

PATTERNS OF HEALTH SERVICE UTILIZATION AT A MEDICAL SCHOOL CLINIC IN GHANA

A. E. YAWSON^{1,2}, K. L. MALM³, A.A. ADU^{1,2}, G-M. WONTUMI^{1,2} and R.B.BIRITWUM¹
¹Department of Community Health, University of Ghana Medical School, College of Health Sciences, Korle-Bu, Accra, Ghana; ²Public Health Unit, Korle- Bu Teaching Hospital, Korle-Bu, Accra, Ghana. ³National Malaria Control Programme, Ghana Health Service, Accra, Ghana.

Corresponding Author: Dr. Alfred Edwin Yawson

E-mail: ayawson@yahoo.com

Conflict of Interest: None declared

SUMMARY

Background: The University of Ghana Medical School (UGMS) Clinic provides healthcare service which is free at point of service to students, staff, retired staff and dependents of staff of the College of Health Sciences. However, since 1983, no in-depth review of health service provision or utilization has been undertaken. This study reviewed client characteristics, utilization and disease patterns at the clinic and also compared the disease patterns to that of other primary health facilities nationwide.

Methods: This was an analytical cross-sectional study undertaken at the UGMS clinic in Korle-Bu. It was a retrospective review of records of all clients attending the facility from January 2002 to December, 2004.

Results: More males than females attended the clinic and majority (63.9%) of clients were between 15-44 years (median age was 26 years). Dependents of staff constituted the highest attendants (41%) to the clinic. Among staff, junior staffs were in the majority. Malaria, respiratory tract infection and musculoskeletal pain were the most common conditions seen. Overall, 83% of clients were treated and discharged per visit without the need for review visits.

Conclusion: Dependents of staff used the facility the most and they live in many different part of the city of Accra, and to ask them to attend the clinic for care is not efficient. It will be better to provide or supplement their securing of insurance so that they could access health care close to their homes and save time and attention to students and staff.

Key words: University Health facility, clinic attendance, disease patterns, Ghana.

INTRODUCTION

Access to medical care is an important factor in reducing mortality among people worldwide.¹ A number of factors have been shown to be potential barriers to assessing health care and these include distance and cost of travel to the health facility, socio-cultural factors and

cost of service especially in a resource challenged country like Ghana.²

Health service utilization by the population of Ghana is influenced mainly by financial, geographical, cultural, and functional accessibility to health service and also by inequalities in health services and infrastructural distribution across the nation.³

Health care-seeking behaviour of individuals is not only an indicator of their willingness to preserve life but it is crucial to personal, societal and national development.⁴ The health of an individual affects all aspects of his or her life and extends to the family, community, society and the nation. The cost of ill-health is not only borne by the individual; but the entire society. Ill-health means less time on the job; lowered production and productivity.⁴

Some organizations and institutions in the country provide free health services for their staff at in-house clinics. The Medical School Clinic is one such facility. The clinic was established in January 1977 to cater for the health needs of medical students, the staff of the Medical School and their families.⁵ This responsibility has been expanded over time to include staff and students of the College of Health Sciences (i.e. staff and relations of College administrative members, staff and students of University of Ghana Dental School, School of Allied Health Sciences, School of Pharmacy, School of Nursing and Noguchi Memorial Institute).

At the medical school clinic where the cost of service is free at the point of utilization, it is expected that the patronage will be high.⁶ It is also expected that patronage of services at the clinic will be higher especially among the junior staff; who may be more challenged by financial accessibility to medical care. Since the Medical School clinic is a primary care facility, it is of interest to know whether the patterns of disease presented to the facility mirrors that seen in other outpatient clinics in the country.

