those who are insured. However, without knowing the level of insurance in the local population, it is difficult to draw firm conclusions. In addition, it is unknown whether the increase in insured attendees is due to an increased number of insured patients, or whether the same patients are coming more frequently, possibly due to better engagement with health care services. This would be difficult to analyse without knowing the local trends in insurance uptake or noting whether the attendees are new or returning patients. This rather tentative data is supported by previous studies, for example the USAID reportⁱⁱⁱ evaluating the effects of the National Health Insurance act in Ghana (2005) which suggested that increased uptake of health insurance led to a greater utilisation of health care services. This data would make sense because it is intuitive that people will attend more willingly if they are not obliged to pay at the point of delivery. People are also more likely to attend regularly for chronic or asymptomatic conditions, for example type 2 diabetes mellitus or hypertension. People will also present with more minor conditions, a proportion of which would otherwise resolve spontaneously. This data is very encouraging as it suggests that the national

health insurance scheme is enabling a greater engagement with the healthcare services. This will inevitably lead to more serious conditions being picked up when they are potentially curable. In addition, greater engagement with health care facilities enables the distribution of public health information and services. This means that not only do conditions stand a greater chance of being cured they are also more likely to be prevented. This makes it likely that the health insurance scheme will improve the health of the population of Ghana as a whole.

Figure 2 shows how the demographics of the outpatients attendees compares between January 2007 and January 2008. The graph shows that in both years children are relatively high attendees, with a particular peak in adolescence (15-19). Attendance drops during the adult years. This is likely to reflect the population distribution. As can be seen in figure 4 children and adolescents are over represented in the Ghanaian population. Adolescents may be higher attendees than children, as they can bring themselves to hospital rather than an adult having to lose earnings to bring a younger child in. In Ghana the adolescent age group is most likely to have the most disposable income, as they have usually begun to work but have not yet started a family. In addition, adolescents may be subject to additional morbidity such as sexual health issues, social factors and possibly more accidents. Interestingly, this adolescent peak is reduced in January 2008 compared with January 2007 in both sexes. This could be because, rather than adolescent attendance decreasing, all other age groups are attending more. Indeed, we looked back at the raw data and found that in January 2007 190 adolescent males and 287 adolescent females attended, compared to 209 and 268 respectively in January 2008. This increase in

attendance could be due to increased uptake in insurance, however further study would need to be done in order to support this theory.

Figure 3 compares the total outpatient attendance broken down by primary diagnosis between January 2007 and January 2008. The graph shows that in our data there did not appear to be much change in the morbidity of the outpatient population between the two years. This is contrary to previous data, which suggested that increased uptake of health insurance has led to more patients presenting with minor conditions. This could be due to the small sample size and the fact that a large percentage of the patients in both years presented with malaria. Also, this set of data was incomplete as not all attendees had diagnoses recorded during their consultations and not all diagnoses were recorded.

In conclusion our data showed that over the seventeen month period from January 2007 to May 2008 there was a dramatic increase in outpatients attendance at St Anthony's Hospital, Dzodze. This is likely to be due to an increased national health insurance uptake throughout this time. Another change that was noted was a minor alteration in the demographic profile of attendees, with adolescents aged 15 to 19 representing a smaller percentage of patients in 2008 compared to 2007.

These results and those from previous study are very encouraging. They suggest that with the introduction of national insurance the Ghanaian people are more able to access health care. They seem to be presenting earlier and with more minor complaints and are engaging far more with health care services. This has the potential to improve the health

of the population, raising life expectancy and reducing maternal and infant mortality. The observed dramatic increase in outpatient attendance has the potential to increase further as health insurance becomes more and more widespread, however this is not without its problems. As previously mentioned, increased attendance may overstretch healthcare services, and this combined with administration issues threatens the success of the national health insurance scheme as a whole.

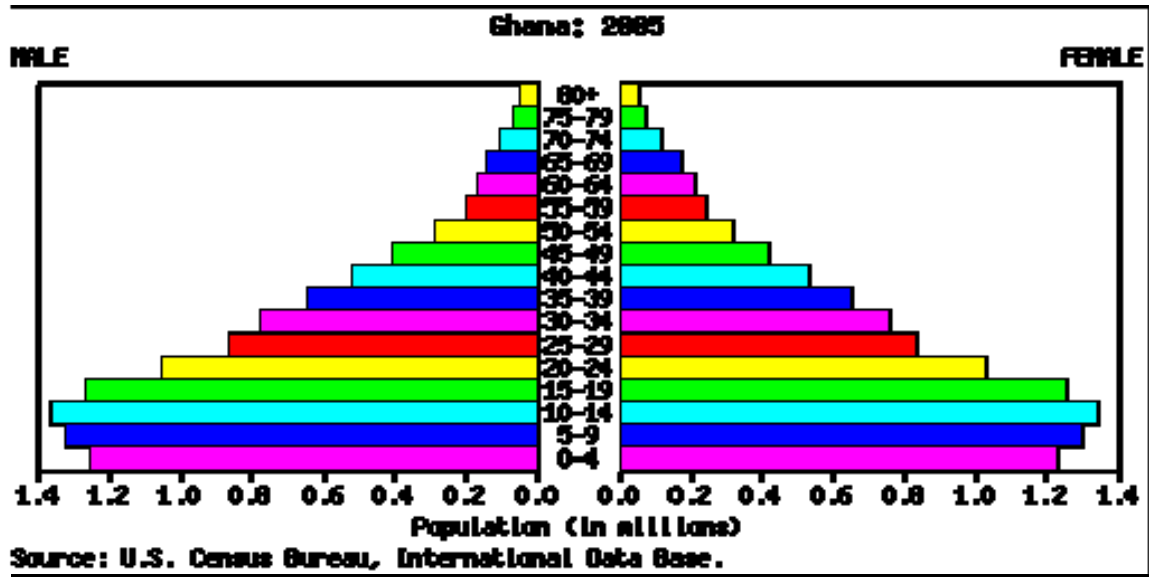


Figure 4 – Population pyramid for Ghana, 2005, from the US census bureau, International Data Base^{iv}

