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Evaluation of Histopathology Laboratory Request Forms in a North -Central Tertiary Hospital in Nigeria- A Pilot Study

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ABSTRACT

BACKGROUND: The laboratory request form is a tool of communication between the clinician and the laboratory, and when some critical information are missing, it may cause delays, increase turnaround time (TAT), and even affect the quality of laboratory diagnosis. Recent efforts in reporting the extent of missing data in laboratory request forms had excluded histopathology laboratories. This study therefore attempts to fill this knowledge gap by providing baseline information on the phenomenon in a tertiary institution's histopathology laboratory.

AIM:This study investigated the completeness or otherwise of the laboratory request form data routinely sent to the histopathology laboratory in one of Nigeria's tertiary hospitals.

METHODS: Six hundred and twenty-nine (629) laboratory request forms (LRF) of the 1,176 specimens sent to the Histopathology Laboratory, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria in 2018 were randomly retrieved and assessed for completeness using performance indicators such as patient identifiers, Physician details, test request details, laboratory details and institutional details. Data were computed in terms of percentages.

RESULTS: Of the 629 forms evaluated, 67.6% was incomplete while 32.4% was complete. Among the incomplete forms, patient identifier, ward (location) was leading with a figure of 54.5% followed by Physician details, 31%. Information on patient name, age, histology laboratory number, sex and date received was 100% complete.

CONCLUSION: The level of completion of histopathology laboratory request forms investigated was found to be substandard. Improved communication among stakeholders, technological innovations and five-year retrospective study recommended for wider data spread.

Keywords: Laboratory QMS, Histopathology, Laboratory, Request form, Evaluation

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Author's contributions:

This work was conducted and approved in collaboration between all the authors who takes responsibility for its accuracy and integrity. BSA designed the study and prepared the manuscript, BVO collated the data for analysis, FAA supervised the work, FOO and ASK proofread and contributed to the final manuscript, AOO and OOA ensured validation of data.

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INTRODUCTION

The laboratory plays important role in providing data for clinical-decision making. About 70-80% of objective data for clinical decision is provided by the laboratory(1). It is apt that test request sent to the laboratory must be rational and appropriate. It has been established that about 50-60/% of laboratory requests are inappropriate (1).Inappropriate test request and incompletely filled laboratory request form may cause pre-analytic error which could affect laboratory's result and compromise patient safety (2). Such errors may include, negligence in completing items on the form, faulty or incomplete information, poor or illegible handwriting, loss of biological material, mix-up of specimen's identity and mistakes on lesion's topography (3).

The laboratory request form is the communication tool between requesting Physicians and the laboratory in a two-way communication model. When the information in the laboratory request form is incomplete, it could compromise the quality of result and impact negatively on patient's safety (4,5,6).

In the hospital setting, the laboratory relates with other stakeholders and professionals. The importance of the laboratory is seen in its test cycle consisting of the pre-analytics, analytics and post-analytics. What happens before sample collection, during sample collection and after sample collection greatly influence the outcome of the laboratory. It has been reported that 67-87% of laboratory errors come from events outside the laboratory(1). Other evidences show that the contribution of pre-analytic events to errors in the laboratory could be more than the percentage range earlier highlighted. For example, it has been documented that post-analytic event introduce about 15% to laboratory error while pre-and post-analytical events contribute about a total of 93% to errors emanating from the laboratory (6,7,8,9,10). The laboratory request form information is one of such classified events. It is not only used to make requisition but a means of communicating results to patients, and Physicians. Diagnosis could be delayed, patient length of stay may be longer, result interpretation may be difficult, and there may be delay in communications when the information in the laboratory request form is incomplete (6).

The histology laboratory request form just like any other standard LRF contains demographic data such as address (location) of patients, Physician's name, hospital name, laboratory identifier, nature of specimen, date of surgery, date received, time sample was sent to the laboratory, telephone number of patient or relatives and previous histology number for repeats.

When the laboratory form is not completely filled during test requisition, it causes a pre-analytical error which leads to a post-analytic error in interpretation and also increases turnaround time (11).The causes of pre-analytical errors have been adduced to individual skill gaps or weak systems (12). It is incumbent on each laboratory and their institutions to look inwards for innovative intervention strategies to reduce these errors. Compliance with standards is a key component of such intervention (6). This calls for improvements in laboratory practice in developing countries.While laboratories in developed countries are ahead in the implementation of quality management system (6),those in developing countries are still trying to take step wise approach in the implementation of quality management system towards laboratory accreditation. Nigeria is one of such countries (13,14).