Although the Medical School clinic is the primary health care facility for a reputable tertiary educational institution (University of Ghana Medical School/College of Health Sciences), there has not been any in depth review of client characteristics, clinic utilization and disease patterns at the school clinic since 1983.⁶

Though the clinic continues to offer clinical service to students, staff and dependents, there has been minimal evaluation of its operations and services and a resultant challenge in revising and improving service provision and delivery. The objective of this study was to determine who used the medical school clinic over the period of study, which disease conditions clients presented with, what the outcomes of such visits were and also determine if there were any seasonal variations in the type of diseases seen at the clinic. This study also compared the disease patterns of attendants at the clinic to that observed for outpatient facilities nationwide and in addition compared client characteristics and patterns of clinic attendance over this review period to that observed in the last review with the aim of identifying changing patterns over two decades.

METHODS

This was a cross-sectional study undertaken at the UGMS clinic in Korle-Bu. It was a retrospective review of records on all clients attending the facility from January 2002 to December 2004.

Site of study

The clinic is sited on the premises of the Medical School Administration in Korle-Bu. It currently has one permanent Senior Medical Officer, one Nursing Officer and three support staff. Doctors from the Departments of Community Health and Family Medicine provide supplementary services especially when the resident doctor is not available. Similarly, nurses from the Department of Community Health provide nursing services when needed.

The clinic attends to between 25 and 35 clients daily. It renders out-patient curative services and has facilities for detention and observation over short periods, of clients who are deemed to require this clinically- Medical emergencies and severe disease conditions are referred to the Surgical-Medical Emergency of the Korle-Bu Teaching Hospital. Other conditions requiring specialist care are referred to appropriate specialist clinics in the Korle-Bu Teaching Hospital. The clinic works on week days from 8:00am to 5:00pm.

The UGMS clinic does not operate the national health insurance scheme (NHIS), however, all clients accessing service at the clinic do not pay for services at the

point of use. They are attended to and provided with all medications they need once these are available in the clinic. When these medications are unavailable, clients are provided with prescriptions to acquire them from other pharmacies.

Clients are reimbursed for the cost of these medications by their institutions (e.g. Medical School, Dental School or College of Health Sciences). This arrangement for cost of medications is uniform for all students but not for all staff. For instance, staff members of the Dental School and School of Allied Health Sciences are not provided with medications directly but are given prescriptions for their medications.

Sampling Methods

The study reviewed data from January 2002 to December 2004, on all clients in the medical registers of the clinic. It was a total enumeration of routine service provision data at the clinic. A total of 7678 client records were reviewed.

Data Collection

An Abstraction form was used to collect data on clients from the medical record books on: Demographic characteristics of clients, such as; Age and sex of clients Description of status of the client's i.e. medical student and other students of the College, junior staff, senior staff (member), retired staff or staff dependents. Department/Unit/school of the client i.e. Basic Sciences, Community Health, Clinical departments, Medical school Administration, Dental school, School of Allied Health Sciences, College of Health Sciences, Maintenance, Security, and Estate services units. Date of attendance to the clinic by clients Disease conditions presented (Diagnosis recorded in clinic registers) and laboratory investigation requested for as part of treatment received.

Outcomes of clinic visit recorded for client i.e. treated and discharged, treated but requiring follow-up visits or requiring review with laboratory investigations or referral to a specialist clinic.

Data analysis

Data from the abstraction form were entered into Microsoft Excel 2007 and imported into SPSS version 19, cleaned and analyzed. Data were categorized by age (in years) as 0-4, 5-14, 15-44, 45-60 and 61 and above and also by sex. These age ranges were chosen to ensure that details of sex and age distribution of clients are available for analysis and also because of its practical usefulness in identifying at risk groups, and in designing health programmes.⁷ Main outcome measures analyzed for the study included, sex differences in clinic attendance, proportion of clients in each staff or student

category and each department, proportion of disease conditions presented, differences in number and type of disease presented during specific periods over the three years, proportion of clients who had laboratory investigations done and outcome of client's visit.

Diseases were classified based on the World Health Organization's ICD-10 International classification of diseases. For this study, simple descriptive statistics such as frequencies, percentages, proportions and ratios were used for the analysis.

