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QUALITY OF CARE AT THE CAPE COAST CENTRAL HOSPITAL, GHANA: USERS' PERSPECTIVE

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SUMMARY

We carried out a survey of users' perception and assessment of the quality of care services provided at the Cape Coast Central Hospital. We interviewed 312 users from 24 communities in the Cape Coast municipality using a structured questionnaire. Of these, 77% attended the hospital for primary care. Eighty-two (26%) were inpatient users during the 6 months preceding the study. Respondents' choice of the hospital was motivated by lower costs compared to private clinics, quality of medical care, available expertise and the final referral position of the hospital. The factors perceived to be most important for medical care included availability of drugs, clinicians and equipment and pleasant staff attitude.

Fifty-seven percent of users were not informed about their diagnosis; 43% of those with preventable illnesses were not educated on how to prevent future episodes. Thirty-eight percent of users spent less than one hour at the hospital. Owing largely to non-availability, only 17% of users received all their prescribed drugs from the hospital's pharmacy. Fifty-two percent of all users spent at least ₵10,000 (cedis) during their last visit to the hospital. Inpatient users generally complained about poor sanitary facilities, lack of clean bedding, disturbance by mosquitoes and rodents and lack of entertainment facilities. Patients' blood pressure and weight were infrequently measured. Overall, 80% or more of users were satisfied with their diagnosis, treatment provided and skills of the clinical staff. Less than 56% were satisfied with staff attitude towards them and waiting time at the hospital. Twenty-eight percent were satisfied with the amount spent on care at the hospital. Inpatient users were less likely than outpatient users to be satisfied with their hospital bills or staff attitude.

Our findings provide indicators for monitoring the quality of care delivered at the hospital.

Keyword: Quality of care, user satisfaction, cost of care

INTRODUCTION

As medical costs rise, patients come to expect improved quality and range of services. According to the Ministry of Health (MOH), the quality of health services in government health facilities is poor due to the absence of institutional quality assurance programmes, a formal system of peer review and medical audit, and poorly developed monitoring systems¹. A qualitative study in the Ashanti-Akim district of Ghana indicated that the quality of health care is a more important determinant of utilisation of health services than its cost². The quality of care was defined in terms of the perceived quality of medical care, staff attitude and availability of drugs. More recently, a series of studies in the Eastern Region of Ghana have identified factors important for the quality of care provided according to patients³. Based on these latter studies, a set of indicators has been developed and a training manual produced to monitor quality of care as part of a quality assurance programme in the region⁴. The studies in the Eastern Region were limited to outpatients. We report on a community-based study of users' assessment of the quality of outpatient and inpatient care at the Cape Coast Central Hospital, Ghana.

MATERIALS AND METHODS

The Cape Coast Central Hospital has a capacity of 306 beds and serves principally the Cape Coast district with a population of 107,000. The hospital also served as the regional hospital for the Central Region at the time of the study. The average daily bed occupancy is about 50%. In 1995, 23,727 new outpatients were seen and 7,563 patients admitted⁵.

The Cape Coast district is divided into four sub-districts reflecting the immediate catchment areas of its public health facilities. Users were selected by multi-stage sampling at the sub-district and community levels. We aimed for a sample size of 300 users, based on a calculation assuming 50% coverage and 6% margin of error⁶. They were selected proportionally according to sub-district population and the number of communities in each sub-district. About a fifth of the total number of communities in each sub-

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district was randomly selected; this proportion being increased as necessary in order to obtain a required number of users. Within each community, households were selected systematically. No more than two users were interviewed per household. We selected 128 users from Cape Coast sub-district, 87 from Ewim sub-district, 66 from Adisadel sub-district and 31 from the University sub-district. A total of 312 hospital users were interviewed in 24 communities of the Cape Coast district using structured questionnaires. Seven trained non-MOH national service personnel were recruited as research assistants to interview users in *Fante*, the main local language in September 1996. Hospital users were defined as adults aged 18 years and over who directly received care themselves or those who accompanied a patient to the Central Hospital in the six months preceding data collection.

Data collected included demographic particulars, history of illness, reasons for attending the hospital, users' perception of factors important for quality of care, users' assessment of the quality of outpatient and in-patient services and facilities as well as their level of satisfaction with services received. Data were analysed using Epi Info version 6.04⁶. Inpatient and outpatient levels of satisfaction with clinical care services were compared using the chi-squared statistical test.

RESULTS

Demographic Particulars of Users

All 312 users had attended the Central Hospital at least once in the 6 months preceding the study; 73% had last attended the hospital in the preceding 3 months of the study. Two-thirds of respondents had been self-users and one-third had accompanied their wards. The female to male ratio of respondents was 3.2:1. There were 230 (74%) outpatient and 82 (26%) inpatient users. Fifty users (16%) were less than 5 years old, 167 (54%) were aged 15-44 years and 33 (11%) were aged 60 years and over. Users were predominantly of the Akan ethnic group (86%) and the Christian faith (86%). They were traders (36%), vocational workers (13%), students (11%) or were unemployed (14%). The majority had received basic (42%) or second cycle education (23%) but 22% had received no formal education.

Symptoms and Treatment History

The commonest symptoms reported were fever, abdominal pains, headache, bodily pains, soft tissue injury or swelling and diarrhoea. Two hundred and fifty-eight users (83%) reported to the hospital within 2 weeks of their symptoms and 18 (6%) after 1 month.

The majority (77%) of users had attended the regional hospital for primary care. Of 73 users who had sought treatment elsewhere before attending the

hospital, 26 (36%) had attended a private clinic, 27 (36%) a government health facility and 11 (15%) a chemical seller shop or pharmacy.

Reasons for Attending

The decision of users to attend the Cape Coast Central Hospital was influenced by self (60%), a relative (16%), spouse (8%), friends (8%) or a referral from a health care provider (7%). The most important reasons for particularly selecting the hospital were availability or competence of doctors (24%), quality of services (23%), lower cost of care (19%), final position of hospital in referral pathway in the municipality (19%), previous or regular user (14%) and proximity (11%). Other reasons were availability of equipment and facilities, only hospital with dental clinic and 24-hour operation.

The factors considered to be important for total quality care at the hospital were availability of drugs (37%), availability of clinical staff (27%), a pleasant staff attitude (25%), right or prompt treatment (20%), availability of equipment (15%), affordable or free medical care (14%), renovation or expansion of the hospital (11%) and receiving right diagnosis (9%). Other factors were good sanitation, provision of meals, provision of more beds, staff punctuality and availability of laboratory services.

Users' assessment of the importance of various factors for quality of care at the Central Hospital, on prompting, is shown in Table 1. [As with factors volunteered as being most important for quality of care, most users considered the availability of drugs, doctors and equipment and staff attitude as very important for quality of care at the hospital. Over 80% of users considered waiting time or proximity to the hospital to be very important for quality of care]. The affordability of cost of care did not receive as high a rating as might have been expected given that it was the commonest reason for using the hospital.

Table 1 Users' Reporting on Importance of Suggested Factors for Quality of Care

Factor	Very Important %	Just Important %	Not Important %
Availability of drugs	97.4	1.9	0.6
Availability of equipment	96.5	3.2	0.3
Availability of doctors	96.5	1.9%	1.6
Cleanliness of hospital	95.2	2.9	1.9
Availability of laboratory	94.2	4.5	1.3
Receiving a diagnosis	93.2	4.2	2.6
Attitude of staff	89.7	6.1	4.2
Affordability of cost of care	83.3	10.9	5.8
Time spent at the hospital	81.0	15.1	3.9
Proximity to hospital	81.0	10.6	8.4

Utilisation of Services

The most frequently utilised areas of the hospital were the OPD Consulting Room, dispensaries, OPD injection room, laboratory and wards. Five users with cholera and three in labour were admitted directly to the wards without passing through the OPD. Twenty-six (8%) were referred out for services such as laboratory or radiographic investigations.

Communication

Most users (95%) had no difficulty finding their way around the hospital. They explained that they were familiar with the hospital, were regular or previous users, were directed by the hospital staff, friends, relatives and others or could read well-labelled signs. The users suggested that providing signboards and pictures, and employing or assigning nurses, receptionists or ushers to direct users particularly the illiterate or elderly could improve movement around the hospital.

Over 93% of users said they were advised on how to take their drugs, were given clear instructions or advice during their interaction with the clinicians or felt sufficiently listened to (Table 2). Users who felt they were not sufficiently listened to claimed that they were ordered to cut their complaints short and the doctors had been more interested in collecting consultation fees. Fifty-seven percent of users were not informed about their diagnosis; 43% received no preventive education.

Table 2 Effectiveness of communication between clinicians and users

Item of Communication	No. of Users (%)
Advice or instructions were clear (n=304)	296 (97.4)
Advised on how to take drugs (n=302)	286 (94.7)
Felt sufficiently listened to (n=305)	284 (93.1)
Noticed health posters at the hospital (n=307)	247 (80.5)
Told when to return for review (n=301)	204 (67.8)
Educated on how to prevent future episodes of illness (n=290)	165 (56.9)
Informed about diagnosis (n=305)	132 (43.0)

Behaviour and Attitude of Staff

Twenty-three percent of users described the behaviour and attitude of the staff of the hospital as not good. They generally described nursing staff as rude, insulting, unfriendly, impatient or harsh and castigated doctors for collecting illegal fees from them. The majority of users however, described the staff as polite, friendly, patient, lively, respectful, understanding and ready to help. The staff received them nicely and had time for them. Forty-one percent of OPD users observed that others had jumped the queue; most disapproved of their observation.

Waiting Time

Of 303 users reporting on the length of time spent at the OPD during their last visit to the hospital, 38% spent less than 1h, 35% spent 1-2 h and 27% spent more than 2h. Ninety-one users (30%) considered their waiting times unreasonable. They preferred waiting times of less than one hour (70%), or 1-2h (30%). The points at the hospital OPD where patients most frequently spent unreasonable times were waiting to see the doctor, records department, laboratory and dispensary. Users suggested that, in order to reduce waiting time, more staff (doctors, dentists, nurses, laboratory technicians) should be employed, doctors should report early for work, doctors should work faster, staff conversation about personal issues should be reduced, more equipment should be provided at the laboratory, doctors' meeting should not be convened during working hours, jumping of queues should be checked, and OPD doctors should wait for doctor-on-call to report before they leave.

Privacy and Confidentiality of Services

Sixty-three percent of OPD users were attended to in privacy during their last visit to the hospital. Two-thirds of those admitted were granted sufficient privacy on the ward. Those receiving insufficient privacy complained of large and open wards with no screens.

Availability of Drugs

Most users received either some of their prescribed drugs (52%) or none at all (30%) from the hospital's dispensary; 17% received all their drugs. Of users who did not receive all their drugs, 85% claimed drugs were not available and 9% had no money. Other reasons were that dispensary was not opened, drugs at the dispensary were expensive or users preferred drugs from private shops.

Cost of Services

Fifty-two percent of users spent a total of at least $\text{¢}10,000$ for their care during their last visit to the hospital. About 25% of inpatient users spent more than $\text{¢}50,000$ compared with 2% of outpatient users. Sixty-four per cent of users considered the amount they spent either very expensive or expensive while 33% considered it just right. One-third of the patients could not afford their bills for the total cost of care. Affordability was inversely related to the amount spent on care ($\chi^2=61.5$; $p<0.001$). The cost of care was significantly higher for inpatient users than for outpatients ($\chi^2=66.4$; $p<0.001$).

Environmental Sanitation

Of respondents who observed the compound of the hospital, 40% found it weeded, 36% weedy and 24% partially weedy. With regard to the physical condition of the OPD buildings, 49% considered it poor or very poor.

Inpatient Care Facilities

Inpatient users were admitted to all the wards in the hospital although majority were admitted to the Children's, Female Medical, Gynaecology and Male Surgical wards. Seventy-four percent of them were admitted for less than 2 weeks and 23% for between 2 weeks and 1 month. Fifty-five percent of inpatient users were unhappy about conditions during their stay. These conditions included disturbance by mosquitoes, mice and other patient's tape music, poor sanitary facilities, lack of clean bedding and pillows, sleeping on floor due to lack of beds, malodour, non-availability of drugs and frequent deaths.

On direct questioning, 86% of users were either disturbed by mosquitoes or had problems sleeping while on admission. They blamed torn mosquito screens and a weedy environment. Mosquito coils were sometimes ineffective. Those with sleep problems blamed inadequate bedding, mosquitoes and rats, cold draught from broken louvres, poor ventilation worsened by lack of electric fans, increased pain and allergy to chloroquine.

Over half of inpatient users assessed the waiting room and facilities for heating food and preparing hot water as absent or inadequate. Most users found the bathing, storage of effects and lighting facilities on the wards adequate. About 91% of users who were not in a position to bathe themselves had to be bathed by relatives or friends.

Cleanliness of Inpatient Facilities

Less than two-thirds of users found any ward facility clean. More than half of respondents did not find the sanitary facilities clean while on admission (Table 3).

Table 3 Percentage of Users who found Ward Facilities Clean

Facility	No. of Users (%)
General ward environment (n=82)	53 (64.6)
Sinks (n=82)	47 (57.3)
Beds/lockers (n=81)	44 (54.3)
Bathroom (n=82)	39 (47.6)
Toilets (n=81)	30 (37.0)

The proportion of users enjoying any entertainment facilities provided by the hospital while on admission ranged from 1% for a party to 20% for television (Table 4).

Table 4 Percentage of Users enjoying Entertainment Facilities

Entertainment Facilities Provided on Ward	No. of Users (%)
Television (n=81)	16 (19.8)
Board games e.g. Ludo, Draught (n=80)	7 (8.8)
Radio/cassette player (n=80)	4 (5.0)
Newspapers/magazines (n=80)	3 (3.8)
End of year or other party (n=80)	1 (1.3)

Inpatient Care Services

Most inpatient users received temperature and pulse measurements, psychosocial support and medication (Table 5). About 69% and 26% of them had their blood pressure and weight measured respectively. Seventy-one percent were attended to by a doctor daily. Three patients including two with cholera claimed that a doctor did not attend to them while on admission. One non-cholera female patient claimed to have been ignored after a problem with one doctor.

