Through the lens of the clinician: autopsy services and utilization in a large teaching hospital in Ghana

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Abstract

Background: Declining hospital autopsy rates in many countries have generated considerable concern. The survey determined challenges of the autopsy service in a large Teaching Hospital in Ghana, from the perspective of clinicians.

Methods: This was a cross-sectional study of doctors at the Korle-Bu Teaching Hospital (KBTH) over in 2012. The data was collected using a 69 item self-administered structured questionnaire. In all a total of 215 questionnaires were sent out and 119 doctors responded. Data was collected on the challenges of the autopsy services and barriers to autopsy request from the perspectives of clinicians. Survey data were analyzed by simple descriptive statistics (i.e. proportions, ratios and percentages). Data from survey was analyzed with SPSS version 21.

Results: The most common reasons for requesting autopsies were to answer clinical questions, 55 (46.2%) and in cases of uncertain diagnosis, 54 (45.4%). Main demand side barriers to the use of autopsy services by clinicians were reluctance of family to give consent for autopsy 100 (84%), due to cultural and religious objections 89 (74.8%), extra funeral cost to family 53 (44.5%) and increased duration of stay of body in the morgue 19 (16%). Health system barriers included delayed feedback from autopsy service 54 (45.4%), difficulties following up the autopsy process 40 (33.6%) due to uncertainties in the timing of particular events in the autopsy process, and long waiting time for autopsy reports 81 (68.1%). More than a third of clinicians 43 (36.2%), received full autopsy report beyond three weeks and 75 (63.1%) clinicians had concerns with the validity of reports issued by the autopsy service (i.e. reports lack specificity or at variance with clinical diagnosis, no toxicological, histological or tissue diagnoses are performed).

Conclusion: The autopsy service should restructure itself efficiently and management should support the provision of histological and toxicological services. Strengthening internal and external quality improvement and control of autopsies in the Hospital are essential.

Keywords: Autopsy service, Barriers to autopsies, Clinicians, Teaching hospital, Ghana

Background

Declining hospital autopsy rates in many countries have generated considerable concern among sections of the medical profession [1,2]. Clinicians are primarily responsible for initiating hospital autopsy requests, and knowledge on their views, attitudes and perceptions of health institutional challenges to requesting and obtaining autopsy reports are critical [3-5]. Demand side and supply side (health system) factors influence autopsy rates in hospitals [5,6]. Demand side factors include attitudes and behaviours of patients and relations of patients, and sociocultural and religious factors. Supply side factors include confidence in clinical diagnosis, use of sophisticated medical diagnostic technology, fears of legal suits by requesting clinicians, and inadequate material and human resources [1,5-10].

It is essential to determine the challenges to efficient delivery of autopsy service and barriers to utilization of the service in the Korle-Bu Teaching Hospital, the largest tertiary health care delivery facility in Ghana [10,11]. Such an
evaluation from the clinicians who utilize autopsy services is vital for indicating where resources should most effectively be allocated [1,12,13]. A potential source of data on patterns of mortality for health policy and planning is data from hospitals; hospital records and autopsy data provide this useful data for planning and resource allocation [10,12-15].

Clinicians’ general interest in autopsy has been shown to be a dominant factor influencing intention to request autopsy and shown among clinicians in the Teaching Hospital in Ghana [1,5,10]. However, health system factors including adequacy of personnel, ability to provide histological and toxicological services to support and confirm clinical diagnosis may be important barriers to clinicians’ request of autopsies. It is expensive to run an effective clinical pathology service in a low income setting [7,16].

There is a global shortage of trained pathologists and insufficient capacity to cover surgical autopsy as well as biopsy, especially in areas facing extreme resource constraints. In most African countries, the health services are overwhelmed with the increasing mortality from the devastating effects of HIV which increases the workload on the already inadequate staff [11,17,18]. Efficient autopsy service depends on systems organization and adequate personnel [18]. The autopsy service currently has only 6 consultant pathologists, 6 specialist pathologists and 5 residents in training [10,11].

The goal of this survey was to determine the views of clinicians on the autopsy services in this large tertiary health facility in Ghana. Clinicians are primarily responsible for initiating the autopsy process in the Hospital, their identification of barriers and challenges hold great value in implementing measures to improve autopsy services, utilization of autopsies and patient care in the Teaching Hospital.

Methods
This was a cross-sectional study of doctors at the Korle-Bu Teaching Hospital over in 2012. The data was collected using a 69 item self-administered structured questionnaire.