Ethical issues

Ethical Clearance was obtained from the University of Ghana Medical School, College of Health Sciences, Department of Community Health and authorities of the UGMS clinic in Korle- Bu.

RESULTS

Age and sex characteristics of clients

In total, over the three year period, (2002-2004), 7678 client records were reviewed. Of these, 27.3% visited in 2002, 44.7% in 2003 and 28.0% in 2004. In all, males constituted 52.5% and females comprised 47.5% of clients; giving a male: female ratio of 1.1: 1. This almost equivalent male: female ratio was observed in each of the three years. The age and sex characteristics of all clients at the clinic are shown in Table 1.

Table 1 Age and sex characteristics of clients

Age group	Sex		Total
	Female	Male	
	N (%)	N (%)	N (%)
Age group			
1 – 4	202 (5.6%)	250 (6.3%)	452 (6.0%)
5 – 14	363 (10.1%)	339 (8.5%)	702 (9.3%)
15 – 44	2400 (66.5%)	2451 (61.6%)	4851 (63.9%)
45 – 60	577 (16.0%)	862 (21.7%)	1439 (19.0%)
61 +	69 (1.9%)	76 (1.9%)	145 (1.9%)
Sex ratio	1.0	1.1	
Client category			
Medical Students	475 (14.6)	830 (24.2)	1305 (19.6)
Other Students	57 (1.8)	22 (0.6)	79 (1.2)
Junior staff	700 (21.6)	1183 (34.5)	1883 (28.2)
Senior staff	218 (6.7)	348 (10.1)	566 (8.5)
Retired staff	44 (1.4)	62 (1.8)	106 (1.6)
Dependents of staff	1750 (53.9)	985 (28.7)	2735 (41.0)

In both females and males, the majority of clients were in the age group 15-45 years (i.e. 61.6% of males and 66.5% of females) with the least in the 61+ year age groups (i.e. 1.9% of males and 1.9% of females). The median age for all clients attending the clinic over the three-year period was 26 years.

Category of clients:

Over the three year period, dependents of staff of the Medical School and College of Health Sciences comprised the majority of clients seen, 2735 (41.0%) whilst retired staff were the least (2%). Among the staff seen, junior staff were in the majority (28.2%) and Medical students comprised 1305 (19.6%) of all clients seen. Among clients seen there were more males than females as shown in Table 1. The ratio of staff (senior and junior staff) to staff dependents is 1: 1.1

Departments/Units or School to which clients belong

Clients who used the clinic came from different schools, departments and units of the Medical School and College as shown in Table 2. Staff and students from the Medical School had the highest percentage distribution (25.7%), followed by staff from the Estate unit (14.9%). Interestingly, a fifth of all clients seen over the period were dependents of staff (20.6%). The School of Nursing and Noguchi Memorial Institute which are both sited on the main University of Ghana campus had the lowest frequency of attendance; of less than 1% (20 and 14 respectively). All departments, units and schools for which the clinic provides services had clients coming to the facility over the period in varying frequencies, as shown in Table 2.

Table 2 Department/Unit or School from which clients came to visit the MSC.

Department/Unit or school	Frequency N (%)
Medical School (staff/students)	1973 (25.7)
Staff Dependent	1579 (20.6)
Estate Unit	1144 (14.9)
Dental School	646 (8.4)
Para-clinical Departments	626 (8.2)
Transport Unit	261 (3.4)
Clinical Departments of Medical School.	245 (3.2)
College of Health Sciences	217 (2.8)
Security Unit	168 (2.2)
Dean's Guest House	163 (2.1)
Medical Illustration Unit	105 (1.4)
Retired Staff	100 (1.3)
Allied Health Sciences	83 (1.1)
School of Nursing, Legon	20 (0.3)
Noguchi Memorial Institute	14 (0.2)
Others (Credit Union, Laundry etc)	334 (4.4)
Total	7678 (100)

Disease Patterns at the MSC

Disease conditions by sex

Disease conditions seen in clients were characterized and further disaggregated by sex, as shown in Table 3. Malaria was the most common condition in both males and females and comprised 30.4% of all conditions seen. Table 3, shows the distribution of diseases in descending order of magnitude, for ease of reference. Males had higher percentages for all disease conditions listed except, acute abdominal pain, hypertension and genitourinary conditions. The other disease conditions include disease like spondylitis, helminthiasis, acne vulgaris, and epididymitis which were less frequently reported at the clinic over the three years.