Twelve patients (15%) alleged that they were denied medical attention at some point during their admission. The circumstances included on-call doctors' failure to turn up, demand for payment before care, denial of wound dressing and denial of assistance to urinate while on drip. Of 80 users, 94% were discharged with their condition cured or improved while 5% were same. One child with convulsion died while on admission. Two patients were still on admission at the time of data collection.

Table 5 Percentage of inpatients receiving selected clinical services

Services provided on ward	No. of users receiving service (%)
Temperature measurement (n=82)	77 (93.9)
Administration of medication (n=81)	76 (93.8)
Pulse count (n=80)	69 (86.3)
Psychosocial support (n=77)	66 (85.7)
Blood pressure measurement (n=80)	55 (68.8)
Weight measurement (n=80)	21 (26.3)

Sixty-nine users (84%) wanted the hospital to provide meals for patients. They argued that patients may come from far and so not have relatives around to prepare food for them; the hospital knew the best diet for patients with various diseases, and it was more economical, convenient, hygienic and timely. Users who opposed the hospital's provision of meal did not consider the hospital food palatable or affordable and wanted patients to choose their own foods.

Patient Satisfaction

Table 6 Level of Users satisfaction of Clinical Care

Area of care	Satisfied	Some-what Satisfied	Dissatisfied/don't know	P value
<i>Making diagnosis</i>				
Inpatient	68	3	11	0.305
Outpatient	197	14	19	
Total	265	17	30	
<i>Treatment provided</i>				
Inpatient	66	10	6	0.625
Outpatient	190	20	20	
Total	256	30	26	
<i>Waiting time</i>				
Inpatient	48	21	13	0.067
Outpatient	118	46	66	
Total	166	67	79	
<i>Staff attitude</i>				
Inpatient	43	20	19	0.051
Outpatient	131	71	28	
Total	174	91	47	
<i>Total amount spent</i>				
Inpatient	12	21	49	0.007
Outpatient	75	42	113	
Total	87	63	162	
<i>Skills of doctors/nurses</i>				
Inpatient	62	12	8	0.392
Outpatient	187	30	13	
Total	249	42	21	

The level of satisfaction with various areas of care among 82 inpatient and 230 outpatient users is shown Table 7. Overall, 80% or more of users were satisfied with their diagnosis, treatment provided and skills of the clinical staff. Less than 60% were satisfied with staff attitude towards them and waiting time at the hospital. Only 28% were satisfied with the amount spent on care at the hospital. Inpatient users were more likely than outpatient users to be dissatisfied with their hospital bills and the attitude of staff.

DISCUSSION

Traditionally, quality of care has been assessed from the dimension of health practitioners and health managers. The emphasis is now shifting to determining how patients view health services⁷. In line with this, MOH has called for the establishment of quality of care teams in all regional and teaching hospitals¹. Our findings cover many conditions that should be examined by teams seeking to improve health service delivery to the public.

The use of non-MOH personnel to interview users in their own communities was designed to eliminate potential desirable answers supplied to please health staff and thereby avoid any reprisals had the interviews been conducted in the hospital. We found that the majority of users attended the Central Hospital for primary care. Cost, available expertise, quality of services and the final referral position of the hospital in Cape Coast had influenced their choice of the hospital. This has implications for efforts to de-congest

the hospital by encouraging patients to attend lower level health facilities for primary care. It also has relevance for public education on the utilisation of a new 60 billion cedi-regional hospital which was commissioned in 1998. Education could be made difficult where users utilise because the hospital is a final referral hospital (and referrals from lower levels end there) and where they continue to use the hospital out of tradition.

Factors volunteered as the most important for quality of care were availability of drugs, availability of clinical staff and caring staff attitude. Our findings agree with the perception of the quality of care by communities in the Ashanti Region of Ghana². In the Eastern Region, however, staff attitude was less important for quality of care in the regional and district hospitals³.

Doctors at the Cape Coast Central Hospital generally did not communicate diagnosis or preventive messages to patients. The situation at the Koforidua Central Hospital was worse where the diagnosis was communicated to only 19% of patients³. The quality of doctor-patient communication influences patients' adherence to treatment, understanding of medical information, ability to cope with disease and their quality of life⁸. Some patients deplored staff attitude towards them. They wanted clinicians to be patient with them and avoid partiality. Both the communication and attitudinal problems could be improved through in-service training.

While majority of users considered their waiting times reasonable, all those dissatisfied with waiting times preferred to wait 2 hours or less. Long waiting times have caused patient dissatisfaction elsewhere in Africa^{9,10}. The analysis of the causes of delay and the introduction of appropriate interventions has usually resulted in a reduction of waiting times⁹. The hospital's management and clinicians should also explore ways of reducing the waiting times of patients at a busy consultation while at the same time examining patients for adequate periods of time and in privacy.

Owing to shortage of drugs at the hospital's dispensary, only 17% of users received all their prescribed drugs. In comparison, 52% of patients at the Koforidua Central Hospital in the Eastern Region of Ghana received all their drugs³. Given the value attached to availability of drugs for utilisation of services and patient satisfaction, it is undesirable that patients do not receive all prescribed drugs. Patients resent paying consultation fees and receiving a prescription but no drugs². Drug shortage appears to indict the cash and carry cost-recovery system being implemented to ensure that essential drugs are available.

One-third of users could not afford their hospital bills. There were calls for the annulment of the cash and carry system which users blamed for their high hospital bills. Elsewhere in Ghana, 24% of inpatients have absconded from wards, denied further management or detained after management because of their inability to settle their hospital bills¹¹. We are gratified by efforts by MOH to introduce health insurance schemes in Ghana. Flexible methods of payment akin to those in traditional medicinal practice should be examined.

Inpatients were generally dissatisfied with conditions pertaining to sanitation, bedding, vector control, waiting room facilities, catering and entertainment. While some of these problems could be addressed through improved management, it is acknowledged that the hospital has suffered continually from inadequate funding, staff shortage and lack of regular maintenance of its facilities since it was built in 1928. A patient who is admitted to the hospital is at considerable risk of developing preventable nosocomial infections given the prevailing conditions on the wards. It would be inexpedient to carry over these problems to the new regional hospital or to neglect them when the hospital's role is downgraded to that of a district hospital. The shortage of weighing scales and sphygmomanometers particularly for children may account for the infrequent weight and blood pressure measurements. The study also revealed that most users prefer the hospital to provide meals for them. The hospital management again could deal with this, particularly as they secure greater financial autonomy with the imminent introduction of the Ghana Health Service.

CONCLUSION

Overall, most users were satisfied with their diagnosis and treatment as well as the skills of the clinicians. This reflects the confidence users have in the expertise available at the Cape Coast Central Hospital. However, they were dissatisfied with waiting times and the cost of care. The key issues of drug availability, doctor-patient communication, sanitation, vector control, staff attitude and entertainment require urgent attention. The users' own key suggestions for improving health care delivery at the hospital were making drugs available, providing affordable or free medical care, providing more clinicians, improving staff attitude, renovating the hospital and improving sanitation.

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IMPACT OF IMPROVED EYE CARE SERVICES ON TIME OF DIAGNOSIS OF PRIMARY OPEN ANGLE GLAUCOMA

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SUMMARY

The case notes of new glaucoma patients seen at the Eye Unit of Korle-Bu Teaching Hospital, Accra, Ghana between the period of January, 1996 and April 1998 were reviewed. The results were compared with a study done by Hagan et al.

A total of two hundred and twenty eight case notes were reviewed. Only 20.2% were found to be blind in both eyes when first seen and 50.4% had useful vision in both eyes. This shows a great change as compared to the situation in 1986-1990 when 63.3% were blind in both eyes and only 20.1% had good vision in both eyes.

About 25% of patients seen at the clinic were referred from outreach services run by ophthalmic nurses. 58% reported directly with blurred vision in one or both eyes; 15.4% reported with other complaints and only 13.3% were picked up from family screening during the period under review.

Keywords: Primary open angle glaucoma, intra-ocular pressure, glaucoma screening, cup to disc ratio, visual fields.

INTRODUCTION

Primary Open Glaucoma is a disease without symptoms in its early stages. The mainstay of prevention of blindness from glaucoma is early diagnosis of the disease. Hagan and colleagues showed that about 63.5% of 159 new cases reporting to Korle-Bu Teaching Hospital, Accra, from January 1986 to 1990 were blind in both eyes when first seen. (Blindness defined as central visual field of less than 10 degrees)¹. All the 159 patients had vertical cup to disc ratios of more than 0.7. Since 1986 a Five Year Action Plan for Eye Care in the country has been drawn up and implemented. Before this period only 3 of the ten regions in the country had ophthalmologists and there was one ophthalmologist to 1,000,000 population. There were only 12 ophthalmic nurses. The Eye Clinic at Korle-Bu

Teaching Hospital had only three ophthalmologists and four ophthalmic nurses.

The excessive work load did not allow for outreach work and active and deliberate screening for glaucoma. Since the implementation of the first 5 year Eye Care Programme, all the ten regions now have at least one ophthalmologist: and there are 5 ophthalmologists, one resident, one medical officer, and 25 ophthalmic nurses at Korle-Bu Teaching Hospital. Ophthalmic nurses carry out outreach services at the polyclinics. They also screen at-risk groups at work places, churches etc. Also the Glaucoma Association of Ghana organizes free eye screening for glaucoma once a year. This study has been designed to determine whether with improved eye care delivery system in Ghana, glaucoma cases are now being picked up at an earlier stage.

MATERIAL AND METHOD

The case notes of 272 new glaucoma patients seen between the period of January, 1996 and April, 1998 at the Glaucoma Clinic of the Eye Unit of the Korle-Bu Teaching Hospital in Accra were reviewed. Patients with incomplete data, low tension glaucoma and ocular hypertensive were excluded in the study. A total of 228 patients qualified to be entered into the study. The age/sex distribution, vertical cup to disc ratio, reasons for presenting to the eye clinic and visual fields were analysed. Visual fields were Humphrey, Friedmans or Goldmans. The results were compared with a study done by Hagan et al¹ which reported on new patients seen at this clinic from 1986 to 1990. Definition of blindness was central visual field less than 10° on perimetry.

RESULTS

Of the 228 patients who were entered into the study, there were 134 (58.8%) males and 94 (41.2%) females giving M:F ratio of 14.4:1. The age/sex distribution is shown in Table 1.

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Table 1 Age/Sex distribution of 228 patients seen between January, 1996 and April, 1998

Age	M	F	Total	% of 228
0-9	-	-	-	-
10-19	2	5	7	3.1
20-29	14	2	16	7.0
30-39	20	6	26	11.4
40-49	20	15	35	15.4
50-59	25	24	49	21.5
60-69	33	26	59	25.9
70-79	19	10	29	12.7
80+	1	6	7	3.1
Total	134 (58.8%)	94 (41.2%)	228	100

M:F = 1.4:1

One hundred and seventy nine 179 (78.5%) were over 40 years of age. There were 46 (20.2%) patients not blind in both eyes; 67 (29.4%) blind in one eye and 115 (50.4%) patients not blind in either eye (Table 2).

Table 2 Age distribution of patients (1996-1998)

Age	Total	Bilateral Blindness		Unilateral Blindness		Not Blind in Either Eye	
		No.	%	No.	%	No.	%
0-9	-	-	-	-	-	-	-
10-19	7	1	14.3	1	14.3	5	71.4
20-29	16	4	2.5	2	12.5	10	16.6
30-39	26	1	7.7	6	19.2	18	69.2
40-49	35	1	8.6	6	17.1	26	74.3
50-59	49	12	13.3	15	30.6	22	44.9
60-69	59	12	20.3	24	40.7	23	39.0
70-79	29	8	27.6	12	41.4	8	31.0
80+	7	4	57.1	1	14.3	9	28.6
Total	228	46	20.2	67	29.4	115	50.4

Table 3 Blindness rates among patients (1986-1990 vs. 1996-1998)

Period	Bilateral Blindness	Unilateral Blindness	Not Blind in either Eye
1986-1990	63.5%	16.1%	20.1%
1996-1998	20.2%	29.4%	50.4%

This shows a highly significant improvement over the situation in 1986-1990 ($P < 0.006$) as shown in table 3.

Table 4 Age distribution of patients blind in both Eyes

Age	1986 - 1990		1996 - 1998	
	Total	No. Blind	Total	No. Blind
0-9	3	-	-	-
10-19	4	-	7	1
20-29	15	7	16	4
30-39	12	6	26	2
40-49	31	17	35	3
50-59	35	24	49	12
60-69	32	24	59	12
70-79	18	15	29	8
80+	9	8	7	4
Total	159	101	228	46

Table 4 compares the age/sex distribution of bilateral blindness between the period 1986-1990 and 1996-April, 1998.

During the period 1986-1990 all eyes reporting to the glaucoma clinic included in that study had vertical cup to disc ratio greater than 0.7, compared to less than 55% of eyes between 1996-1998 (Table 5).

Table 5 Vertical cup: disc ratio of 228 patients 1996-1998

V/cd	Right Eye		Left Eye		Total	
	No.	%	No.	%	No.	%
<0.5	44	19.3	41	18.0	85	18.6
>0.5-0.7	67	29.4	51	22.4	118	25.9
>.7-0.8	37	16.2	55	24.1	92	20.2
>0.8-1.0	80	35.1	81	35.5	161	35.3
Total	228	100	228	100	456	100

It is significant that the number of glaucoma patients seen during the five year period reviewed by Hagan et al (159 patients) is less than half the number of patients (228 patients) seen during the less than two and a half year period currently under review.

Table 6 shows the mode of presentation of patients to the clinic.

Table 6 Mode of presentation to the eye clinic

Presentation	Number	%
Blurring of Vision (Unil./Bil) ⁽¹⁾	133	58.3
Outreach/Screening	57	25.0
Family Screening	3	13.3
Others ⁽²⁾	35	15.4
Total	228	100

1. About 50% (61) of those presenting with blurring of vision had refractive errors.
2. Others include Pterygia, watering, irritation, conjunctivitis, stye, minor pains, retinal detachment.

DISCUSSION

Hitchings has defined glaucoma as a name given to a group of diseases showing the common characteristic of deformation of the optic nerve head. (Glaucomatous cupping) Primary Open Angle Glaucoma (POAG) is a diagnosis of exclusion². It is the 3rd commonest cause of global blindness³.

