

Assessment of the Drafting Quality of Request Forms Submitted to the Malaria and Parasitology Units at the Institut Pasteur de Cote d'Ivoire

Yao Serge-Stéphane^{1*}, Ako Ako Bérenger Aristide¹, Sylvain Beourou¹, Ouattara Yacouba¹, N'Guessan Tiacoh Landry², N'Dri Kouadio Thierry-Borel¹, Toure André Offianan¹

¹Malaria Unit, Institut Pasteur de Cote d'Ivoire, Abidjan, Cote d'Ivoire

²Parasitology Unit, Institut Pasteur de Cote d'Ivoire, Abidjan, Cote d'Ivoire

Email: *yaosergestephane@yahoo.fr, aristideaako@gmail.com, be_sylvain@yahoo.fr, yacouba760112@gmail.com, landrytiacoh@yahoo.fr, ndriborel@gmail.com, andre_offianan@yahoo.fr

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Abstract

Biological tests provide information on the medical analysis requested by both the patient and the prescriber. It is a communication link between the prescriber and the laboratory staff. The lack of some information on request forms not only affects the drafting quality of the test and patient care, but could also make thousands of data produced by healthcare centers unusable. The aim of this study was to assess the drafting quality of request forms submitted to the Malaria and Parasitology Units at the Institut Pasteur de Côte d'Ivoire. **Methods:** It was a descriptive cross-sectional study to assess the drafting quality of request forms of various prescribers received at the Institut Pasteur de Côte d'Ivoire. This study was conducted at the Malaria and Parasitology Units, department of Parasitology and Mycology (Institut Pasteur de Côte d'Ivoire), from 6th December 2020 to 6th December 2021. The information on each request forms was recorded on a data collection form designed for this purpose. Each data collection form corresponds to a request forms and each test to a patient. **Results:** Out of a total of 1990 request forms received, the patient's age and sex were missing on 18% and 26.8% of the tests respectively. More than half (51.80%) of request forms did not indicate the patient's place of residence. Clinical information was not provided on 45.90% of the tests. Prescribers omitting their signatures were 51%, stamps were 50.3% and contacts were 71.2%. Only 5.4% of request forms were of good drafting quality. Providing all the required information on the forms could facilitate the use and analysis of data and samples.

Keywords

Laboratory, Quality, Request Forms, Information

1. Introduction

Reliable clinical laboratory services are the backbone of modern medical practice and up to 70% of medical diagnoses may be based on laboratory results [1]. They represent a vital tool in the delivery of quality healthcare. Studies showed that 60% to 70% of clinical decisions concerning diagnosis, prescription and treatment follow-up are based on laboratory data [2]. In clinical diagnostic laboratories, the laboratory analysis process is divided into three phases: the pre-analytical phase, the analytical phase and the post-analytical phase [3]. The pre-analytical phase is subdivided into several stages. It begins by issuing a medical exam, followed by the client registration, and finally the collection and transportation of samples to laboratories [3] [4]. Biological tests are documents drafted by a practitioner (doctor, nurse, midwife) and given to a patient for whom the item to be prescribed is a paraclinical investigation in medical biology. The request form is a means of communication between clinicians and laboratory staff. It contains the patient's demographic data, including first and last names, age and sex; the required biological analysis; the patient's location, the date and time of request, and other details such as the prescriber's contact, the reason for the prescription and the nature of the sample [5]. According to Adeoti and colleagues in 2004, a request forms is deemed acceptable and compliant when 80% and 100% respectively of the selected technical regularity items are mentioned by prescribers of healthcare centers [5]. The smooth running of later stages depends on the quality of its drafting. Unfortunately, in practice, some information is often omitted when request forms are drafted. This is confirmed by recent studies conducted in Burkina Faso and Niger, which found a low compliance rate for request forms [6] [7]. The lack of some information on request forms could not only influence its quality and patient care, but could also make unusable thousands of data produced by healthcare centers. Consequently, good practice or the quality of writing for request forms becomes a necessity for the practitioner and the biologist. In Côte d'Ivoire, few studies have investigated on the drafting quality of request forms, even though this is a source of concerns when researchers use the data. It is therefore necessary to provide an overview of the situation.