Table 3 Distribution of Disease conditions by sex at the Medical School Clinic (2002-2004)

Disease Condition	Sex		Total N (%)
	Female N (%)	Male N (%)	
Malaria	1078 (29.6)	1255 (31.1)	2333 (30.4)
Respiratory Tract Infections	489 (13.4)	572 (14.2)	1061 (13.8)
Musculoskeletal Pain	246 (6.7)	336 (8.3)	582 (7.6)
Dermatological conditions	204 (5.6)	237 (5.9)	441 (5.7)
Gastroenteritis	131 (3.6)	178 (4.4)	309 (4.0)
Accident/Trauma/Injury	102 (2.8)	163 (4.0)	265 (3.5)
Eye conditions	91 (2.5)	108 (2.7)	199 (2.6)
Hypertension	82 (2.2)	61 (1.5)	143 (1.9)
Genitourinary conditions	111 (3.0)	26 (0.6)	137 (1.8)
Acute Abdominal Pains	65 (1.8)	9 (1.6)	129 (1.7)
Dental conditions	26 (0.7)	31 (0.8)	57 (0.7)
Review (follow up treatment)	418 (11.5)	399 (9.9)	817 (10.6)
Other disease conditions	603 (16.5)	602 (14.9)	1205 (15.7)
Total	3646 (100)	4032 (100)	7678 (100)

Top 10 disease conditions over the three years (2002-2004)

Malaria was the commonest disease condition seen each year for the three-year period. Among the top ten

common conditions seen, malaria constituted 44.8%, 41.3% and 38.6% in 2002, 2003 and 2004 respectively. Though malaria had the highest percentage each year over the three years, the proportional contribution to the top ten conditions decreased from 44.8% to 38.6%. Interestingly the rankings of the top six most common diseases seen remained the same over the three year period, as indicated in Table 4. The last four of the top ten diseases were similar for the three years but only changed in terms of their specific ranking. Overall, the annual top 10 disease conditions were very similar for the year 2002, 2003 and 2004.

Table 4 Top 10 Annual disease conditions seen at the MSC

Ranking	Top 10 Annual Disease conditions		
	2002 (N=2096) (%)	2003 (3432) (%)	2004 (2150) (%)
1	Malaria (44.8)	Malaria (41.3)	Malaria (38.6)
2	*RTI (20.7)	RTI (18.3)	RTI (18.2)
3	*MSP (10.2)	MSP (10.3)	MSP (10.8)
4	Skin Diseases (7.1)	Skin Diseases (8.3)	Skin Diseases (7.8)
5	Gastroenteritis (5.6)	Gastroenteritis (5.5)	Gastroenteritis (5.4)
6	Accidents/Injury (4.3)	Accidents/Injury (5.0)	Accidents/Injury (4.5)
7	Eye Problems (2.6)	Eye Problems (4.2)	Hypertension (4.5)
8	Abdominal Pains (2.2)	Hypertension (2.6)	Eye Problems (3.2)
9	Genitourinary (1.7)	Genitourinary (2.5)	Genitourinary (2.8)
10	Dental Problems (0.8)	Abdominal Pains (2.1)	Abdominal Pains (1.1)

*RTI: Respiratory Tract Infection, MSP: Musculoskeletal Pains, N: Total number of visits for each year

Seasonal patterns of common disease conditions

Further analysis on seasonal variations in the top six common diseases presented over the three year period showed much wider seasonal variation in the number of malaria and respiratory tract infections than the other disease conditions as indicated in Figure 1. For malaria, most of the cases were seen in the 3rd quarter (July-September) of the three years, followed by the 2nd quarter (April-June) and the least in the 4th quarter (October-December). Most respiratory tract infections were seen in the 3rd quarter and the least were in the 2nd quarter. The other disease conditions showed progressive increases from 1st quarter to the 2nd quarter and then decreased in the 4th quarter.