In Ghana it is second only to cataract, being responsible for 20% of all causes of blindness⁴. A detailed review of available data and disease projections in 1993 have shown that the problem of glaucoma as a major cause of global blindness is greater than previously thought⁵. It has been established through population based studies that 50% or more of POAG cases in any given community are not under medical care⁶, because they are unaware that they have the disease. The most recent estimates from the WHO suggest that over 100 million people are glaucoma suspects, over 20 million suffer from glaucoma and 5 million people are blind as a result of glaucoma. And approximately 70% of global glaucoma is found in developing countries⁶. POAG in black patients is more common, has an earlier onset, is more resistant to treatment, and is more aggressive at a younger age than in white patients.

It has been suggested that earlier diagnosis may prevent blindness from glaucoma. This can only be done through screening programmes or case finding, since POAG is silent until very late stages of the disease when visual deterioration is experienced. The issue of screening for glaucoma has been under considerable debate since POAG does not satisfy all the WHO guidelines for major population screening⁷. In developing countries, especially, there are not enough facilities and personnel to cope with the increasing workload of managing POAG patients. Primary surgery advocated for

these communities may not be feasible and the high cost of glaucoma medications lower compliance of patients. However, it has been strongly suggested that case finding among at risk group must be carried out to detect early glaucoma.

Before the development of the Five Year Action Plan for Eye Care in Ghana there were very few eye workers. Because of excessive workload, active and deliberate screening for glaucoma, even in hospital attendees, was not frequently undertaken. Most of the glaucoma patients therefore presented blind. In 1990, Hagan et al drew attention to the problem of glaucoma at the Eye Clinic at Korle-Bu by reviewing the case notes of all new glaucoma patients seen at this clinic from 1986 – 1990.

They reported a total of 159 new patients within a five year period studied, 63.5% of whom were bilaterally blind. Ten years later, we have reviewed currently, 228 (>1.4 times) cases seen over the last two and a half years (1996 – 1998). Out of this only 20.2% are blind in both eyes. This suggests that significantly more people have been diagnosed. The success has been achieved through the establishment of a local programme for manpower development. Optometrists and primary eye care workers are currently being trained locally.

Ophthalmic nurses have been well trained among other things to recognise glaucomatous cupping and to check the Intraocular Pressure (IOP) with schiotz tonometer. Any suspicious disc or an increase in IOP is referred to ophthalmologist for further evaluation.

Twenty five percent of all cases seen were referred from outreach clinics and community screening by ophthalmic nurses. With increased numbers of ophthalmologists and their better distribution in the regions, active case finding by ophthalmologist has also improved. Fifteen percent of patients reporting with conditions other than blurring of vision or glaucoma suspects were picked up by the ophthalmologists.

Significantly, referrals by optometrists have not been recorded in this series. In the United Kingdom the major source of referrals of glaucoma patients for hospital service is from the optometrist^{8,9}. In Ghana, there are very few optometrists trained to screen for ophthalmic disease. The older generation of optometrists did not have the privilege of being trained to screen for eye disease. The locally trained optometrists have had such training.

The first crop came out in 1993; so far about 20 have been trained. Some are in private practice. Those in government practice probably are not screening for ophthalmic pathology because of excessive refraction workload and also because they assume that the ophthalmologists are taking care of that.

Another category of personnel who could be involved in case findings are General Practitioners (GP's). Two years ago the Glaucoma Association of Ghana retrained ten general practitioners in private practice in Accra, to recognise glaucomatous optic disc damage. Unfortunately the follow up for these doctors was poor. Arrangements to have them attached to the glaucoma clinic to reinforce their diagnostic skills failed due to lack of time on parts of the GP's. Referrals from GP's are therefore lacking in these series.

The most sensitive screening methods for the early detection of glaucoma¹⁰, optic disc changes are a reliable way of detecting established glaucoma^{11,12}, although this is also known to be prone to errors¹³. Cup to disc ratio alone especially is not a reliable method for diagnosing glaucoma. Sommer has suggested therefore that for developing countries, techniques using newer simpler visual field techniques aimed at identifying those who have moderate to severe fields loss and not early loss must be employed¹⁴. This, he says will reduce the number of false negatives and therefore excessive load on the already scarce ophthalmic resources in these regions.

Until these newer visual field techniques become available in developing countries, optic disc characteristics indicating mild to moderate glaucomatous damage and intraocular pressure measurements remain the main screening tools in developing countries. It remains for us to determine the false negative and false positive rates using these techniques in developing countries. But it has been established that general practitioners and other eye workers can be quickly and reliably taught to evaluate the optic disc for moderate to severe glaucomatous damage¹⁵. Using this method we have seen a remarkable improvement in the stage at which POAG is diagnosed at the eye clinic, Korle-Bu Teaching Hospital, Accra. 50.4% are first seen not blind in both eyes in contrast to 20.1% between 1986 and 1990. Whilst between 1986 and 1990 all the patients seen had vertical cup to disc ratio of more than 0.7, between 1996 and April, 1998, 44.5% had vertical cup to disc ratio equal to or less than 0.7.

CONCLUSION

This study clearly suggest that with improvement in eye care delivery services and active and deliberate screening for glaucoma the disease can be detected at an earlier stage. What is not yet known is whether this earlier detection leads to prevention of blindness form glaucoma. However early detection is an important step in the prevention of blindness from glaucoma.

We therefore recommend that for the developing world ophthalmic nurses (or ophthalmic assistants) optometrists and perhaps general practitioners should be involved in the screening for glaucoma.

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INFORMED CONSENT AND PATIENT COMPLIANCE - A PILOT STUDY AT THE PSYCHIATRIC OUT-PATIENT CLINIC OF THE KOMFO ANOKYE TEACHING HOSPITAL, KUMASI

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SUMMARY

A study of the impact of informed consent on the compliance behavior of some out-patients at the Psychiatric Clinic of the Komfo Anokye Teaching Hospital over a nine month period had been done. A study population of 47 patients comprising of patients from a broad range of psychiatric disorders were randomly selected. A group of 22 of the patients were fully informed of their diagnosis, treatment methods, the possible side effects to be expected from their medication, the anticipated results when treated and the outcome if untreated as well as any available alternative treatments. A control group of 25 patients were given their usual treatments without the benefit of the full disclosure that the first group received. At the end of the study period 18 of the 22 patients in the Full Disclosure Group were still attending reviews while 10 of the 25 patients in the control group were attending reviews. A relative risk ratio of 2.05 was found. The results suggested a fairly high correlation between informed participation of patients in their treatment and their compliance behavior. Further research using an objective criteria to exclude other factors militating against compliance was suggested.

Keywords: Informed Consent, Compliance, Review.

INTRODUCTION

In almost all chronic diseases either of adulthood or even of childhood, the major aim of medical intervention remains largely the maintenance of health and the empowerment of patient to maintain a sense of control. A health team may use the art of medicine to help the patient to live as independently and as comfortably as possible¹. Whenever the goals of medical intervention and patient's desire to be treated are both seen to be achievable there are few problems to be expected. Yet in many clinical encounters involving patients whose illnesses require periodic attendance of reviews and supportive therapy one observes a tendency of patients to default².

Default and non-compliance to therapy mitigate against the achievement of attainable goals.

At the psychiatric out-patient clinic of the Komfo Anokye Teaching Hospital the above observations were as true as one may find in any out-patient clinic involving patients who require periodic reviews. Many reasons such as financial difficulties, difficulty in getting to the clinic due to distance from the clinic or difficulty in getting transportation, lack of an accompanying relative, etc. have been advanced for patient default and non-compliance.

It has been observed that inspite of all the work that go into attending to patients who are seen at the clinic for the first time by the health team, defaulting from treatment and non-compliance with treatment regimes increasingly poses the single most important challenge to the success of the efforts of the team.

Studies into the compliance behaviour of schizophrenics, however, suggested the lowering of expectations³. It is the experience of this author that it is only those patients who attended their periodic reviews for chemotherapy as well as supportive psychotherapy who benefited from the kinds of help that medical intervention offered such patients as the mentally ill.

In view of the above observations one wondered why patients still failed to take advantage of the help that medical intervention could offer them and tended to default. The question to be posed was: is it because they did not fully appreciate their condition and the benefits that compliance could offer them? In 1986 Simes, Tattersall and others reported that patients who were given the benefit of full disclosure of information regarding diagnosis and treatment understood their conditions better⁴. The hypothesis that informed consent would improve patient compliance was here tested.

Considering that the key to the success of our efforts to help our patients was their attendance of periodic reviews and compliance with their treatment regimes, this pilot study was aimed at finding the impact that full informed consent procedures would make on patient understanding of their conditions and possible compliance with review schedules and treatment regimes, in spite of the difficulties that faced our general patient population with reviews.

METHODS

A study population of 47 patients who attended the out-patient clinic of the psychiatric unit at the Komfo Anokye Teaching Hospital from August 1996 through April 1997 were randomly selected and involved in the study. Every other patient was assigned to the control group while even number patients were assigned to the Full Disclosure group. Only patients who on assessment were well oriented in time, place and person were included, those patients who were not well oriented in these spheres were excluded. A group of 22 patients of the study population were fully informed of their diagnosis, treatment methods and treatment regimes, the possible side effects to be expected from their medications, the anticipated results when treated and the outcomes if untreated, as well as any available alternative treatments. Patients were given the chance to ask any questions and requested to give consent to the treatment method chosen. These comprised of a broad spectrum of psychiatric disorders, diagnosed by the consulting psychiatrist using the ICD-10⁵ criteria, ranging from Anxiety-Depressive States, Schizophrenia, Hypomania, Schizo-Affective Disorders and Acute Psychotic Disorders.

A control group of 25 patients also within the same range of psychiatric disorders were given their usual treatment but were not given the benefit of full disclosure that the first group received. All patients were given their next review dates on a card and were expected to take their medication and return on the appointed date for review. All 47 patients were followed for a period of 9 months from the date of their first attendance to monitor their attendance record as well as their report of compliance with treatment regimes.

In this study compliance was defined as attendance of review at appointed dates and a verbal report by the patient and or an accompanying relative that prescribed drugs had been taken accordingly.

A descriptive statistical analysis of the results were made and are presented below.

RESULTS AND FINDINGS

An analysis of all Forty-seven (47) patients involved in the study revealed that patients fell within the ages of 19 and 80 years, with 61.7% falling within the range of 19 to 40 years. The study population was made up of 40.4% females and 59.6% males.

Table 1 shows the age as well as the sex distribution of the patients involved.

Table 1 Age and sex distribution

Age	Full Disclosure			Control		
	Male	Female	Total	Male	Female	Total
19 - 30	6	4	10	8	2	10
31 - 40	4	1	5	3	1	4
41-50	2	2	4	1	4	5
51- 60	1	-	1	3	1	4
Over 60	1	1	2	1	1	2
Totals	14	8	22	16	9	25

Table 2 shows the various category of diseases of the patients involved. Diagnosis was by the Consulting Psychiatrist using the ICD - 10 criteria.

Table 2 Patients and Diagnoses

Diagnosis	Full Disclosure	Control	Total
Hypomania	5(23.7%)	6(24%)	11(23.4%)
Anxiety Depressive State	7(31.8%)	7(28%)	14(29.7%)
Schizophrenia	4(18.1%)	5(20%)	9(19.1%)
Schizo-Affective Disorder	3(13.6%)	3(18%)	6(12.7%)
Acute Psychotic Disorder	3(13.6%)	4(16%)	7(14.8%)
Total	22(100%)	25(100%)	47(100%)

Table 3 shows the educational background of the patients. Majority of the patients, as many as 51%, in both groups had attained middle level education, 27.6% had secondary or post secondary education while 21.2% had only primary or no formal education.

Table 3 Educational Background of Patients

Level of Education	Full Disclosure	Control
No Formal Education	2	2
Primary Education	3	3
Middle Education	11	13
Secondary Education	4	5
Post Secondary Education	2	2
Total	22	25

Table 4 shows the occupation of the patients. 70.81% of the patients were employed. Only 4.2% of the patients were employed by others, the remaining were either self-employed or unemployed. 6.3% of them were students while.

Table 4 Occupation of Patients

Occupation	Full Disclosure	Control	Total
Trader	5	7	12
Clerk	1	-	1
Mechanic	2	1	3
Tailor	2	1	3
Housewife	1	3	4
Teacher	1	-	1
Farmer	4	4	8
Student	2	1	3
Unemployed	2	5	7
Retired	1	-	1
Driver's Mate	1	-	1
Hairdresser	-	1	1
Seamstress	-	1	1
Total	22	25	47

At the end of the nine month period 10 of the patients in the Control group of 25 were still coming for review. All of them reported that they were taking their medication fairly well. Of the 22 in the Full Disclosure group, 18 were still coming regularly for their reviews and those who had need for medication reported that they were taking their medication fairly well.

Of the 22 patients in the Full Disclosure group 4 were supported by their siblings when they first came to the clinic, 10 were accompanied by parents, 1 by a spouse, 1 by a daughter, 3 by uncles, 1 by an in-law and 2 were unaccompanied. Whilst 7 in the control group were supported by siblings, 9 by parents, 2 by spouses, 1 by a son and 1 by an uncle. The remaining 5 were unaccompanied.

Out of the 4 defaulting patients in the Full Disclosure group 2 had been diagnosed as having Schizophrenia, 1 Hypomania, and the other as Acute Psychotic Illness. Among the Control group the 15 patients were distributed as follows: 4 Hypomania, 4 Schizophrenia, 3 Anxiety Depressive States, 2 Schizo- Affective Disorder and 2 Acute Psychotic Disorders.

Of the 18 patients attending reviews among the Full Disclosure group 7 did not need any more chemotherapy but were coming for supportive psychotherapy while only 1 of the 10 in the control group came for only supportive psychotherapy.

Analysis of the age of the compliant patients showed that older patients were more compliant than younger ones in both the Full Disclosure group as well as the Control group. Among the former group all patients within the 50 to over 60 age bracket complied while 60% of patients in that age bracket complied among the Control group.

In both groups, all patients who were on medication and who came for their periodic reviews reported that they were taking their medications. In some of these cases accompanying relatives collaborated this information.

In both groups all the 7 patients who reported for the first time to the clinic unaccompanied had defaulted by the ninth month.

This study found a compliance rate of 81.8% among the Full Disclosure group as against a rate of 40% in the Control group, a relative risk ratio of 2.05.