Site of study
The Korle-Bu Teaching Hospital (KBTH), a tertiary health care facility in Ghana, was the survey site. The KBTH has a bed capacity of 2000 and over 3000 staff [7]. In 2010, 29,757 clients were seen on the average per month, average daily outpatient attendance was 1500 and average daily admission was 150 and over 4000 mortality from the clinical departments [11]. Autopsy service in KBTH is provided by the Department of Pathology. The Department of Pathology is a nucleus of the University of Ghana Medical School (UGMS) provides surgical pathology, cytology/cytopathology and autopsy services. Due to challenges with logistics and equipment, surgical autopsies in the department seldom include histological services as demonstrated in a recent study in the Teaching Hospital [10,11]. It is involved in undergraduate, postgraduate and residency training and research in surgical pathology, cytopathology and autopsy. The department manages and operates the mortuary unit which has a storage capacity of 350 bodies and stores between 8,500 and 10,000 bodies annually. The mortuary serves the Hospital and the general public [10,11].

Overall between 3,000 and 5,500 (average 4,100) autopsies are performed annually from within and outside the KBTH; about 20% of these are hospital autopsies. In the Hospital the autopsy rates are as follows; Department of Child Health (average 30%), Department of Obstetrics and Gynaecology (average 30%), Department of Surgery (average 38%) and Department of Medicine (average 60%) [10,11]. Histological services are provided by limited and therefore not all autopsy reports include histological diagnosis [10]. There are no private facilities which offer surgical autopsy services and the teaching hospital handles all the hospital cases and referrals from other health institutions within Accra and outside Accra [11].

Sampling methods/selection of survey sites
Doctors from the main Clinical Departments i.e. Internal Medicine, Surgery and Allied Surgery, Child Health and Obstetrics and Gynaecology (OBGYN) were involved in the survey. These service centres were selected based on the clinical services they provide and the critical importance of autopsies in the practice of these doctors. The survey was a total enumeration of all doctors in these departments. The questionnaires were distributed in each department through the heads of department.

Study population
The population for the survey were doctors of all categories in the Hospital. These included house officers, medical officers, senior medical officer/residents, senior residents and consultants in all the clinical departments of the Korle-Bu Teaching Hospital.

Data collection
The questionnaire solicited information on the background of the respondent including sex, current status and Department of work as well as the main reasons for autopsy request. Background data whether doctors attend departmental clinico-pathological or mortality meetings and whether pathologists in the Hospital are involved in these mortality meetings. Data was also collected on the barriers and challenges on the request and use of autopsies by doctors and the challenges to autopsy service provision in the Hospital.
Data analysis
Survey data were analyzed by simple descriptive statistics (i.e. proportions, ratios and percentages). Data were summarized in tables. Data from survey were entered into Microsoft Excel 2007 and imported into SPSS version 21, and analyzed.

Ethical issues
Ethical Approval for the survey was obtained from the University of Ghana Medical School Ethical and Protocol Review Committee (Protocol Identification Number: MS-Et/M.11-P 5.8/2011–2012 ). Clearance was also received from the Management of the Korle-Bu Teaching Hospital and Heads of Clinical units where survey was conducted.

Results
A total of 215 questionnaires were sent out and 119 clinicians responded, giving a response rate of 55.3%. There were more males 67 (56.3%), than females 52 (43.7%); with a male: female ratio of 1.3: 1. The sex distribution of respondents were not different from all 215 clinicians who had questionnaire sent to (in the 215 clinicians 125 (58%) were males). Majority of the clinicians involved in the survey were senior medical officers/residents, 45 (37.8%). There were consultant, 19 (16%) involved in the survey, as indicated in Table 1.

Overall, 92 (77.3%) of clinicians did request for autopsy in the previous six months and the two most common reason for requesting autopsies were to answer clinical questions, 55 (46.2%) and in cases of uncertain diagnosis, 54 (45.4%) as shown in Table 2. Of the 92 (77.3%) clinicians who requested for autopsy in the previous six months only 23 (19.3%) clinicians had personal interaction with the pathologist during autopsy process. A majority of clinicians, 88 (73.9%) had not attended any autopsy demonstrations in the past 6 months however, almost all clinicians 111 (93.3%) attended monthly mortality or clinic-pathological meeting in their Department/unit where autopsy reports discussed. Attendance of a pathologist at such meetings was very low.

The two main demand side barriers to autopsy request from the perspectives of clinicians as indicated in Table 3, were reluctance of family to give consent for autopsy to be performed (especially on patients advanced in age) 100 (84%), as well as due to cultural and religious objections raised by families 89 (74.8%). Other factors included perceived increased or extra funeral cost for the family and increased duration of stay of body in the morgue due to the autopsy process. The two main supply side or health system barriers were delays in obtaining feedback from the autopsy service 54 (45.4%) and difficulties following up the autopsy process (due to