Despite the fact that pre-analytic and post-analytical activities constitute about 90% of

errors in the laboratory (6), medical laboratories in Nigeria are yet to adopt a systemic approach in addressing these concerns. Focus had rather been on the analytic aspect of the work flow. Few attempts have been made to report laboratory request form data incompleteness and the ones done had excluded information on histopathology laboratories. This study therefore assesses routinely submitted histopathology request forms for correctness, completeness and consistency with a view to evaluating the status of the histopathology laboratory request form in terms of information provided so as to fill existing knowledge gap in this area.

MATERIALS AND METHODS

The study was conducted at the University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria; a 750-bed hospital. The hospital is a second-generation tertiary health institution located at the North Central region of Nigeria. It is a referral center to neighboring States including Niger, Osun, Kogi and Ekiti.

Histopathology laboratory request forms from January –June, 2018 were retrieved, systematically reviewed and evaluated for completeness, correctness and consistency.

Data were extracted manually from the histopathology request forms and entered into an Excel file (Microsoft, Redmond, Washington, United States), then collated, cleaned and reviewed before analysis using the Statistical Package for Social Scientists (SPSS; version 21/2012; IBM, Armonk, New York, United States). A score of 1 was used to indicate complete and correctly-filled information, whereas a score of 0 was recorded when any item was missing.

A frequency distribution table was created to summarize the data collected. Data were analyzed and categorized into groups of quality indicators (QI) based on International Federation of Clinical Chemistry-Working Group (IFCC-WG) guidelines.

The quality indicators (QIs) used were, patient identifiers (name, age, sex, unit number and ward), appropriateness of test request (request date and specimen type), availability and completeness of laboratory details (e.g. laboratory number), and availability and completeness of physician's details (doctor's name and signature, name of consultant and phone number). In this setting, 'Consultants' head a medical team and are the most experienced senior clinicians.

RESULTS

A total of 629 laboratory request forms were evaluated. There were sixteen form elements required. Of the total numbers of histopathology laboratory request forms evaluated, a total number of 204 (32.4%) were completely filled while the number incompletely filled forms was 425 (67.6%) (Table 1). Concerning all the required information, only histology laboratory identification number, date received, name of patient, age, sex, and date recorded were completely and correctly filled for all the patients. Patient location (Ward), hospital number, name of hospital, organ of the body, nature of specimen, clinical details, duration, consultant identity and date sent were incompletely filled. Of the incompletely filled information, location of patient (ward) was the highest (n=346; 55%) followed by date sent (n=189; 30%) and duration (time before fixation) (n=88; 14%). The lowest frequency of incompletely filled information was shared by organ of the body and clinical details (n=6; 1%).

Five quality indicators were evaluated in this study. These indicators are patient

identifiers, physician's details, test request details, laboratory details and institutional details. Only laboratory details were completely filled 100% completion (n=629). On the status of completion, patient identifiers recorded 40.2% completion (n=253), Physician's details, 56.9% completion (n=339), test request details, 96% completion (n=604), and institutional details 97.5% (n=613). By implication, the most commonly occurring quality data gap was observed in patient's identifiers (40.2%), Physician's details (56.9%), test request details (96.%), and institutional details(97.5%) respectively. The least commonly occurring quality data gap was institutional details, 97.5% (n=613), test request details, 96% (n=604), Physician details, 56% and patient identifiers, 40.2% respectively. It could then be said that the least information on the histopathology laboratory request form is that of the patient and the Physician respectively while the most information available is that of the laboratory number and the institutions sending the requests.

Table 1: Completeness of histopathology laboratory request forms submitted to Pathology Department, University of Ilorin Teaching Hospital from January –June, 2018 (n=629).

S/N	**PARAMETERS**	**COMPLETED n (%)**	**NOTCOMPLETED n (%)**
1	Histology number	629 (100)	0
2	Date received	629 (100)	0
3	Ward	283 (45)	346 (55)
4	Surname	629 (100)	0
5	First name	629 (100)	0
6	Sex	629 (100)	0
7	Age	629 (100)	0
8	Hospital number	598 (95)	31 (5)
9	Hospital name	610 (97)	19 (3)
10	Organ	623 (99)	6 (1)
11	Nature of specimen	598 (95)	31 (5)
12	Clinical details	623 (99)	6 (1)
13	Duration of disease symptoms	541 (86)	88 (14)
14	Consultant-in-charge	623 (99)	6 (1)
15	Date sent	440 (70)	189 (30)
16	Date recorded	629 (100)	0
TOTAL	**Histopathology LRF**	**204 (32.4%)**	**425 (67.6%)**

Table 2: Completeness of histopathology laboratory request forms submitted to Pathology Department, University of Ilorin Teaching Hospital, Ilorin in 2018.