References

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- ^{iv} US census bureau, International Database.
<http://www.nationmaster.com:80/country/gh-ghana/Age- distribution>
- ^v Katz-Summercorn K & Greaves D. A tale of two countries: an insight into healthcare in two developing African nations (2007) *Cambridge Medicine* 21(3):27-30

Appendix 1

Data tables used to compile graphs.

A: Number of outpatient attendees per month

Month	Number of outpatient attendees		Total
	Uninsured	Insured	
Jan-07	552	1789	2341
Feb-07	492	1682	2174
Mar-07	590	1115	1705
Apr-07	1164	1571	2735
May-07	811	1462	2273
Jun-07	276	2240	2516
Jul-07	991	2151	3142
Aug-07	713	2375	3088
Sep-07	809	2453	3262
Oct-07	1215	2435	3650
Nov-07	967	2910	3877
Dec-07	1113	2967	4080
Jan-08	648	3464	4112
Feb-08	585	3640	4225
Mar-08	660	3941	4601
Apr-08	583	4080	4663
May-08	603	3403	4006
Total	12772	43678	56450

B: Age and sex of outpatient attendees in January 2007 and January 2008

Age	Jan-07		Jan-08	
	Male	Female	Male	Female
<1	68	60	115	135
1 to 4	88	85	154	189
5 to 9	75	82	159	143
10 to 14	103	149	123	147
15 to 17	123	175	133	135
18 to 19	141	173	120	170
20 to 34	136	177	220	376
35 to 49	86	152	201	310
50 to 59	91	137	157	242
60 to 69	69	65	167	182
70 +	47	59	209	325
Total	1027	1314	1758	2354

C: Recorded diagnoses in January 2007 and January 2008

	Jan-07		Jan-08	
	Number	Percentage of total	Number	Percentage of total
Acute Ear Infection	10	0.55	7	0.14
Acute Eye Infection	1	0.06	21	0.42
Anaemia	66	3.63	117	2.33
Diarrhoea	51	2.81	10	0.20
Dog bite	7	0.39	4	0.08
Hypertension	73	4.02	10	0.20
Malaria	742	40.81	1683	33.57
Pneumonia	26	1.43	10	0.20
Pregnancy	17	0.94	9	0.18
Rheumatism and Joint Pain	2	0.11	13	0.26
Road Traffic Accident	3	0.17	59	1.18
Skin disease and Ulcers	24	1.32	65	1.30
Typhoid	33	1.82	11	0.22
Vaginal Discharge	3	0.17	4	0.08
Other	760	41.80	2991	59.65
Total	1818	100.00	5014	100.00

Appendix 2

The cost of some common procedures and medical supplies at St. Anthony's Hospital, Dzodze.

	ITEM	COST / Ghanaian cedi	EQUIVALENT COST / GBP	
General	Outpatients consultation fee	1.20	0.60	
	Outpatients examination	0.30	0.15	
	Post-mortem report	28.00	14.00	
	Inpatients admission fee per day	2.00	1.00	
	Private single ward	14.00	7.00	
	Transfer to Ho (provincial capital) in hospital vehicle	18.00	9.00	
	Transfer to Accra (capital) in hospital vehicle	36.00	18.00	
Minor theatre	Evacuation of uterus	20.00	10.00	
	Normal vaginal delivery – singleton	14.00	7.00	
	Normal vaginal delivery – twins	20.00	10.00	
	Circumcision – under 1 year	6.00	3.00	
	Suprapubic catheterisation	20.00	10.00	
	Cateterisation	4.00	2.00	
	Ear irrigation	2.00	1.00	
	Reduction of fractures / dislocations	6.00	3.00	
	Small wound dressing	1.00	0.50	
Major operations	Hernia Ectopic Appendicectomy Laparotomy Bowel resection Orchidectomy Colostomy Hysterectomy Caesarean section Amputation – digital	75.00	37.50	
	Amputation – femur	100.00	50.00	
	Skin grafting – big	50.00	25.00	
	Skin grafting – small	30.00	15.00	
	IV infusion	5% Dextrose, 500mls	1.40	0.70
		Blood bag 500mls	2.94	1.47
		Mannitol	2.80	1.40
		Ringers Lactate 500mls	1.40	0.70
		Oral rehydration salt	0.20	0.10
		Metronidazole 500mls	1.40	0.70
Medical supplies	Infusion set	0.56	0.28	
	Surgical glove	0.50	0.25	
	Crepe bandage	1.40	0.70	
	Gauze pack	0.42	0.21	
	8’’ plaster of paris	3.64	1.82	
	Cannula	1.12	0.56	
	Catheter	0.80	0.40	
	Urine bag	1.12	0.56	
	NG tube	0.40	0.70	
Tablets	Most common drugs used 0.01 to 0.50 cedi per tablet		0.01-0.25	