| Table 1 Status and sex distribution of doctors involved in survey in the Teaching Hospital |
|-----------------------------------------------|
| Current position                   | Sex of respondent | Total |
|                                 | Male  | Female |  |
| House officer                    | 18 (29.6) | 16 (30.8) | 34 (28.6) |
| Medical officer                  | 1 (1.5)  | 3 (5.8)   | 4 (3.4)   |
| Senior medical officer/resident  | 28 (41.8) | 17 (32.7) | 45 (37.8) |
| Senior resident                  | 10 (14.9) | 7 (13.5)  | 17 (14.4) |
| Consultant                       | 10 (14.9) | 9 (17.3)  | 19 (16.0) |
| Total                            | 67 (100) | 52 (100)  | 119 (100) |

| Table 2 Background characteristics of clinicians involved in the Teaching Hospital survey |
|-----------------------------------------------|
| Characteristic                              | Frequency | Percentage |
| Reasons for autopsy request                 |           |           |
| Answer clinical questions                    | 55        | 46.2      |
| Uncertain diagnosis                          | 54        | 45.4      |
| Confirm clinical diagnosis                   | 40        | 33.6      |
| Coroners case                                | 39        | 32.8      |
| Family request                               | 2         | 1.7       |
| Explain sudden questionable deaths           | 1         | 0.8       |
| Total                                        | 119       | 100.0     |
| Number of clinicians who requested for autopsy in previous six months | 92 | 77.3 |
| Total                                        | 119       | 100.0     |
| Personal interaction with pathologist during the process of autopsy |           |           |
| Yes                                          | 23        | 19.3      |
| Total                                        | 119       | 100.0     |
| Number of autopsy demonstrations attended by doctors in past 6 months |           |           |
| none                                         | 88        | 73.9      |
| 1                                            | 12        | 10.1      |
| 2                                            | 3         | 2.5       |
| 3 or more                                    | 7         | 5.9       |
| Total                                        | 119       | 100.0     |
| Monthly mortality or clinic-pathological meeting in Department/unit |           |           |
| Yes                                          | 111       | 93.3      |
| Total                                        | 119       | 100.0     |
| Autopsy reports discussed at meetings        |           |           |
| Yes                                          | 90        | 75.6      |
| Total                                        | 119       | 100.0     |
| Pathologist or personnel from Department of Pathology participate in mortality meetings |           |           |
| Yes                                          | 3         | 2.5       |
| Total                                        | 119       | 100.0     |
uncertainties in the timing of particular events in the autopsy process), 40 (33.6%). Other health system barriers identified were limited ability of requesting doctors to use autopsy information to improve patient care, and lack of knowledge and circumstance under which autopsy is permitted.

As indicated in Table 4, clinicians deemed the main health system barriers to autopsy service in the Teaching Hospital to be the long waiting time for autopsy reports 81 (68.1%). The mean time taken for receipt of full autopsy report was beyond three weeks, for over a third of clinicians 43 (36.2%). In all 75 (63.1%) clinicians had concerns with the validity of reports issued by the autopsy service. The specific concerns of the clinicians were that pathological report received were sometimes at variance with the clinical diagnosis, 16 (13.4%) and that reports do not state specific findings 6 (5%). In addition, neither toxicological nor histological nor tissue diagnoses were done; hence clinical diagnosis is reported without histological diagnosis.

Despite these concerns, 72 (60.5%) of the clinicians patronized the Teaching Hospital’s autopsy service.

**Discussion**

Autopsy reports provide useful guidance to clinical management of patient and assist in the provision of precise information on the cause of death of patients [19,20]. Despite the well established role of autopsy in disclosing clinical diagnostic inaccuracy among clinicians, autopsy rates have been declining gradually over several decades in many parts of the World [9,21,22].

In this study, clinicians of all categories in the Hospital were seen to request autopsies and the main reasons for requesting autopsies were to answer clinical questions and in cases of uncertain diagnosis. These reasons are in conformity with other studies which indicated that autopsies provide a good index of the quality of patient care, in terms of the accuracy of clinical diagnosis and the quality of treatment given [2,7,23].

Clinicians initiate the autopsy process in the Hospital, identification of major barriers within and outside the health system by this group of health workers can provide useful lessons in implementing measures to optimize service delivery [5]. Lack of cooperation and reluctance of family to give consent for autopsy to be performed especially on patients who are advanced in age hinder the

| Table 3 Clinicians views on general factors hindering autopsy services in the Teaching Hospital |
|-----------------------------------------------|
| Main Barrier to autopsy request | Frequency | Percentage |
|-----------------------------------------------|
| Reluctance of family to give consent | 100 | 84.0 |
| Cultural and religious objections (Muslims and traditional royal persons) | 89 | 74.8 |
| Delay in feedback from the pathological service | 54 | 45.4 |
| Increased cost to family | 53 | 44.5 |
| Difficulty following up | 40 | 33.6 |
| Age at death | 29 | 24.4 |
| Lack of feedback from the pathological service | 28 | 23.5 |
| Increased duration of stay of body in morgue | 19 | 16.0 |
| Busy clinical service | 11 | 9.2 |
| Limited ability to use autopsy information to improve care | 10 | 8.4 |
| Lack of knowledge/circumstance under which autopsy is permitted | 6 | 5.0 |
| Unintended consequences | 4 | 3.4 |
| Others (Fears of being sued if diagnosis was missed, Request form too complicated, Missing folders/health records) | 8 | 6.7 |
| Total | 119 | 100.0 |