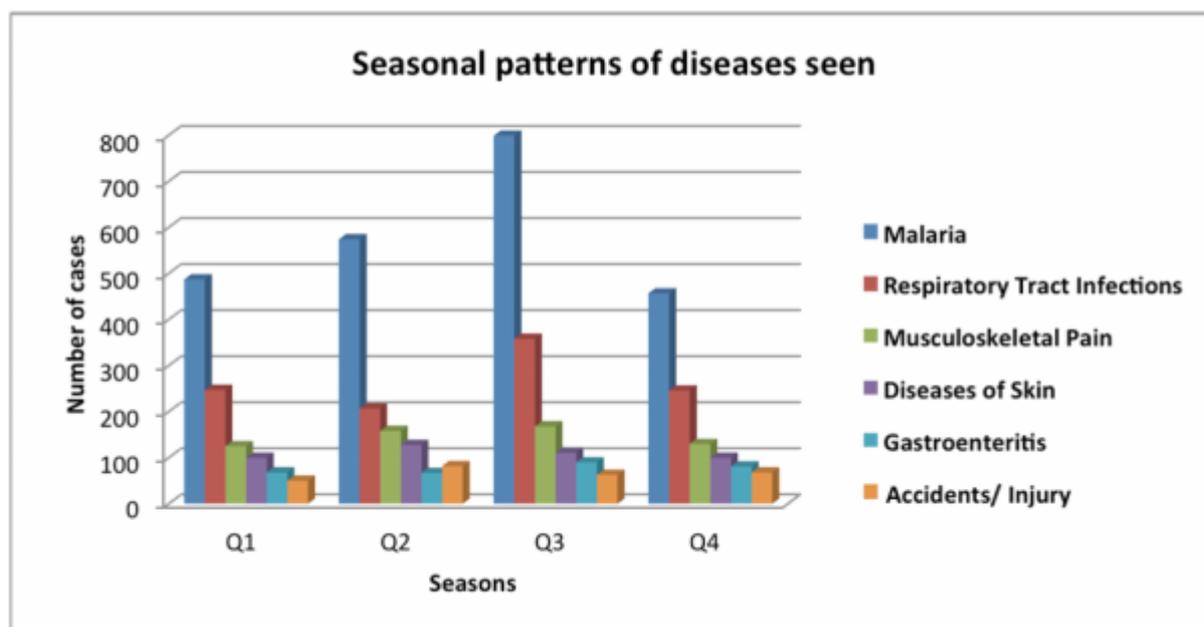


Figure 1: Seasonal patterns of morbidity at the Medical School Clinic, 2002-2004

[Q1= 1st Quarter of year (January-March), Q2= 2nd Quarter of year (April-June), Q3= 3rd Quarter of year (July-September) and Q4= 4th Quarter of year (October-December)]