DISCUSSION

This study focused on one of the functions of informed consent, namely, patient education and its impact on patient compliance behaviour. The results of this study showed a correlation between the informed participation of patients in their management and care and patient compliance.

Informed consent primarily aimed at affirming patient autonomy. In many jurisdictions the informed consent of the patient was essentially required for all therapy and research⁶. Beauchamp and Childress⁷ have reported that the justification for the principle of informed consent was not some utilitarian idea of its benefit to the patient but it was rooted in the promotion of the autonomy of the patient itself. Consequently, one did the patient no favour by seeking his or her consent, it was rather his or her right.

It was the view of this author that the informed consent of the patient was not only his or her right but beyond the professional conduct of the physician it was in his best interest, because, as the results of this study showed it contributed in a significant way to the attainment of his clinical goals, namely, winning the co-operation of his patient. In spite of confirmed diagnosis and carefully planned management procedures, the non-compliant patient was a physician's nightmare.

It was significant to note that the amount and the kind of information that patients should have been given was a subject of considerable debate⁸⁻¹⁰. Simes, Tattersall et al.⁴ reported in 1986 that the debate was even more considerable, in this matter of informed consent, when the issue concerned clinical trials, especially in randomized trials that involved the treatment of cancer patients. Some opined that it could have led to more confusion but not better understanding among patients¹¹, whilst others still maintained that it could lead to considerable anxiety¹².

Yet others held the view that lack of information caused more anxiety in patients not less since that led patients to believe that they were being kept in the dark over matters concerning their management, care and well being¹³⁻¹⁵.

The teaching is that the patient's autonomy is promoted by involving him or her in decision making affecting his or her management and care.

The findings of this study were that the more the patient perceived himself or herself as an active participant in his or her management the more the likelihood that he or she would comply with the treatment procedures. This was collaborated by Wright¹⁶ who reported in 1994 that group discussions and patient education had been found to lead to better compliance.

Earlier studies of compliance among the mentally ill concentrated on studying patient compliance behaviour with only chemotherapy. They found compliance rates to be lower than 50%. Furthermore they studied only schizophrenics³.

Whilst these earlier works concentrated on only drug compliance the data presented here sought to emphasize the need to look at compliance in a broader way than compliance with drugs only and to look at a broader spectrum of psychiatric disorders. Hence the difference between this study and previous ones.

In this study compliance included attending reviews and for supportive psychotherapy. Among the Full Disclosure Group as many as 7 of the 18 patients who still attended the clinic did not need any further drugs but supportive psychotherapy. Only 1 of the patients in the control group who needed only support attended. It could be argued that when patients were educated to see compliance beyond taking medication, they were more likely to appreciate the need to come for review particularly among the

mentally ill for whom supportive therapy constituted a significant part of their management.

An analysis of the age of the compliant patients in this study revealed older patients were more compliant than younger ones. Other studies found age to be significant as far as compliance went. Goldman, Holcomb et al.¹⁷ found that compliance tended to improve with age in their study of compliance among hypertensive patients. Held et al.¹⁸ found that age was significantly correlated with compliance in their study of malaria prophylaxis. One could argue that this was so because younger patients found it harder to accept that they were ill and needed to take regular medication over a period of time.

Another variable that had been associated with compliance was the education level of the patient. Slymen, Drew, Wright et al.² reported in 1992 that the less educated the patient the more non-compliant he tended to be. The results of this study, however, found the opposite to be true. Among both the Full Disclosure as well as the Control groups none of the patients who had attained post secondary or tertiary education was coming for review by the ninth month. It was the view of this author that in that particular patient population the more educated patients tended to be younger and as earlier observed, the younger population, in this study, tended to be more non-compliant.

It could also be argued that among the mentally ill, the level of education of the patient became irrelevant by virtue of their mental states. More work would be needed to establish what the relationship was between educational level and compliance among the mentally ill.

A factor that was found on analysis to be significant as far as compliance was concerned was family support. All patients who continued to come for review in both groups had an accompanying supporting relative on their first visit to the clinic and in many cases subsequent visits. It was found that none of the 7 patients who came to the clinic for the first time unaccompanied was coming for review by the ninth month. A previous study found the role of supporting relatives to be a major contributing factor to success in the management of the psychiatrically ill¹⁹.

A major drawback of this study may be the lack of a scientifically verifiable method of checking whether patients actually did take their drugs or not. A more objectively verifiable method of checking drug

compliance would add to the weight of our present findings. Looking at a broader range of psychiatric disorders in this study marked a difference between this work and earlier works, it could, however, have been a limiting factor in that it could have led to overlooking significant differences in the mental states of patients of different diagnostic categories.

Another limiting factor was the size of the study population, a larger population would have strengthened the conclusions of the study.

CONCLUSION

The results of this study suggested a correlation between informed participation of patients in their treatments and compliance with treatment. Three confounding factors found to influence compliance were age, accompaniment and education. It was not clear which of them was more important. More work will be needed to determine the extent to which each of the factors influenced compliance. Given that patients in both the Full Disclosure group as well as those in the Control group all faced similar problems that the general population faced, the rate of default among the control group and the success rate among the Full disclosure group were high enough to have indicated that informed consent impacted compliance behaviour positively. Age, family support and educational level of the patients were found to be important. Further large scale work using an objective criteria to exclude other factors that militated against compliance would be needed.

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PICA PRACTICE AMONG PREGNANT GHANAIS : RELATIONSHIP WITH INFANT BIRTH-WEIGHT AND MATERNAL HAEMOGLOBIN LEVEL

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SUMMARY

In this study the pica habit of 502 pregnant women were studied. It was found that 48.01% of the pregnant women had pica habit. Clay eating was the major form of pica practised by the pregnant women (28.49%). Some of them also chewed wooden-sponge or wooden-stick (9.76%) more frequently. However a few of the pregnant women chewed cola nut (4.98%), uncooked maize dough (2.79%), chalk (1.20%), and fresh starch (0.80%). Multiple pica was not observed among our study population.

Two main reasons were given by the pregnant women for eating clay. One was to prevent salivation or vomiting (16.14%) while the other was because they liked its flavour (12.35%). Clay eating significantly correlated with maternal haemoglobin concentration ($r = -0.32$). Pregnant women who ate clay had a significantly lower mean haemoglobin concentration ($11.05 \pm 0.59\text{g/dl}$) than women who did not eat clay ($11.86 \pm 0.49\text{g/dl}$; $p < 0.05$). Those who ate clay had persistently lower mean haemoglobin concentration throughout pregnancy than those who did not. The overall mean birth weight of the 502 singleton infants delivered by the pregnant women was $3.01 \pm 0.50\text{kg}$. There was no significant difference in the mean birth-weights of infants born to women who ate clay ($2.99 \pm 0.39\text{kg}$) and those who did not eat clay at all ($3.03 \pm 0.51\text{kg}$) during pregnancy. Thus the observed level of clay intake did not significantly affect infant birth-weight.

Clay pica is shown by this study to be associated with low haemoglobin level. Medical doctors and dieticians should ask pregnant women with anaemia about pica habit. Education of women in general about the effects of pica and other habits must be intensified to reduce the prevalence of anaemia during pregnancy.

Keywords: Pica, clay, birth-weight, haemoglobin, pregnancy.

INTRODUCTION

There is no universally accepted definition of pica due to the diversity of the habit. While some authors define pica as the compulsive eating of non-food substances over a sustained period of time, others define it as the abnormal craving for food substances^{1,14}. There is another kind of pica which is defined as the sucking or mouthing of objects by children above 18 months of age¹. The term 'pica' is derived from the Latin word for magpie, a bird famous for its habit of gathering a variety of objects to satiate its hunger¹. During pregnancy, a number of non-food items are ingested by some pregnant women probably due to the effects of antenatal nausea and vomiting or anaemia. Pica habit may be excessive eating of ice (pagophagia), clay (geophagia) or starch (amylophagia). Some of the materials ingested can have deleterious effects on the health of both the mother and infant. The non-nutritive items when eaten occupies space in the stomach where food will normally be. This reduces the stomach capacity and hence reduces food intake during pregnancy. When seen in the context of increased nutrients requirement during pregnancy, pica habit can aggravate malnutrition problems encountered during pregnancy such as anaemia. A major cause of anaemia is the normal physiological changes which occur during pregnancy. However other causes such as inadequate body iron store, inadequate nutrition and deficient dietary practices, systemic infections, as well as habits such as pica contribute to the observed haemoglobin levels.

The role of pica in the genesis of iron deficiency anaemia has been reported with conflicting views. It is speculated that some of the components of the soils ingested can form chelates with minerals like iron and calcium to prevent their absorption².

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Minnich reported that ingestion of Turkish clay markedly decreased absorption of iron². On the other hand, Talkington³ studied two clays from East Texas that were popular with pregnant women and found a minimal impairment of iron absorption when the clays were ingested just prior to iron intake. Talkington³ also reported that the ingestion of starch may contribute to the development of iron deficiency during pregnancy not because iron absorption is impaired, but because the starch provides energy without iron. In addition to clay and starch, some women may ingest items like coal and chalk¹³. McGanity⁴ observed that 28% (n = 861) pregnant adolescent girls ate fresh starch, clay and refrigerator frost.

The objective of this study was to investigate the independent effects of pica during pregnancy on infant birth-weight and maternal haemoglobin level among a group of 502 pregnant Ghanaian women. The study was conducted between 1993 and 1994.

SUBJECTS AND METHODS

Study locale

Data for the study were collected from four Maternal and Child Health (MCH) Centres in Accra, Ghana. The MCH Centres were: University of Ghana Hospital, Labadi Polyclinic, Kaneshie Polyclinic and Nerzit Clinic. These centres provide antenatal services for pregnant women.

Subjects

The subjects for this study were pregnant Ghanaian women resident in Accra. Subjects were of the age range 20 - 35 years. A total of 502 pregnant women were selected for the study through a systematic random sampling technique¹¹. These were pregnant women receiving antenatal care at the time of the study. All the subjects showed consent before participating in the study. Subjects who had complicated pregnancy, sickle cell disease and severe malaria were excluded from the study. The pregnant women for this study were all on mineral and vitamin capsules (which provided 3 × 60mg ferrous sulphate per day) as part of protocol for MCH clinics controlled by the Ministry of Health (MOH) in Ghana.

Data Collection

Interview data from the 502 pregnant women were collected by means of a study-specific semi-structured questionnaire. An epidemiological data which also included a dietary data were collected. Specifically data were collected on antenatal nausea, oedema, physical activity level, occupation of

subject and husband, smoking status, alcohol consumption, nutrient supplementation, parity, overlap (breast-feeding while pregnant), antenatal clinic attendance and women's perception of good nutrition during pregnancy.

Dietary data were collected on energy, protein and iron intakes of the pregnant women by means of a three-day 24-h dietary recall method in the first, second and third trimesters. Data on pica habit were collected at the time of the 24-h dietary recall data collection. Food intake and pica habit data were collected for two week-days and one week-end day to offset daily variations. Data collected in addition to infant birth-weights and maternal haemoglobin concentrations will enable us to have a clear perception of the characteristics of the subjects involved in the study.

Infant birth-weights were measured by means of a sensitive infant weighing scale (model 850B, WEYLUX Electronic Baby Weighers, British Standard Quality).

The infant birth-weights were taken immediately after parturition. Infant birth-weight and maternal weight measurements were done in accordance with standard procedures⁵.

The haemoglobin concentrations were determined monthly from the 3rd to 9th month of pregnancy. Haemoglobin determination was done by the use of the cyanmethemoglobin spectrophotometric method¹².

Data Analyses

Data analyses and storage were computer based using EPI-INFO version 6.0 [Centre for Disease Control and Prevention (CDC), WHO, Geneva] and STATA version 4.0 (Population and Development Program, Warren Hall, Cornell University). Students' *t*-test was used where comparison between the means was required. Correlation analysis was used to ascertain relationships between variables. All findings were considered statistically significant at $P < 0.05$. Dietary nutrient intakes were analysed by the use of FAO food composition tables for Africa⁶ together with local food composition tables formulated by Eyeson and Ankrah⁷.

RESULTS

Characteristics of the Subjects

The mean age of the subjects involved in the study was 27 years with a range of 20-35 years. Most of

the subjects had received at least 10 years of education (97.7%), and 3.9% had had university education. Almost all were married (99.3%) and 28.1% of them were in their first pregnancy. Trading was the major occupation of the subjects (47.7%) followed by vocational work (28.9), defined here as hairdressing, dressmaking, catering, and farming. Office workers and professionals (teacher, lawyer, nurse, actress, police personnel) comprised 10.9% while housewives were 12.5% of the total number. The pregnant women had initial mean weight of 60.77 ± 10.11 kg. The mean BMI of the subjects was 23.14 ± 3.60 kg/cm² while the mean height was 162.09 ± 5.20 cm in the first trimester. The mean dietary energy intake of the subjects was 2176.03 ± 278.79 kcal per day, while the dietary protein intake was 70.04 ± 14.30 g/day. Mean dietary iron intake was observed to be 25.54 ± 6.82 mg/day.

Prevalence of Pica and Reasons

Out of the 502 pregnant women studied, about 48% practised pica during pregnancy (Table 1).

Table 1 Pica habit during pregnancy and reasons (n=502).

Types of Material Eaten	Number of Pregnant Women (%)	Reasons
Clay	81 (16.14)	To prevent salivation or vomiting.
"	62 (12.35)	Flavour was appealing.
Clay total	143 (28.49)	--
Stick/Sponge	49 (9.76)	To prevent salivation.
Cola Nut	25 (4.98)	To clear the mouth or to prevent salivation.
Maize dough	14 (2.79)	The flavour was nice / it was attractive.
Chalk	6 (1.19)	Appealing flavour.
Starch	4 (0.80)	Appealing flavour
No pica	261 (51.99)	Do not like it or it is not good

A substantial number of the pregnant women ingested clay (28.49%) during pregnancy (Table 1). Some of them also chewed wooden-sponge or wooden-stick (9.76%) and cola nut (4.98%) more frequently, while a few ingested fresh maize dough (2.79%), chalk (1.20%) and uncooked starch (0.80%). Although some of the pregnant women ate one form of non-food item or another, multiple pica habit was not found among our subjects.