S/N	Quality indicators	Completed n(%)
1	Patient identifiers	253 (40.2%)
2	Test request details	604 (96%)
3	Laboratory details	629 (100%)
4	Physicians details	339 (53.9%)
5	Institutional details	613 (97.5%)

DISCUSSION

This study showed that out of the sixteen information required on the histopathology laboratory request form, 7 were completely and correctly filled for all patients while 9 were incomplete. In essence, none of the forms had all the vital information completely filled. This agreed with an earlier study in Amazona, Brasil where similar result was reported for a histopathology laboratory(3).Also in this study, information on patient name, histology laboratory number, sex and date received was 100% complete.This is in contrast to that of Schettini and colleagues who reported incompletely filled for age, sex and date (3). The most common incomplete item in our study was the patient's location (Ward). This is capable of causing bureaucratic bottlenecks in dispatch of results. The percentage completeness for all request forms was 32.4%. This is lower than the 89.5% for the department of haematology and 81.2% of the blood transfusion service figure reported in an earlier study conducted in Kano(6). It is also lower than the 84% reported in Ile-Ife, Nigeria (15). In the same vein, it is lower than the 43% reported in a study from Australia (16). It is however higher than the 1.73% completion found in a study from Lagos, Nigeria (17). The trend of incompleteness of laboratory request form may be adduced to the reluctance of Physicians to follow guidance from medical laboratory professionals probably due to the inter-professional rivalry between the two groups on one side and other factors already identified such as lack of understanding by the referring Physician of the potential as well as limitations inherent in histopathology and the issue of preparedness for collaborative interdisciplinary work (3,18).The general attitude of healthcare workers in terms of poor documentation of laboratory processes may also be a factor (14, 19).

In our study, the name of the Consultants in charge had a completion of 99%. This is higher than the 75% and 85.5% in Kano (6) and the 96.6% reported in Ile-Ife, Nigeria (15).

In this study, 99% completion of clinical details was achieved. Similar result of 93.2% was reported in Ile-Ife, Nigeria (15). It is also consistent with the 80.9% and 99.8% reported in Kano for blood transfusion service and haematology department respectively (6). Our findings here is however in contrast to the 65.9% completion of clinical details reported in Lagos, Nigeria (16), 77% completion reported at Nepal University Teaching Hospital (20), 22.7% at Ghana Tertiary Hospital (21)and 20.8% reported in Cape Town, South Africa (11). Another 25.3% was said to have abbreviated diagnosis information. An Indian study found that clinical diagnosis information was not documented on the laboratory request forms

up to 61.20% (22).When there is a critical result, the laboratory will find it difficult to communicate the Consultants on one hand and the Consultants too may find it difficult to communicate to patient's relatives or use the data actionably due to incomplete data on clinical diagnosis.

Our study shows that histopathology laboratory request forms had complete (100%) information for patient, age and sex. This is comparable to the 98% reported for Kano, Nigeria and the 86.4% completion for age and 99.8% completion for sex reported from the study at Ile-Ife, Nigeria (6,17). The finding from our study is however significantly higher than the 68% completion for age from the Lagos, Nigeria study. The global nature of the challenges surrounding complete filling of laboratory request forms emphasizes the importance of implementing standard protocols in line with ISO 15189:2012 (23).This will generate data that could be used for the improvement of pre-analytical processes.

CONCLUSION /RECOMMENDATION

The level of completion of histopathology laboratory request forms investigated in this study was found to be substandard. There is need to develop a laboratory handbook apart from the more detailed quality manual to make information available to users of laboratory services on best practices concerning the filling of laboratory request forms and other pre-analytic procedures. Development of structured SOP for sample collection duly communicated to all stakeholders involved in the pre-analytic process with strict compliance is also of prime importance. In order to promote best practices in handling of request forms, the laboratory management should engage hospital management and stakeholders on the need to organize regular orientation training for medical laboratory scientists, medical laboratory technicians, house officers, resident doctors, pathologists and other users of laboratory services on pre-analytic processes of the laboratory workflow and sample rejection practices. Joint physician-laboratory conferences should be conducted to share ideas, improve communication and generate feedback for improvement of quality. Digitalization of processes to make the items on the laboratory form compulsory during data entry is also advocated. Laboratory request form audit should be done periodically to provide baseline information with post evaluation data for quality improvement. Similar assessment of this nature is also recommended for other laboratories (Chemical Pathology/Immunology, Haematology& BGS, and Medical Microbiology/Parasitology) at the University of Ilorin Teaching Hospital to generate data for evidence-based decision making process, improvement in laboratory outputs and high quality of patient care. We also recommend a five-year retrospective study for a wider spread of data.

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