Table 5 Health outcomes of visit to Medical School Clinic

Characteristics	Outcome of visit to clinic				Total
	Treated and discharged	Review visit needed	Laboratory tests needed	Referral needed	
	N (%)	N (%)	N (%)	N (%)	N (%)
Sex					
Male	3137 (84.6)	66 (1.8)	237(6.4)	270 (7.3)	3710 (100)
Female	2786 (83.3)	75 (2.2)	230 (6.9)	253 (7.6)	3344 (100)
Age Group					
1 – 4	392 (92.7)	2 (0.5)	11 (2.6)	18 (4.6)	423 (100)
5 – 14	578 (88.0)	9 (1.4)	22 (3.3)	48 (7.3)	657 (100)
15 – 44	3722 (83.1)	95 (2.1)	320 (7.1)	343 (7.7)	4480 (100)
45 – 60	1077 (83.6)	31(2.4)	91 (7.1)	89 (6.9)	1288 (100)
61 +	93 (73.8)	2(1.6)	14 (11.1)	17 (13.5)	126 (100)
Staff Category					
Medical Students	1010 (83.5)	25 (2.1)	88 (7.3)	87 (7.2)	1210 (100)
Other Students	62 (83.8)	2 (2.7)	5 (6.8)	5 (6.8)	74 (100)
Junior staff	1488 (84.6)	30 (1.7)	117 (6.7)	123 (7.0)	1758 (100)
Senior staff	433 (87.5)	9 (1.9)	25 (5.1)	28 (5.7)	495 (100)
Retired staff	67 (77.0)	2 (2.3)	6 (6.9)	12 (13.8)	87 (100)
Dependent	2109 (82.7)	60 (2.4)	166 (6.5)	215 (8.4)	2550 (100)
Total	5169 (83.7)	128 (2.1)	407 (6.6)	470 (7.6)	6174 (100)

Health service outcomes from the MSC

Outcomes of visits to the MSC

Overall, 5169 (83.7%) clients were treated and discharged, 470 (7.6%) were referred to specialist clinics, 407 (6.6%) needed laboratory investigations as part of

their treatment and 128 (2.1%) needed a follow up visit. The outcomes of visits to the clinic did not vary much by sex. Males and females had similar percentages for all the four outcomes as illustrated in Table 5.

Regarding the different age groups, the 1-4 years age group had the highest percentage (92.7%) of being treated and discharged, while those 61 years and above had the lowest (73.8). Indeed, those 61 years and above had the highest percentage of referrals (13.5%), followed by the 15-44 years age group (7.7%)

Similarly, a higher percentage of retired staff (13.8%) were referred, unlike senior staff members, who had the least referrals (5.7%) and the highest percentage for getting treated and discharged (87.5%). Medical students had the highest percentage (7.3%) among clients who needed laboratory investigations; senior members had the least (5.1%). Junior staff members had the lowest percentage among clients requiring follow-up review visits.

DISCUSSION

This study reviewed records of clinic attendance at the University of Ghana Medical School clinic over the period 2002-2004. Overall, more males (52%) attended the clinic during the period than females. This finding is in contrast to the general pattern of health seeking in health facilities across the country where more females seek health care services than males.³ The base population of the Medical School and College of Health Sciences is predominantly male (among both staff and students), which probably accounts for this pattern of health seeking. In this review however, among dependents of staff, more females attended the clinic than males, reflecting the usual health utilization patterns in the general population.

Majority (64%) of the patients were 15-44 years with a median age of 26 years. This really is not unexpected in a health centre whose primary responsibility is the care of students and staff of an academic institution.

Junior members of staff of the Medical School and the College of Health Sciences were the highest (28%) among all the staff and students who used the clinic. This finding is similar to findings in an earlier study at the clinic by Biritwum in 1983⁵, in which he found the demand for health was relatively higher for the lower ranked staff. A worker in such an establishment needs to obtain certification as being sick before he or she is given permission to be off-duty⁵; this demand for certification for lower level personnel, may account for higher frequencies of clinic attendance.

In addition lower level staff may be more financially challenged, may have higher burden of diseases associated with low socioeconomic status and therefore for them, the free health care delivery is a greater incentive to seek services at this clinic. This review however, suggests a further study on the demand and use of cer-

tification for the purposes of obtaining sick leave among the different staff categories of the Medical School and College of Health Sciences.

Interestingly, dependents of staff constituted almost half (41%) of all clients seen at the clinic over the period. The mandate for service provision at the Medical

School clinic is first to students, then staff and thereafter relatives⁵; however health seeking by relatives has over time become a major function of the school clinic. Although staff dependents constituted over 40% of clinic attendance, the ratio of number of staff (senior and junior staff) to staff dependents was only 1:1.1.