Two main groups of pregnant women were found in terms of reasons for clay eating (Table 1). One group ate clay to prevent salivation or vomiting (16.14%) while the other group ate it because they craved for it (12.35%) (Table 1). The eating of clay was not regular among the pregnant women. While some ate clay everyday 2.8% (n = 14), others ate it less frequently 25.7% (n = 129). The type of clay eaten by the pregnant women was a white clay popular among Ghanaians. The quantities of white clay eaten ranged from 2.0 to 25.0g per day with a mean of 10.65 ± 0.825 g/day.

Birth-Weight and Maternal Haemoglobin Concentration in Relation to Pica

The mean birth weight of the 502 infants delivered by the subjects was 3.01 ± 0.50 kg (Table 2).

Table 2 Infant birth-weight and maternal haemoglobin concentration in relation to pica (n = 502)

Pica group	Number of mothers (%)	Mean Infant birth-weight (kg) ¹	Mean maternal haemoglobin (g/dl)
Clay	143 (28.5)	2.99 ± 0.39	$11.05^a \pm 0.60$
No pica	261 (51.99)	3.03 ± 0.51	$11.86^b \pm 0.49$
OTHER PICA			
Sponge/stick	49 (9.76)	2.90 ± 0.60	11.73 ± 0.42
Cola nut	25 (4.98)	3.16 ± 0.37	11.89 ± 0.49
Maize dough	14 (2.79)	3.30 ± 0.41	11.83 ± 0.62
Chalk	6 (1.19)	2.92 ± 0.40	11.32 ± 0.46
Starch	4 (0.80)	2.95 ± 0.50	12.30 ± 0.45
Total: other pica	98(19.53)	3.08 ± 0.49	11.79 ± 0.55
Total	502 (100)	3.01 ± 0.47	11.50 ± 0.60

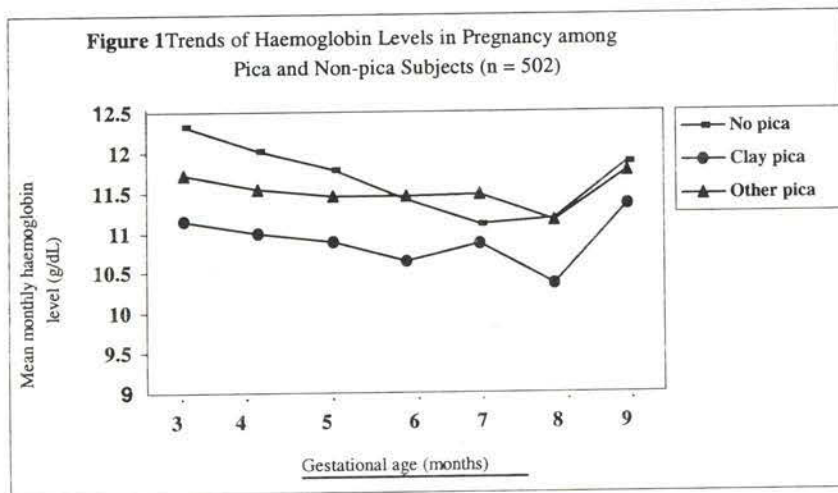
1: No significant differences were observed in terms of birth-weight, $p > 0.05$.

a: Mean values with different superscripts are significantly different $p < 0.05$.

There was no significant difference in the birth-weight of infants born to women who ate clay (2.99 ± 0.39 kg) and those who did not eat clay (3.00 ± 0.55 kg) during pregnancy.

Table 2 indicate that women who ate clay had significantly lower maternal haemoglobin concentration than those who did not (11.05 ± 0.596 vs 11.86 ± 0.574 g/dl). There was a significantly negative correlation ($r = -0.32$; $P < 0.05$) between maternal haemoglobin level and clay eating. However there were no significant differences between the other pica groups in infant birth-weight or maternal haemoglobin concentration during gestation (Table

2). Throughout pregnancy, those who ate clay had significantly lower haemoglobin concentration than their counterparts who did not eat clay. This trend is shown in Figure 1.



DISCUSSION

Pica During Pregnancy

Pregnancy is associated with some alterations of maternal food habits. Notable among these habits is pica or the eating of non-food items. This study showed that about half of the 502 pregnant women studied ingested some types of non-food materials. Clay eating was the most common form of pica practised among our subjects, involving about a third of them. Some of the pregnant women chewed wooden stick, sponge and cola more often than when not pregnant, while few ate fresh uncooked maize dough and uncooked starch as well as classroom chalk. Even though maize dough and starch are food items, the eating of the uncooked forms is probably abnormal and deviates from normal food habits.

These findings imply that apart from aversion to some nutritious foods some pregnant women develop taste for some non-food items. The combined effects of these on nutrient intake during pregnancy can be profound. The Non-food materials may replace a substantial part of the diet possibly preventing adequate nutrition during pregnancy. Some of these non-food items like chalk and clay can form chelates with essential mineral elements like iron and calcium and reduce their availability in the gut, and can also cause obstruction of the colon⁹. The reduced availability of iron and other essential mineral elements can aggravate the already high anaemia prevalence among preg-

nant women in developing countries. Pica practice in terms of starch eating has earlier been reported among pregnant women in Texas³. In that report³ it was observed that the ingestion of starch promoted iron deficiency anaemia, not because raw starch prevented iron absorption but because the it supplied energy without iron. The high microbial contents of items like fresh maize dough and starch can promote infection or induce diarrhoea in women who eat them. The ingestion of coal and chalk is also reported to be a common form of pica among some pregnant women^{1,13}.

In the present study the type of clay eaten by the pregnant women was a white clay popular among Ghanaians. Traditionally this white clay is used on the body during rituals like initiation into womanhood in some parts of Ghana and in some areas it is used on the body of the mother who has just delivered an infant successfully.

Among our study subjects, there were two main reasons for the consumption of clay. The first was to prevent salivation or vomiting during pregnancy, while the second reason was because they had developed taste for it (Table 2). It can be deduced from the first reason that to some extent, among our study subjects, nausea can induce consumption of clay during pregnancy.

Effect of Pica on Birth-Weight and Maternal Haemoglobin Concentration

This study took cognisance of the fact that haemoglobin concentration during pregnancy is affected by numerous factors. However it will be beneficial to study the haemoglobin concentration of pregnant Ghanaians who eat clay.

No significant differences in the birth-weights of infants born to women who ate clay regularly and those who did not eat clay during pregnancy. This could mean that the amount of clay eating by the pregnant women did not significantly alter infant birth-weight.

Clay eating was associated with low maternal haemoglobin level. Subjects who ingested clay during pregnancy had significantly lower maternal haemoglobin level than those who did not eat clay even though these subjects were from similar environment. The significantly negative correlation shown between clay eating and haemoglobin level suggests an association between clay eating and anaemia. This observation is consistent with what has been reported recently from a similar study¹⁴. Even though clay eating is statistically significantly associated with low maternal haemoglobin concentration, the observed difference may not be clinically significant for those with high haemoglobin concentration. It will however be harmful for those on marginal haemoglobin status.

There are several mechanisms by which clay eating may reduce haemoglobin concentration. Clay can form chelates with essential mineral elements needed for haemoglobin synthesis such as iron and copper, and prevent their absorption². It could also line the absorptive surface of the intestines to prevent efficient absorption of nutrients. The clay could provide excess amounts of minerals that competitively inhibit the absorption of iron and other nutrients required for haematopoiesis. The reduced availability of mineral elements such as iron needed for haematopoiesis can lead to iron-deficiency anaemia, worsening the already high anaemia prevalence among pregnant women. Some of the components of clay and other earth materials can promote toxemia and systemic infections, including worm infestation which may predispose one to anaemia. In a study a high rate of death was observed among pregnant women who ate clay during pregnancy⁹. Women who ingested clay frequently suffered from severe anaemia, complete obstruction of the colon with perforations and sepsis⁹.

The role of clay eating in the genesis of iron-deficiency anaemia is however not clear. For instance, while Minnich² reported that Turkish clay markedly decreased absorption of iron, Talkington³ found only a minimal impairment of iron absorption caused by the type of clay that is popularly eaten by pregnant women in East Texas. It is therefore probable that different clay types and quantities may have different effects on maternal haemoglobin concentration. It was also not clear by our study whether it is the anaemia that induces the pica habit or it is the pica that causes the anaemia.

There were no significant differences in the birth-weights of infants born to women who ate clay regularly and those who did not eat clay during pregnancy. This indicates that clay eating or the quantities of clay eaten by our subjects did not significantly alter infant birth-weight. A recent similar study has also shown a similar result¹⁴.

In conclusion pica habit is of high prevalence among pregnant women in Ghana. Although clay eating did not influence infant birth-weight it was inversely associated with maternal haemoglobin concentration.

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INFLUENCE OF ANALGESIC DELIVERY TECHNIQUE ON RESTORATION OF BOWEL FUNCTION AFTER COLO-RECTAL SURGERY

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SUMMARY

One hundred and five consecutive patients who underwent uncomplicated elective colorectal surgery between January 1993 and December 1996 were analysed retrospectively to examine the efficacy of Patient Controlled Analgesic (PCA) delivery method (Epidural 26 patients; IV 79 patients) and the restoration of bowel function post-operatively. The epidural solution contained 50mls 0.5% bupivacaine, (1mg/ml) with 1mg fentanyl made to 250mls with 0.9% normal saline (4mcg/ml) to run at 6-8mls per hour. The IV PCA contained morphine 60 mg. In 60ml. Of 0.9% normal saline (1mg/ml) with a bolus dose of 1mg, lockout interval of 5 min and no background infusion. The results which were analysed by χ^2 test showed that epidural patients had significantly better post-operative pain relief ($p = 0.04$) and earlier restoration of bowel function ($p = 0.03$). Quicker return of bowel function after elective colorectal surgery may enable earlier discharge from hospital with attendant cost savings.

Keywords: Analgesic, Bowel Function, Surgery

INTRODUCTION

The synergistic interaction of epidural low dose opioid and local anaesthetic is said to provide superior post-operative analgesia^{1,2}. Recovery of bowel function is slowest after colonic resection^{3,4}. The suggested mechanisms for development of post-operative ileus include activation of a spinal reflex arc by abdominal pain which inhabits intestinal motility⁵, induction of generalised sympathetic hyperactivity following surgical stress which inhibits bowel motility^{6,7}, and the effect of opioids in delaying intestinal transit by increasing the tone and amplitude of non-propulsive bowel contractions^{8,9,10}. Epidural PCA (Patient Controlled Analgesia) with low dose opiate and bupivacaine after

colo-rectal surgery may provide superior analgesia by blockage of nociceptive afferents and sympathetic efferents. It may also promote quicker restoration of bowel functions because of unopposed parasympathetic tone. This latter benefit may enable earlier patient discharge from hospital with attendant cost saving and this has prompted this study.

METHODS

One hundred and thirty patients of two Consultant Surgeons who underwent consecutive uncomplicated elective colo-rectal operations between January 1993 and December 1996 from the colo-rectal unit at South Cleveland Hospital, Middlesbrough were studied. Pre-study power analysis showed that to detect difference in time to restoration of free fluids of 2 days, a total 25 patients would be needed ($p = 0.05$, power 80%). All patients went to the High Dependency Unit (HDU) from theatre where details of their analgesic delivery techniques, intravenous and epidural PCA, and pain scores (0 = no pain and 4 = worst pain imaginable) were charted according to a standard protocol by trained nurses from this unit. For each patient the number of times each particular pain score was recorded was extracted from this chart. Because of ethical committee concerns about placement of epidural catheter for placebo purposes it was not possible to blind the nurse charting the pain scores. Patients were as a result not randomised and epidural patients were chosen on the basis of whether or not they consented for the procedure. However on return from the HDU to the main ward nurses and doctors were blinded to the analgesic delivery technique. Pain was scored over the period the patients were on the

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HDU (median duration 72 hours). Pain scores were obtained every 15 minutes for the first hour, every half hour for the next two hours, and hourly thereafter, unless a score 3 or 4 was obtained when observations reverted to the beginning. Thus the number and frequency of observations made was a function of the severity of pain. Information on patient demography, surgical operation, analgesic delivery technique, pain scores, clinical progress and discharge from hospital were collected on a specially designed data sheet and entered into a computer. All but seven patients were ASA category 1 or 2 (4 IV; 3 Epidural). Midline incisions were employed and nasogastric tubes inserted were removed on the second day. Post-operatively a protocol for introduction of oral fluids was strictly followed. Essentially, provided they tolerate it, patients progressed from 30ml to 100ml clear fluids and were then allowed to drink freely. On the first day they were allowed up to a maximum of 50ml hourly. On subsequent days, the last value of the previous day was started as baseline and this was increased by 10ml successively but given on two hourly basis until the patient tolerated 100ml.

The IV PCA contained 60mg morphine in 60ml of 0.9% normal saline (1mg/ml) with a bolus dose of 1mg, set at a lockout interval of 5 minutes and no background infusion. The epidural PCA solution contained 50ml 0.5% bupivacaine (1mg/ml) and 1 mg of fentanyl made to 250ml in 0.9% normal saline (4mcg/ml) and was run at 6-8ml per hour, bolus dose of 2ml and a lockout interval of 20 minutes.

Any patients who had incomplete documentation were excluded from analysis. Also excluded were those with complications such as pulmonary infection or myocardial infarction which may confound pain requirements, or stroke and ileus which may affect their ability to drink or restoration of bowel function. The result of the study was analysed statistically by chi square test. Our statisticians felt that despite the lack of randomisation and difference in sample sizes statistically meaningful data could be obtained so long as a constant ratio was maintained between the two groups.

RESULTS

Twenty five of the 130 patients were excluded from further analysis because of incomplete documentation (10 patients), and complications (15 patients). Those with complications were 9 pulmonary infection (3 Epidural, 6 IV); 3 wound infection, 2 myocardial infarction and 1 stroke. Incidence of pulmonary infection between groups was not significant ($p = 0.48$) and is detailed below (Table 1)

Table 1 Characteristics of patients with chest infection

Index	Epidural	IV
Age (yrs)	64.6 (33-84)	64.1 (45-82)
Weight (Kg)	78.3 (82-70)	76.5 (60-103.7)
Smoking	Non-smoking or stopped > 10yrs	Non-smoking or stopped > 10yrs
ASA Score	2	2
Incision	Midline	Midline
Duration of Operation	176.6 (160-190)	177.8 (90-240)

Table 2 Details demographic profile of all patients

	Epidural	IV
Total Number	26	79
Mean Age (years)	58.3	59.4
Anterior Resection	11	28
Right Hemicolectomy	5	17
A-P Resection	6	13
Sigmoid Colectomy	3	10
Others	3	11

Analysis of the effectiveness of pain relief by analgesic delivery technique (Table 3) shows that whilst both analgesic delivery techniques were effective the epidural is clearly superior as shown by the absence of any patient in this group suffering severe pain i.e. pain score 3 or 4 ($p=0.04$).