| Table 4 Clinicians views on Health system challenges to autopsy services in the Teaching Hospital |
|-----------------------------------------------|
| Characteristic | Frequency | Percentage |
|-----------------------------------------------|
| Average time taken for receipt of full autopsy report | | |
| <1 week | 14 | 11.8 |
| 1-2 weeks | 42 | 35.3 |
| 3-4 weeks | 34 | 28.6 |
| 1-3 months | 7 | 5.9 |
| >6 months | 2 | 1.7 |
| Total | 119 | 100 |
| Waiting time for autopsy report unduly long | | |
| Yes | 81 | 68.1 |
| Total | 119 | 100 |
| Concerns about validity of reports issued by autopsy service | | |
| Not at all | 33 | 27.7 |
| Just a little | 46 | 38.7 |
| Often | 15 | 12.6 |
| Unable to judge | 14 | 11.8 |
| Total | 119 | 100 |
| Specific concerns on the autopsy services | | |
| Pathological report at variance with clinical diagnosis | 16 | 13.4 |
| Specific findings not stated, too generalized | 6 | 5.0 |
| Autopsy findings are no different from clinical diagnosis | 5 | 4.2 |
| No toxicology reporting | 4 | 3.4 |
| No histology reports received | 4 | 3.4 |
| Others (Clinical diagnosis given instead of histological diagnosis, clinical queries not addressed, provides no added information) | 5 | 4.2 |
| Total | 119 | 100 |
The service should designate residents doctors in the department of Pathology to specific department/units of the hospital to be involved in their clinico-pathological meetings and to deal promptly with their autopsy request as well. The assigned responsibility may improve communication of pathologist and clinicians; the current order of services probably hinder effective engagement of pathologists and clinicians.

Management of autopsy service and Hospital Management should institute internal and external quality improvement and control measures to regulate and support autopsies in the Hospital. Regular operational and hospital based research and reviews (satisfaction surveys among clients, clinicians and pathologists) could identify bottlenecks to optimum service provision to guide implementation of corrective measures. The role, duties and responsibilities of requesting clinicians and pathologists in the Teaching Hospital should be critically examined to bridge gaps in service delivery.

Human resource challenges have been seen as one of the major factors contributing to the decline of autopsies in most parts of the world, especially in resource limited settings [7,10,16].

The ultimate need to increase human capital for the service cannot be ignored and Hospital Management and the Ministry of Health, should see training of more pathologists as a priority.

The fear of legal suits due to diagnostic inaccuracies and inadequate knowledge on criteria for reportable deaths (coroners case) have been demonstrated in other studies among clinicians [1,7,8,25]. This conforms to findings from this Teaching Hospital based survey. Institutional provision of a structured capacity building programme on autopsy requests, death certification, coronial system and communication skills will garner more confident clinicians [6,10]. An initiative to achieve this could be a structured continuous medical education programme organized as collaboration between institutional care division of Ministry of Health/Ghana Health Service and the autopsy service in the Teaching Hospital. This should provide the basis to improve medico-legal education of all clinicians on regular basis in the Hospital [6,25]. Implementing such an initiative may reduce the apprehension of clinicians - fear of being sued if diagnosis was missed, features of the coronial system which are poorly understood by clinicians and autopsies in terminally ill patients [1,7,8,25]. It must be emphasized that, despite advances in medical diagnostic technology, diagnostic inaccuracies do occur even in developed settings; thus autopsy requests are imperative resource limited settings [11].

Limitations
A limitation of this analysis was the relatively low response rate of 55.3%. Clinicians who did not respond...
probably might have provided other dimensions to the theme of the survey. However, all categories of clinicians were involved and non response did not cluster in any particular category of clinicians.

Conclusion
All categories of clinicians from all clinical departments value autopsy reports as essential in improving clinical practice and patients care. However, majors challenges confront the provision of efficient autopsy service in the Hospital. Critical demand and health system factors need to be improved for optimum autopsy service provision and utilization in this large tertiary health care facility.

Competing interests
The authors declare that they have no competing interest. The views expressed in this paper are those of the authors. No official endorsement by the Korle-Bu Teaching Hospital Administration is intended or should be inferred.

Authors’ contributions
ET and YT developed the concept, AEY and ET analyzed the survey data. AEY, ET and YT contributed to the writing and reviewing of the various sections of the manuscript. All the authors reviewed the final version of the manuscript before submission. All authors read and approved the final manuscript.

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