Considering that the average urban household size in Ghana is 4.0, (according to the 2008 Ghana Demographic and Health Survey), there exist the potential for further increases in number or percentage of staff dependents attending the clinic and that will mean greater cost implications. Dependents of staff live all over the city of Accra and its environs and to ask all these dependents to attend the Medical School clinic for care is not efficient. A policy measure to mitigate this is for the Medical School/College of Health Sciences to enroll or subsidize the enrolment of all staff and dependants onto the National Health Insurance Scheme (NHIS).

Dependents of staff as well as members of staff who prefer can access health care from public facilities near their homes. The initial registration for staff and their dependents may be expensive; however in the long term this policy measure will save cost and enable the clinic discharge its core mandate and enhance the quality of care for students and staff.

In addition, the policy of free health care is for only close or immediate relatives of staff, but currently the enforcement of the regulation on the number of relatives a staff can enroll at the clinic is weak and left to the discretion of staff at the clinic. The Medical School/ College of Health Sciences in the interim need to develop more stringent criteria and enforcement for clients qualifying for free services at the clinic.

Distance to a health facility is one factor that influences its use by the population.² This finding was confirmed in this study, where two institutions of the College (School of Nursing and Noguchi Memorial Institute) situated far away from the clinic on the Main University of Ghana campus (about 23 kilometres from the location of the Clinic on the Medical School premises), had the least frequency of attendance to the clinic compared to the other institutions situated much closer to the clinic.

Regarding diseases presented to the clinic by clients, the most common conditions over the three year period were malaria, respiratory tract infection and musculo-skeletal pain. The top ten disease conditions recorded at the clinic over the period under review were similar to that recorded at the District and Municipal hospitals and Polyclinics across the country.^{8,9}

Seasonal patterns of disease presented to the clinic did not demonstrate significant differences over the three year period for most of the other diseases except malaria. Many more cases of malaria were seen in the third and second quarters of the year. In the southern sector of Ghana, where the Medical School clinic is located, these periods correspond to major rainy seasons (April-May and July-August), which therefore increase the breeding places for mosquitoes, the malaria vector.¹⁰

Furthermore, malaria accounted for over 30% of clinic attendance, a finding similar to patterns of out-patients disease reports for district and Municipal health facilities⁸ and reports from the National Malaria Control Programme.¹⁰ Unfortunately, only 5.5% of all clients diagnosed with malaria at the clinic had laboratory confirmation also similar to practices observed nationally.¹⁰ This observation is worrying because there is evidence to show that when diagnosis of malaria is based solely on clinical findings there may be a misdiagnosis of malaria in more than 50% of cases classified as malaria.^{11,12} This has the potential to result in gross mismanagement of non malarious fevers with fatal consequences.^{13,14}

With respect to outcome of visits to the clinic, most (83%) of the attendants were treated and discharged without any referral, request for laboratory investigations or need for a review visit. Indeed, retired staff and clients above 61 years had the highest percentages of referrals to other special clinics in the Korle-Bu Teaching Hospital; probably because of the presence of other co-morbid conditions in the elderly.¹⁵ The referrals to specialist clinics in the Teaching Hospital suggest the need for more doctors or specialists to support the work at the clinic.

CONCLUSION

The study demonstrated that dependents of staff constitute close to half of all clients seen over the period and yet the ratio of attendance to the clinic is only one staff to one staff dependent. There exist the potential for increases in the number and proportion of dependents of staff accessing free health care at the clinic with subsequent cost and quality of care implications. It is not efficient to ask dependents living all over Accra to access free health care at the Medical School clinic. The study recommends the enrolment of staff and their

dependants onto the NHIS. Indeed the study did show that the pattern of diseases seen at the Medical School Clinic is similar to those seen in other primary health care facilities and thus dependents of staff as well as members of staff who prefer, can access health care from public health facilities near their homes. In the interim, the Medical School/ College of Health Sciences need to develop more stringent criteria for clients qualifying for free services at the clinic.