Table 3 Effectiveness of pain relief per analgesic method

Pain Score	Epidural	IV
0	26	69
1	22	63
2	0	24
3	0	10
4	0	2

The superiority of the epidural route is further emphasized by the finding (Figure 1) that significantly more pain score 0 were recorded in this group.

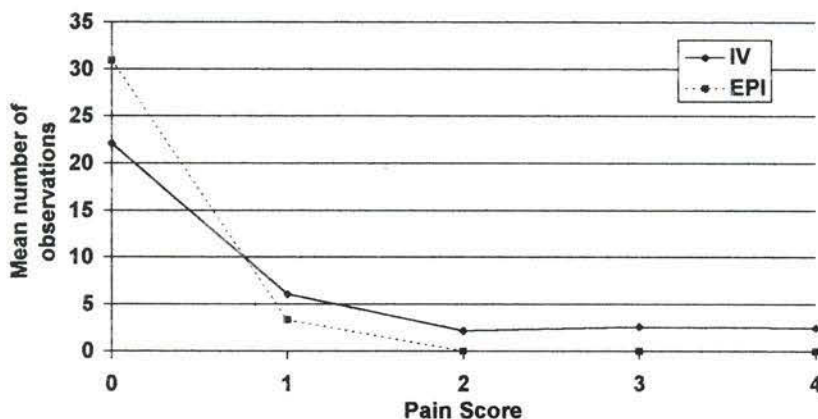


Figure 1 Mean number of observations per pain score

Bowel function was assessed by the establishment of free fluids and compared by analgesic delivery type. Mean time to establish free fluids was 4.7 days for IV group and 3.8 days for Epidural group, a statistically significant difference ($p=0.03$).

Table 4 Establishment of free fluids in relation to analgesic delivery type

Days Free Fluid Established	Analgesic Delivery Type	
	Epidural	IV PCAS
Day 1-4	22	39
Day 5 or more	4	40

There was no difference in mean operating time between the two techniques (epidural = 140 minutes; IV = 139 minutes). Epidural patients had a mean hospital stay of 8.1 days, and were discharged home 2.0 days earlier than patients in the IV group.

DISCUSSION

This study reveals that epidural PCA technique provided superior analgesia and a quicker restoration to free fluids than the intravenous PCA method.

The study methodology was hampered by the ethical committee's disapproval of epidural catheter placement for placebo purposes. It was impossible to blind or randomise effectively as was done by de Leon Casasola¹¹. By using adequate sample size as shown by the pre-study power analysis, and keeping a constant ratio between the two groups meaningful data was obtained.

In this study a better assessment of severity and duration of pain was made by recording individual pain scores rather than simply obtaining the average pain score over the period.

Some randomized prospective studies comparing the effect of epidural analgesia with systemic opioids on recovery of bowel function after colo-rectal surgery have shown faster recovery by the epidural route^{12,13,14}. In these studies recovery of bowel function was assessed by gastric emptying, passage of flatus or faeces, or transit of radiopaque marker. Assessment by gastric emptying, passage of flatus or faeces, or transit of radiopaque

markers is accurate but involves additional procedures. Compared to passage of flatus or faeces establishment of free fluids is an easily identifiable clinical marker and can be assessed over the whole day without intrusive questioning. For personal or cultural reasons the patient may feel reluctant to divulge such private information on passage of flatus.

Using establishment of free fluid as a marker of return of bowel function enables us include operations with stoma such as abdomino-perineal (AP) resection in our analysis as assessment by passage of flatus or faeces could be unreliable in such circumstances.

Although factors other than medical reasons might have affected discharge from hospital, we believe that the shorter duration of stay with the epidural PCA patients was important and is in agreement with the study by de Leon-Casasola¹¹. Quicker discharge should ultimately help reduce hospital costs.

In conclusion, our study showed better pain relief is obtained with epidural PCA compared to IV PCA for patients undergoing colo-rectal surgery. Furthermore, there was a significantly earlier return of bowel activity and a quicker discharge of patients from hospital after epidural PCA.

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IMPORTANCE OF *BULINUS GLOBOSUS* SNAILS IN THE TRANSMISSION OF URINARY SCHISTOSOMIASIS IN EIGHT VILLAGES IN SOUTHERN GHANA

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SUMMARY

Snail survey was carried out at water contact sites (WCSs) of 8 villages in southern Ghana to establish fresh water snails responsible for schistosomiasis transmission in the area. *Bulinus globosus*, one of the intermediate host snails of *Schistosoma haematobium* was found at the WCSs in all 8 villages although those infected were identified at sites in 5 of the villages. The snails were confined to the Densu river itself, its tributaries (streams) and ponds. These snails were found during the minor rainy season, at the beginning of and during the dry season. They were found to be focal in distribution. Also found in the Densu river and the ponds were uninfected *Biomphalaria pfeifferi* snails. In addition to those indicated above, non-schistosome-transmitting snails were also found.

Keywords: *Bulinus globosus*, *Schistosoma haematobium*, Densu River, Southern Ghana.

INTRODUCTION

Schistosomiasis, one of the major parasitic diseases affecting about 200-300 million people world-wide is a disease of the tropics and subtropics¹⁻³. Judging from the local names given to urinary schistosomiasis - "la shaamo" in Ga, "dwonso mogya" in Akan and "ewudodor" in Ewe - it can be inferred that schistosomiasis has been known in certain areas of Ghana for a long time as reported by Odei^{4,5}.

There are two types of schistosomiasis in Ghana, the urinary which is the most predominant and the intestinal types^{4,6}. The snails responsible for the transmission of urinary schistosomiasis, *Schisto-*

soma haematobium, in Ghana are *Bulinus truncatus* and *B. globosus*^{4,7-10}. *B. globosus* was reported to be the most important and widely distributed in the country before the creation of the Volta Lake^{4,5,7,9,11} but rare in the area now occupied by the lake¹¹. *B. truncatus* had a less extensive distribution in the pre-lake period and was associated with the Volta watershed and the freshwater lagoons^{8,12}. Though the intermediate snail host of intestinal schistosomiasis (*S. mansoni*), *Biomphalaria pfeifferi* were found in the freshwater lagoons, only *S. haematobium* infection was recorded in the area^{9,12}. Comparatively this snail species was far widely distributed than the foci of intestinal schistosomiasis^{5,12,14}.

Studies carried out in 1984 in the lower Volta river, below the Akosombo dam¹⁷ and at the Tono irrigation scheme in the Upper East Region¹⁸ indicated that the disease is on the increase. At the root of the problem is often a lack of knowledge of both the epidemiological pattern and of the socio-cultural structures that govern the attitude/perception of the population concerned¹⁹.

The Noguchi Memorial Institute for Medical Research therefore undertook an epidemiological survey to assess the endemicity of urinary schistosomiasis in another geographical area of the country from May, 1992 to July, 1993 to facilitate the formulation of a control strategy. During the study water contact sites (WCSs) in 8 selected villages were sampled for the presence of host snails of *Schistosoma spp.* The results of which are presented

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in this paper. Results of the effect of control measures undertaken, socio-cultural findings and water contact behaviour patterns are reported elsewhere.

MATERIALS AND METHODS

The study area covered eight villages in the Ga and Akuapem South Districts of the Greater Accra and Eastern Regions respectively. These villages which are located about 40 to 60km north-west of Accra were grouped into three defined areas on the basis of their natural boundaries. The villages in the Ga District are Ayikai Doblo, Akramaman, Dom Faase and Papase while Ntoaso, Sansami Amanfro, Chento and Gidi Kope are located in the Akuapem South District.

peasant farmers who grow maize, cassava and vegetables.

The WCSs for these villages were located on the Densu river itself, its tributaries, permanent and temporary ponds which were partly created by the Densu river overflowing its banks during the rainy season and partly by rainwater. All the identified WCSs were sampled once a month from September 1992 to March 1994 using palm leaf mats²⁰. Other methods for snail sampling could not be applied because of the relative low numbers of snails found during preliminary studies. The mats which were made of fresh palm leaves, woven into a palm frond frame of 43x43cm, were left at the WCSs and collected in the mornings of the fourth day. An attempt was made to

ensure that the mats were submerged in the water during the exposure period. Snails found attached to the mats were picked into containers and transferred to the laboratory for identification.

The host snails were grouped into young (0-4mm) and adults (4.1mm and above). They were checked for infection the day after collection by exposing them to light between 8.00 hours and 14.00 hours. Snails shedding brevifurcate cercariae were recorded as infected. Non-shedding snails were re-checked for infection once a week and those still not shedding cercariae were crushed at the end of the 4th week for final examination for infection. Infection rate of snails was

based on the number of snails shedding brevifurcate cercariae among the number of surviving snails. Non-schistosome host snails collected were also recorded.

RESULTS

General

Figure 1 is the map of Ghana showing the study area while Table 1 summarizes the results on *Bulinus globosus* snails. They were identified in all the 8 villages. Generally, these snails were collected during

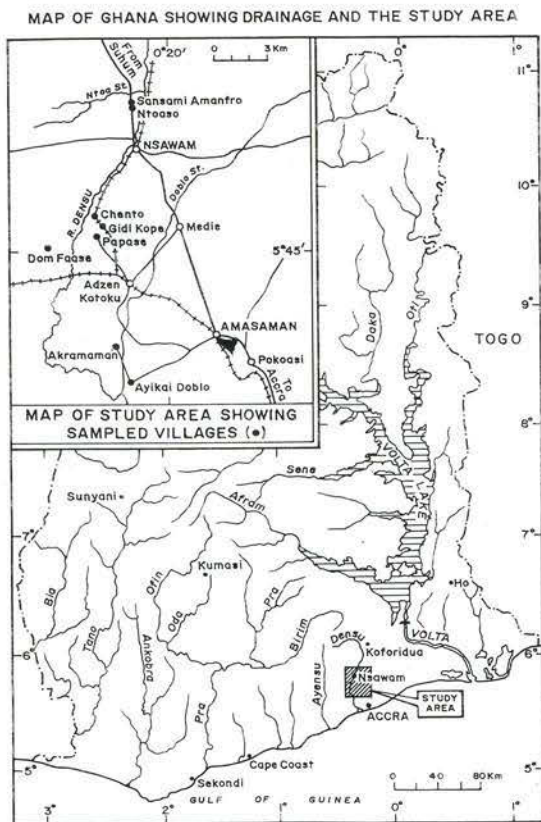


Figure 1. Map of Study Area

The major rainy season in the study area is from April to July and the minor one from September to October. The dry season is from November to March. People living in seven of these villages depend on water from the Densu river and its tributaries while one, Gidi Kope depends on its tributaries and ponds for their daily activities. Fishing is carried out in the Densu river, its tributaries and in the temporary pools created by the overflow of the river during the rainy season. The inhabitants of all 8 villages are mainly

the minor rainy season (September and October), the dry season (December and January) and in August and November. At Ntoaso, one of the 8 villages, *B. globosus* snails were found throughout the year. In all 2,293 *B. globosus* snails were found and 1,913 (83.4%) survived. A total of 3.1% (60/1,913) of the survived snails were infected. These infected snails were found in January, June, September, October, November and December.

Area 1

Ayikai Doblo had 9 WCSs but all the 237 *B. globosus* snails were collected at 4 sites on the Doblo stream. Out of this number, one hundred and sixty one (68.0%) snails survived. The overall infection rate was 23.0% (37/161). Infection rates of 32.7% (36/110) and 14.3% (1/7) were recorded in the adult snails from sites 1 and 2 respectively.

Table 1 *B. globosus* snails collected at the water contact sites in 8 villages in southern Ghana

Area	Village	<i>B. globosus</i> snails no. collected		<i>B. globosus</i> snails no. examined		Infection rate % (no. pos./no.exam.)		
		Young (0-4mm)	Adult (4.1mm+)	Young (0-4mm)	Adult (4.1mm+)	Young (0-4mm)	Adult (4.1mm+)	Overall
1	Ayikai-Doblo	21	216	1	160	0 (0/1)	23.1 (37/160)	23.0 (37/161)
	Akramaman	112	315	88	286	0 (0/88)	0.35 (1/286)	0.3 (1/374)
2	Ntoaso	24	142	16	138	0 (0/16)	2.2 (3/138)	2.0 (3/154)
	Sansami- Amanfro	0	7	0	7	0 (0/0)	0.0 (0/7)	0.0 (0/7)
3	Dom-Faase	0	1	0	1	0 (0/0)	0.0 (0/1)	0.0 (0/1)
	Papase	0	188	0	148	0 (0/0)	2.7 (4/148)	2.7 (4/148)
	Chento	252	995	100	951	1 (0/100)	1.6 (15/951)	1.4 (15/1051)
	Gidi-Kope	6	14	6	11	0 (0/6)	0 (0/11)	0.0 (0/17)

At **Akramaman** 427 *B. globosus* snails were collected at 4 out of the 11 WCSs; 3 of the sites were located on the Doblo stream while one was on the Densu river. In all 374 (87.6%) snails, (286 adults and 88 young), survived. Only one adult snail, 0.7% (1/145), from site 4 on the Doblo stream was found to be infected giving an overall infection rate of 0.3% (1/374).

Area 2

Ntoaso had 8 WCSs, 7 of which were located on the Ntoa stream while the other one was a fish pond. A total of 166 *B. globosus* snails were collected from 3 sites and 93.0% (154/166) survived. The overall infection rate was 2.0% (3/154). The infected 4.2% (3/71) snails were found at site 5. No schistosome host snail was collected from the fish pond.

The WCSs at **Sansami Amanfro** were made up of 1 site on the Densu river and 7 ponds. None of the seven adult *B. globosus* snails collected at the site on the Densu river was infected. All the 7 snails survived. No schistosome host snail was found in the ponds.

Area 3

Dom Faase: The 20 WCSs at this village were made up of 7 sites on the Densu river, 11 temporary ponds created by the Densu river when it overflows its banks during the rainy season and 2 ponds. Only 1

uninfected *B. globosus* snail which survived was found at site 6 which is a pond.

The 13 WCSs at **Papase** consisted of 6 sites on the Densu river, 6 temporary/permanent ponds and 1 site on a stream, a tributary of the Densu river. A total of 188 adult *B. globosus* snails were collected from 4 ponds and the stream. Out of the 78.7% (148/188) snails which survived, 2.7% (4/148) were infected. Sixty per cent (3/5) of the infected snails were found at site 5 and 4.0% (1/9) at site 6.

Chento: This village had 4 WCSs; 1 on the Densu river, 1 permanent and 2 temporary ponds which were fed by rainwater. A total of 1,247 *B. globosus* snails were found in the permanent pond which did not dry up during the dry season. Only 1.4% (15/1051) out of the 88.6% (1051/1247) surviving snails was infected.

Gidi Kope: All the 11 WCSs at Gidi Kope were ponds. None of the 6 young and 14 adult *B. globosus* snails collected was infected. Eighty five per cent (17/20) of the collected snails survived.

Snails Per Mat

On the average the number of *B. globosus* snails per mat was 8.3.

Other Snails

Also collected were 44 uninfected *Biomphalaria pfeifferi*, snail host of *S. mansoni*, from the ponds and the Densu river in Area 3 during the months of September 1992 and 1993 respectively, April 1993 and May 1993. Other snails found were *Aplexa waterloti*, *Melanoides spp.*, *B. forskalii*, *Pila spp.*, and *Lymnaea spp.* (Table 2).

Table 2 Some other snails sampled at the water contact sites in 8 villages in southern Ghana

Area	<i>B. forskalii</i>	<i>Melanoides spp.</i>	<i>Pila spp.</i>	<i>Aplexa waterloti</i>	<i>Lymnaea spp.</i>	<i>Biomphalaria pfeifferi</i>
1	662	446	38	193	0	0
2	29	466	7	1241	6	0
3	721	1019	23	64	166	44

DISCUSSION

Data on the epidemiological studies carried out in 1992/93 in the present study area indicated that urinary schistosomiasis was endemic in all the 8 villages with prevalence ranging between 43.5% at Sansami Amanfro and 65.5% at Ntoaso indicating that transmission of the disease existed in the area (Aryeetey, M. E. et al unpublished observation) and during our survey 3.1% of the surviving 1,913 *B. globosus* snails were infected.

It is known that the relationship between human infection and water bodies which constitute the infection-sites is of importance in the epidemiology of schistosomiasis and that few snails surviving in a water body much frequented by human population are of greater importance in terms of transmission than a large number of snails in a water body not frequented. Furthermore observation made in 1962 indicated that in localities where the prevalence of infection among children was 60% and above, snail host were scarce in the early dry season, the transmission period⁸. In southern Ghana all infections were detected in adult snails and a relationship between the degree of infection in snails and degree of prevalence of human infection, was noted. Lower human infection rates were observed in villages where collected snails shed no cercariae contrary to a high prevalence of infection in communities from which infected snails were collected. The survey revealed the absence of schistosome snails at WCSs which were not much frequented.

The prevalence of *B. globosus* snails at WCSs in all the villages sampled confirmed earlier reports on the wide distribution of this important snail species in Ghana^{4,6-8,10,11}. These snails were found in the Densu river, one of the major rivers in Ghana, at Akramaman and Sansami Amanfro, about 50 -

60km from Accra as well as in streams and ponds. *B. globosus* snails are known to thrive in small perennial streams, temporary pools formed in depressions along-side streams and ponds^{9, 10, 20}. Its presence in the Densu River noted during the present survey therefore provides further information on the distribution of this important schistosome snail species in Ghana. The focalization of this snail species and the seasonality in its distribution, as being reported here, is a confirmation of earlier findings^{20, 21}

The formation of the Volta Lake in 1964 created a vast environment favourable for the invasion of *B. truncatus* in an area, which previously did not favour its survival¹¹. The absence of this snail species in our study area could therefore be due to prevailing unfavourable environment for its survival. Ecological changes along the Volta Lake altered the importance of the two snail species responsible for urinary schistosomiasis in Ghana, especially along the lake. With the emergence of *B. truncatus* as an important schistosome transmitter as mentioned above, it was thought that *B. globosus* would lose its importance as schistosomiasis host snail; but the observation of its presence in southern Ghana indicates its continuing epidemiological importance.

The presence of uninfected *Biomphalaria pfeifferi* snails in southern Ghana is worth noting since generally, prevalence of intestinal schistosomiasis is on the increase in Ghana¹⁸. Infection due to *S. mansoni* was not detected in stool samples examined during an epidemiological study on schistosomiasis in the present survey area (unpubl. data); this could be due to the absence of faeces at the WCSs. In 1974 examination of stool samples of 1,698 boys in north-western Ghana too did not reveal the presence of intestinal schistosomiasis despite the wide distribution of its potential host in the area²⁰. The other snails found at the water contact sites are of no known importance with regard to transmission of urinary schistosomiasis in Ghana.

Results of the study demonstrates the relatively "positive" impact of non-interference of the environment by man on the transmission of urinary schistosomiasis in the study area as compared with the situation along the shores of the man-made Volta Lake.

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DETERMINANTS OF MATERNAL MORTALITY IN ECLAMPSIA AT KORLE-BU TEACHING HOSPITAL, ACCRA-GHANA

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SUMMARY

Eclampsia, though preventable, seems to remain common at the Korle-Bu Teaching Hospital and constitutes a major cause of maternal mortality. This study was conducted to examine other determinants apart from lack of antenatal care that may be responsible for maternal deaths from eclampsia.

The case records of 929 patients who had eclampsia in the 8-year period 1990-1997 were reviewed and data on socio-economic and medical factors influencing maternal mortality were collected.

The incidence of eclampsia was 11.1 per 1000 deliveries and the case fatality was 1 in 18.2 or 5.5%. Univariate analysis did not find any difference in the risk of dying from eclampsia with respect to age, parity and marital status, but women who had attained a higher level of formal education had a lower risk.

Postpartum eclampsia after a spontaneous vaginal delivery carried a higher risk of maternal death. There is a need to examine the management of hypertensive diseases in pregnancy within the Primary Health Care System and see if changes could be made to prevent eclampsia at all levels of health delivery in Ghana.

Keywords: Eclampsia, Determinants of Maternal Mortality.

INTRODUCTION

In many developing countries, eclampsia constitutes a major cause of maternal mortality with specific mortality ranging from 5-20%¹⁻⁴. The incidence of eclampsia in the developed world has fallen considerably because of improved maternal

services^{5,6}. Unfortunately such changes have not occurred in most developing countries and eclampsia continues to be a common complication of pregnancy^{4,7,8}.

There is scarcity of information, especially in most developing countries, concerning the various associated factors, quite part from lack of antenatal care^{4,9,10} that are responsible for the high maternal mortality following eclampsia.

This study was aimed at finding out factors that influence maternal deaths in eclampsia.

MATERIALS AND METHODS

All cases of from eclampsia registered at the Korle-Bu Teaching Hospital (KBTH), Accra during the 8-year period (1st January 1990 to 31st December 1997) formed the data base of the study. The analysis of the maternal deaths was made in relation to age, parity, residence, marital status, formal educational attainment, antenatal care, timing of the seizure, mode of delivery and associated complications of pregnancy, labour and puerperium. Statistical analysis was done using the chi-square test. Statistical significance was defined as p-value less than 0.05.

RESULTS

During the 8-year period of study, there were 83,957 deliveries at KBTH. Out of these 929 were associated with eclampsia, a rate of 11.1 per 1000 deliveries.

The rates of eclampsia and the maternal mortality rate by year from 1990 to 1997 are shown in Table 1.

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Table 1 Eclampsia Rates and Maternal Mortality Rates Korle-Bu Teaching Hospital

Year	Total Deliveries	Total No. of Eclampsia	Rate of Eclampsia per 100 Deliveries	Total Maternal Deaths	MMR per 100,000 Total Delivery
1990	10593	148	13.9	74	696
1991	10301	134	13.0	102	990
1992	9729	122	12.5	42	432
1993	11775	129	10.9	110	934
1994	5988	49	8.2	33	551
1995	11719	113	9.6	88	751
1996	11563	107	9.2	63	545
1997	12289	127	10.3	71	576
Total	83,957	929	11.1	583	694

MMR – Maternal Mortality Rate

In 1994 there was a nurses' strike for a period of about three months, during which no admissions were made in the hospital.

Out of the 583 total maternal deaths, 51 were associated with eclampsia. The maternal mortality rate due to eclampsia was 0.6 per 1000 deliveries. The case fatality rate for eclampsia was 1 in 18.2 cases or 5.49%.

Table 2 Age and formal education: Correlation of risk of maternal death in eclampsia.

Age (Years)	Formal Education	Total No. Eclampsia	Maternal Deaths	Risk of Maternal Deaths %
≤ 20	Nil	81	5	6.17 NS
	Primary	89	6	6.74 NS
	Secondary	14	0	0.00 S
21-25	Nil	120	8	6.67 NS
	Primary	103	5	4.85 NS
	Secondary	26	1	3.85 S
26-30	Nil	127	8	6.30 NS
	Primary	114	6	5.26 NS
	Secondary	34	1	2.94 S
31-35	Nil	69	7	7.25 NS
	Primary	47	3	6.38 NS
	Secondary	31	1	3.22 S
>35	Nil	22	1	4.55 NS
	Primary	23	1	4.35 NS
	Secondary	29	1	3.45 NS
Total		929	51	5.49

S = Statistically Significant
NS = Not Significant

Table 2 shows age and formal education attainment correlation of risk of maternal mortality associated with eclampsia. Women who had attained secondary education had significantly lower risk of ma-

ternal death from eclampsia than those who had primary or no formal education in all age groups.

Residential area and marital status had no significant association with maternal mortality (Table 3).

Table 3 Residential area and marital status: Correlation of risk of maternal death in eclampsia.

Residence	Marital Status	Total No. Eclampsia	Maternal Deaths	Risk of Maternal Death %
Accra City	Married	301	10	3.32 NS
	Not Married	232	13	5.62 NS
Rural Area	Married	135	9	6.67 NS
	Not Married	261	19	7.28 NS

N.S. – Not Significant

Table 4 shows obstetric factors and risk of maternal death in eclampsia. Women who had postpartum eclampsia after spontaneous vaginal delivery had significantly higher risk of maternal death than those who had seizure attacks before delivery.

Table 4 Obstetric factors and risk of maternal death in eclampsia.

Obstetric Factor	Total No. Eclampsia	Maternal Death	Risk of Maternal Death (%)
A. Antenatal Care			
Non Attendant	379	23	6.07 NS
Private Maternity			
Home/Hospital	192	11	5.73 NS
Gov't Clinic/Hospital	184	12	6.52 NS
KBTH	174	5	2.87 S
B. Timing			
Antepartum	390	19	4.87 NS
Intrapartum	408	21	5.15 NS
Postpartum	131	11	8.40 S
C. Mode of Delivery			
Spont. Vaginal	339	27	7.97 S
Instrumental	84	3	3.57 NS
Caesarian Section	501	16	3.19 NS
Died Undelivered		5	
D. Parity			
Nulliparous	631	28	4.85 NS
Parous	298	23	6.67 NS

S – Statistically Significant
NS – Not Significant

The major complications causing maternal death in eclampsia are shown in Table 5.

Table 5 Clinical cause of death in eclampsia.

Primary Diagnosis	No.
Haemorrhage	13
Renal Failure	12
DIC	12
Puerperal Sepsis	5
Pneumonia	5
Cardiac Failure	3
C.V.A.	3
Sickle Cell Disease	2

The leading causes were haemorrhage, renal failure and disseminated intravascular coagulation. Thirty-three (64.7%) of the maternal deaths in eclampsia occurred in less than 24 hours, 4(7.8%) occurred between 24 and 48 hours and 14 (27.5%) after 3 days stay in the hospital.

DISCUSSION

The maternal mortality rate of 694 per 100,000 deliveries at the Korle-Bu Teaching Hospital is very high. This is similar to the rate of 734.4 per 100,000 deliveries reported by Lassey and Wilson in the same hospital¹¹. Eclampsia is an important contributor to this high maternal mortality rate. The incidence of eclampsia of 11.1 per 1000 deliveries is high compared to rates of 4.2 to 9.3 per 1000 in some African studies^{7,8,12}. The incidence in the developed countries is about 0.5 per 1000 deliveries^{5,6,13}.

The case fatality ratio of 1:18.2 or 5.5% is also high compared to studies from other African countries where the ratios were 0 to 4.4%^{3,9,14,15}.

The differences in mortality from eclampsia have been shown to have a direct relationship with poor socio-economic factors¹⁶. Age and parity did not show any difference in the predisposition to maternal death from eclampsia in this study. These findings are at variance with that of Adetoro, who in a Nigerian study reported higher maternal deaths in young primigravidae and elderly women of higher parity³.

Marital status and residential area also did not influence mortality. These findings were surprising as eclampsia can be considered a condition of ignorance and poverty. Thus women who had completed secondary level of formal education and are more likely to have good jobs had significantly lower mortality rates compared with those who had attained little or no formal education.

Awareness of the dangers of hypertension in pregnancy should be of paramount importance to all health workers who attend to pregnant women. Studies have shown that lack of antenatal care is responsible for the high maternal mortality rates following eclampsia^{4,9,10}.

But in this study, there was no significant difference in mortality between women who did not attend for antenatal care and those who had their care at clinics and hospitals other than the Korle-Bu Teaching Hospital. Provision of good antenatal care

has been shown to reduce the incidence of eclampsia¹⁷.

Though eclampsia occurred less frequently during the postpartum period, mortality was found to be significantly higher in this period than the antepartum and intrapartum period. Health workers tend to lose their guard after delivery of the patient and acute emergencies during this period often do not have prompt attention. This is often the case at the Korle-Bu Teaching Hospital where delivery rates are high, and there are comparatively fewer health care workers. Delays in referral and reaching the hospital because of lack of ambulance services in the referral centres also contribute to the high case fatality rates. Eclamptic patients who delivered spontaneously per vaginam had significantly higher mortality rates than those who had operative delivery.