Finally, junior members of staff utilized the Medical School Clinic more than other categories of staff. This study suggests the review of off-duty certification patterns among different categories of staff and more in-depth studies to determine the underlying factors for the pattern of utilization of health care services at the clinic by staff. These measures when adopted can enable the clinic concentrate on its core function of providing quality health care for students and staff.

Disclaimer

The views expressed in this paper are strictly those of the authors. No official endorsement by University of Ghana Medical School or the College of Health Sciences is intended or should be inferred.

ACKNOWLEDGEMENT

We are grateful to all doctors and nurses who provide services at the University of Ghana Medical School Clinic in Korle-Bu and especially to Sister Otioku-Buadu, Matron-in-charge of the clinic at the time data collection was done. We are grateful to Loretta Bannerman, of Department of Community Health for entering the data.

REFERENCES

1. World Health Organization. Preventing Chronic Diseases a vital investment. Geneva: WHO; 2005.
2. Leive A, Xu K. Coping with out-of-pocket health payments: empirical evidence from 15 African countries. *Bulletin of World Health Organization* 2008; 86 (11):849-856
3. Ministry of Health (2008). Annual Report of the Ministry of Health (MOH) of Ghana, 2009.
4. Bourne P. A. Impact of poverty, not seeking medical care, unemployment, inflation, self-reported illness, health insurance on mortality in Jamaica. *North American Journal of Medical Science* 2009; 1 (3): 99-109)
5. Biritwum R.B Utilization Pattern at a Medical School Clinic. *West African Journal of Medicine* 1983; 2(4):147-151
6. Ansah E. K., Narh-Bana S., Asiamah S., Dzordzordzi V., Biantey K., Dickson K. et al Effect of Removing Direct Payment for Health Care on Uti-

- lisation and Health Outcomes in Ghanaian Children: A Randomised Controlled Trial, *PLoS Med* 2009; 6 (1): 1000007
7. Ashitey G. A, and Nettey Marbell A.O.C. Monitoring Disease Patterns at the District Level: The Suhum Experience (II). Utilization Patterns: *Ghana Med J* 1989; 23:127-130
 8. Ghana Health Service (2009). Annual Report of the Ghana Health Service. Published by the Ghana Health Service in 2010, Accra, Ghana.
 9. Annual Report of the Korle-Bu Teaching Hospital, 2009. Published by the Korle-Bu Teaching Hospital in 2010, Accra, Ghana.
 10. Ghana Health Service (2010). 2009 Annual Report. National Malaria Control Programme (NMCP) of Ghana Health Service, Accra, Ghana.
 11. Berkley J.A., Lowe B.S., Mwangi .I, Williams T., Bauni E., Mwarumba S. et al. Bacteremia among children admitted to a rural hospital in Kenya, *New England Journal of Medicine* 2005; 352 (1):39-47
 12. Nankabirwa J., Zurovac D., Njogu J.N., Rwakimari J.B., Counihan H., Snow R.W, and Tibenderana J.K. Malaria misdiagnosis in Uganda – implications for policy change. *Malaria Journal* 2009; 8: 66-77
 13. Reyburn H., Mbakilwa H., Mwangi R., Mwerinde O., Olomi R., Drakeley C and Whitty C.J Rapid diagnostic tests compared with malaria microscopy for guiding outpatient treatment of febrile illness in Tanzania: randomised trial *British Medical Journal* 2007; 24: 334 (7590):403
 14. Makani J., Matuja W., Liyombo E., Snow R.W., Marsh K., Warrell D. A Admission diagnosis of cerebral malaria in adults in an endemic area of Tanzania: implications and clinical description, *QJM* 2003; 96 (5):355-362
 15. World Health Organization (2004). Department of Measurement and Health Information, Global Burden of Disease, December, 2004
-