In conclusion, there are no distinct social reasons for maternal death in eclampsia except that women who had attained higher levels of formal education have a better outcome.

To improve the maternal outcome of eclampsia at the Korle-Bu Teaching Hospital, there is a need to relieve the congestion, improve upon blood pressure monitoring of all antenatal patients and promptly refer cases from the Private Maternity Homes and other district hospitals.

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GMA NEWS

WORLD HEALTH ORGANIZATION PRESENTS OFFICE EQUIPMENTS TO THE GHANA MEDICAL ASSOCIATION

The World Health Organization, Ghana Office has presented a range of office equipments to the Ghana Medical Association at a ceremony in Accra. The presentation was made by Dr. Martin Mandara, the Country Representative for World Health Organization in Ghana through the Ministry of Health.

The items, which are valued at US \$22,000 consist of Computer, UPS and a Heavy Duty Laser Printer. Other items were a Fax Machine, Heavy Duty Photocopier (Canon 6035), Binding Machine, Slide and Overhead Projectors and Stationery.

Dr. Martin Mandara disclosed that the donation is in line with the objective of World Health Organization to assist Non-Governmental Organizations such as the Ghana Medical Association who has clear objective to play a positive role in the improvement of the health sector through their activities.

Receiving the items, the Minister of Health, Hon. Mr. Samuel Nuamah Donkor thanked the World Health Organization for its continued support for the Health Sector. He expressed the confidence that the equipments will be put to good use to facilitate the proper role of the Ghana Medical Association in the provision of better Healthcare for the people of this Country.

On his part, the President of the Ghana Medical Association, Dr. J. K. Kwakye-Mafo expressed the Ghana Medical Association's appreciation to the World Health Organization. He stated that the donation would go a long way to enhance the Continuing Medical Education Programmes of the Ghana Medical Association. He indicated that the equipments will also help to facilitate the aim of the Ghana Medical Association to establish its own Publication Unit so as to increase the volume of its publications to Doctors and other Healthcare Providers in the country. He also indicated that the Ghana Medical Association has concluded discussions with the World Health Organization to start a Cervical Cancer Screening Programme in the country within the next few weeks.

Present at the ceremony were Dr. Moses Adibo, Deputy Minister for Health; Dr. Awudu Tinorga, Acting Director of Medical Services; Dr. Oheneba Owusu-Danso, Honorary Secretary of GMA, Dr. Rhoda Manu, Honorary Treasurer of GMA and Ms. Sakyibea, Administrative Secretary for WHO.

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OBITUARY

From January, 1999 to date

- Name:** Dr. Frempong Asante
- Position :** Pathologist
- Place of Work:** Komfo Anokye Teaching Hospital, Kumasi.
- * * * * *
- Name:** Dr. Mawuli Kokroko
- Position :** Senior Medical Officer
- Place of Work:** Komfo Anokye Teaching Hospital, Kumasi.
- * * * * *
- Name:** Professor H. Hopwood Phillips
- Position:** Medical Director (P M P)
- Place of Work:** Phillips Clinic, Accra
- * * * * *
- Name:** Dr. E. K. Tetteh
- Position:** Medical Practitioner
- Place of Work:** London Clinic, Cape Coast
- * * * * *
- Name:** Dr. Samuel Edusa
- Position:** General Medical Practitioner
- Place of Work:** Samalla Clinic, Accra

ONE DAY NATIONAL SYMPOSIUM FOR THE NORTHERN SECTOR ON FRIDAY, MAY 28, 1999 AT CITY HOTEL, KUMASI

THEME: WOMEN'S HEALTH

Keynote Address by Dr. J. K. Kwakye-Mafo, President, Ghana Medical Association

Madam Chairperson, Distinguished Resource Persons, Executives of the Ghana Medical Association, Colleagues, Ladies and Gentlemen

It is a great pleasure to be called upon to give the keynote address. For the fifth time in four years, the Ghana Medical Association is organising a day's seminar for all Doctors and other Health Professionals in Ashanti, Brong Ahafo, Northern, Upper East and Upper West Regions, referred to as the Northern Sector.

We have gathered here today for a symposium on Women's Health. The symposium has been organised by the Ghana Medical Association in collaboration with the Human Resource Development Division of the Ministry of Health. In our efforts to cover the entire country with this programme, a similar symposium was held in Accra on 14th May, 1999 for Doctors and other Health Professionals in the Southern Sector of the country.

The Ghana Medical Association shares the belief that women must have the right to their own sexuality, fertility, health and well-being. Doctors and all other health care providers in Ghana must therefore have the knowledge, skills and attitudes to achieve these goals particularly as we enter the next millenium.

Since 1996 three International Conferences on Women's Health have been convened. The Toronto Conference in 1996 discussed women's right to health including sexual and reproductive health.

In January, 1997, a consultation was held in New York (New York consultation) where medical ethics, including sexual and reproductive health were considered.

The London Conference in November, 1997 considered status of women through human rights approach. All these conferences considered how women's health can be improved and monitored through conventions.

At the Beijing Conference in 1995 various governments accepted that women have the right to fullest enjoyment of health through the life cycle and specially to sexual and reproductive health.

The Ministry of Health has recently developed a National Reproductive Health policy.

Colleagues, health professionals, distinguished ladies and gentlemen, women face a variety of threats to their health. These threats generally stem from cultures and cultural patterns which devalue women. The underlying cause of women's poor health are numerous and inter-related. It is therefore important for us health professionals to take a holistic approach to women's health. I am therefore pleased to note that this seminar will be considering topics such as:

- Safe Motherhood
- Sexually Transmitted Disease
- Female Malignancies
- Maternal Mortality and
- Violence against women.

Safe Motherhood

World Health Organization estimates that 586,000 woman die each year from causes related to pregnancy. Ninety nine percent of these deaths are in developing countries and nearly all these are preventable. When a mother dies the children she leaves behind are less likely to survive to adulthood than children whose mothers survive child birth. Statistics available in Ghana reveal that teenage pregnancy in 1997 accounted for 19% of all pregnancies. Pregnancy in Ghana is a risky business since about 43% are at risk of conditions such as anaemia, hypertension, eclampsia etc. From the foregoing, you realise that women's health warrant a national focus.

Conclusion

The Ghana Medical Association is therefore thankful and grateful to the Ministry of Health for collaborating with her to make this seminar possible with the array of experts on the various topics. I hope we are going to formulate strategies to address the issue of women's health in Ghana. It is also my hope that after this seminar a report will be drawn for the Ghana Medical Association and to the policy makers for implementation. The Ghana Medical Association will present certificates to all participants of this seminar.

On behalf of the Executive Council of the Ghana Medical Association, the Planning Committee of the Divisional Executive and on my own behalf, I wish you fruitful deliberations and a happy stay in Kumasi.

Guidelines for Contributors

Contributions to the Ghana Medical Journal should be in English and addressed to:
The Editor-in-Chief, Ghana Medical Journal, P. O. Box 1596, Accra, Ghana.

CATEGORIES OF ARTICLES

The journal will consider articles of the following categories for publication.

1.1 Original Article

Works publishable under this section include original work of suitable standard. Such work must be innovative or contribute further to well-established knowledge in a particular field. Articles on all the medical specialties including the basic sciences, paraclinical and clinical sciences will be accepted. Short or preliminary reports on original works will be published under this section.

1.2 Special Articles

Review articles, articles on special medical events, clinical notes and clinical investigation will be accepted for publication under this section. Review articles should cite original works that lead to formulation of a concept, theory or hypothesis. Review articles that seek to draw attention to current medical practice must have ample support in the form of published observations by other authors as well as the authors' own findings.

1.3 Case Report

Extremely rare clinical syndromes or presentations will be accepted for publication under this section. Also a collection of cases highlighting particular trends or problems in clinical practice are acceptable. In both cases, contributors are advised to give ample evidence in support of their claims.

1.4 General Practice

This section which is an innovation, is reserved exclusively for articles by general practitioners. The idea is to encourage contributors who are in general practice to share their knowledge in general practice with the general readership. They are given a chance here to share their experiences in general medical practice especially in areas where one has improvised due to shortage of facilities such as in rural areas or where a particular approach to the

management of clinical problems is quite different from the normal practice but gives satisfactory results. Occasional new trends in general medical practice will be published under this section.

1.5 Correspondence

Correspondence on articles published in this journal or letters to the editor shall be entertained. Such correspondence must reach the editor not less than 3 months after publication of an article. The correspondence may seek further clarification on a published article. In both cases the author(s) whose article has attracted correspondence from readers will be contacted for their comments and both comments and correspondence on published articles will be published together. Letters to the editor are welcome at all times.

Apart from correspondence and invited editorials, all submissions will be subjected to peer review.

2.0 LENGTH OF ARTICLES

The high cost of printing requires that articles are not unduly lengthy. They must be concise.

2.1 Original Articles

Including text, figures, tables and references should occupy not more than the space for a maximum of 6000 words including tables and illustrations. Short or preliminary reports should not exceed 1500 words.

2.2 Special Articles

Review articles should not exceed 7000 words including tables and illustrations. Articles on special medical events should not exceed 1500 words or a total space equivalent to 5 quarto pages, including figures, tables and references.

2.3 Case Report

Case reports should not exceed 2700 words including figures tables and references.

2.4 General Practice

Articles under this section should not exceed 2000 words. No figures or tables will be published under this section. Articles meant to be published under general practice that have figures and tables will be published under case reports or original articles in which case they must include references.

3.0 PREPARATION OF MANUSCRIPTS

All papers should be typewritten on A4 paper, on one side only, in double spacing, with a left hand margin of 3.5cm and a right hand margin of at least 2cm.

3.1 Format

Original articles including short reports, must have the following parts: Title, name(s) of author(s), address of author(s); summary, keywords, running title; introduction, materials/subjects and methods; data analysis/calculations, results; discussion; acknowledgements and references.

Case reports and review articles or special articles on medical events need not comply with this format.

3.2 Title

The title of each article should not have more than 20 words, or 100 characters, and should express clearly, the aims of the articles.

3.3 Names of Authors, Academic Qualifications, Titles

The name of the principal author should appear first, followed by other authors. The name and address of the author for correspondence must be indicated on the pages for author name(s) and address(es). The name(s) and signature(s) of author(s) and co-author(s) should appear on the covering letter to the Editor-in-chief. The first 3 academic degrees and titles of all authors and co-authors must be indicated on the same page as for names and addresses.

3.4 Summary

The summary should contain not more than 200 words and must state the purpose of the study, basic procedures, main findings and principal conclusions. It should emphasize new and important aspects of the study or observation.

3.5 Keywords

These should include words that emphasize the theme or central point of the research. For instance in a paper on the seasonality of human reproduction in Ghana, the following keywords may be used if it is felt that they emphasize the objectives and significance of the research: delivery frequencies; conception low; fertility behaviour; conception probability. However, keywords should as far as possible be selected from the Medical Subject Heading (MeSH) list of Index Medicus.

3.6 Running Title

Where the title of the article is lengthy, the running title may take a shortened form to reflect the main objectives of the paper. However no running title is required if the title is short, for instance, not exceeding four words. Example: Salt activation of Rat Brain Choline Acetyltransferase maybe shortened to Rat Brain Acetyltransferase, as the running title. The running title should not have more than 5 words or 30 characters arranged one after the other. A hyphen is counted as one character.

3.7 Papers should be prepared in accordance with the fifth edition of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (see *New England Journal of Medicine* 1997, 336(4): 309-315 or on the World Wide Web at <http://www.acponline.org>.

Guidelines on tables and figures, units and abbreviations, are also to be seen in the above references. Two figures will be published free of charge. Subsequent figures will be published at a cost of 12 US dollars or equivalent for each extra figure.

3.8 References

The number of references should be kept to a minimum. They should be numbered consecutively as they occur in the text. Identify references in the text, tables and legends by Arabic numerals placed in superscript.

The title of journals should be abbreviated according to the style used in *Index Medicus*.

Titles of journals and books in listed references should be in italics. The references should be listed in the order in which they appear in the text. References should be based on the Uniform Requirements style (the Vancouver style).

4.0 ETHICS OF INVESTIGATIONS

Clinical studies are expected to conform to the Proposed International Guidelines for Biomedical Research involving Human Subjects issued by CIOMS, (Geneva 1982). Statements about ethical clearance, (if appropriate) and the obtaining of participants' informed consent should be included in the paper. Experimental animals must be properly anaesthetised to avoid suffering and anaesthetic procedure fully explained in the text. Authors who do not comply with the said code of ethics both for humans and animals will have their articles rejected.

4.1 Originality of Articles

Articles submitted to the Ghana Medical Journal must not have been submitted for publication in another journal. The laboratory or institute of origin of research and the role of each author in the case of multiple authorship, must be indicated. Original articles must be accompanied by a written declaration that the articles has not been submitted for publication either in part or in full, in another journal.

4.2 Copyright

Articles published in the Ghana Medical Journal may not be published elsewhere without the consent of the publishers. Request for consent for reproduction of material published in the Ghana Medical Journal should be addressed to the Editor-in-Chief. The publisher of this Journal reserves the right of copyright of all articles published in the Journal.

5.0 GENERAL INFORMATION

Two copies of papers should be submitted. Authors are also encouraged to include a 3.5" IBM-compatible diskette containing the text and tables in MS Word or WordPerfect format, stating clearly which version of the software has been used.

5.1 All correspondence should be addressed to the Editor-in-Chief, Ghana Medical Journal, P. O. Box 1596, Accra, Ghana.

5.2 Articles are subject to Editorial revision to clarify them. Articles that do not conform with the requirements of this journal shall be returned to the author(s) after a median period not exceeding 12 weeks from the date of receipt of the articles. Returned articles may be accepted for publication if they are modified to an acceptable form.

5.3 Authors shall receive one copy of the Journal in which their article is published. Reprints will be sent upon request in which case authors must pay for the cost of production and postage of the reprints in advance. Each reprint including postage fee will cost 15US dollars or equivalent per page.

5.4 All payments must be made by crossed cheque or bankers transfer to the Ghana Medical Association.

5.5 Frequency of Publishing

The Ghana Medical Journal is published quarterly. Subscription price: ₵50,000.00 per annum for Ghanaian subscribers and 50US dollars per annum for other subscribers.