The aim of this study was to evaluate the drafting quality of request forms received at the Malaria and Parasitology Units at the Institut Pasteur de Cote d'Ivoire.

2. Materials and Methods

2.1. Framework and Type of Study

This was a descriptive cross-sectional study to assess the drafting quality of re-

quest forms received at the Institut Pasteur de Côte d'Ivoire from various prescribers in healthcare centers (private and public) in Côte d'Ivoire.

2.2. Period of Study

This study was conducted at the Malaria and Parasitology Units, department of Parasitology and Mycology (Institut Pasteur de Côte d'Ivoire), from 6th December 2020 to 6th December 2021.

2.3. Sampling and Data Collection Method

Consecutive sampling was used. All request forms prescribed to patients for medical analysis at the Malaria and Parasitology Units were the sample to be studied. In fact, the tests to be performed were sometimes written on papers containing the logo or without the logo and contacts of the private and public healthcare centers issuing those tests. These request forms were used to collect data for this study. For each medical exam, the information expected was recorded on a data collection form designed for this purpose. Each data collection form corresponded to a test and each test to a patient.

2.4. Study Variables

The information displayed below represented the study variables.

- Information about the patient (identity, age, sex, clinical details, place of residence).
- Information about the test (date of prescription, date of collection, time of collection, type of test, test requested).
- Information on the prescriber (identity, qualification, signature, stamp, contact, place of consultation or department).

2.5. Statistical Analysis of the Data

Descriptive data analysis was performed using Excel and RStudio (Version 4.1.1).

2.6. Ethical Consideration

A first written informed consent for participation in this study was obtained from adult's patients or children's parents or guardians, in accordance with the Declaration of Helsinki.

3. Results

3.1. Characteristics and Frequency of Notification of Request Forms Submitted to the Malaria and Parasitology Units at the Institut Pasteur de Cote d'Ivoire

Out of 1990 request forms received at the Department of Parasitology and Mycology, the place of residence, the clinical information, sex and age of patients were the least recorded information, with 51.80% (1030/1990), 45.90% (914/1990),

26.80% (533/1990) and 18.00% (358/1990) respectively. However, it should be noticed that the identity of patients was recorded on all the request forms received and included in this study.

Analysis of information concerning the biological examination requested and the sample, revealed that the least recorded were the date of collection and the nature of the sample (blood, urine, CSF, faeces, etc.), with 50.70% (1009/1990) and 34.40% (685/1990) respectively. However, the examination requested was noted on all the request forms submitted to this study.

This study showed that the least recorded information concerning prescribers were contacts, stamps and signatures, with 71.20% (1416/1990), 53.30% (1001/1990) and 51.00% (1014/1990) respectively. However, 86.10% (1713/1990) and 84.90% (1689/1990) of prescribers' identity and qualification were noted (**Table 1**).

Table 1. Characteristics and frequencies of notification of request forms submitted to the Malaria and Parasitology Units at the Institut Pasteur de Cote d'Ivoire.

Criteria	Present		Absent	
	Numbers (n)	Percentage (%)	Numbers (n)	Percentage (%)
Patient's surname and first name	1990	100	0	0
Patient's age	1653	82.00	358	18
Patient's sex	1457	73.2	533	26.8
Clinical information	1076	54.1	914	45.9
Place of residence	960	48.2	1030	51.8
Date of prescription	1881	94.5	109	5.5
Date of sample collection	981	49.3	1009	50.7
Nature of the sample	1309	65.6	685	34.4
Time of sample collection	0	0	1990	100
Type of test	1990	100	0	0
Prescriber's identity	1713	86.1	277	13.9
Prescriber's qualification	1689	84.9	301	15.1
Prescriber's signature	976	49	1014	51
Prescriber's stamp	989	49.7	1001	53.3
Prescriber's contact	574	28.8	1416	71.2
Place of consultation	1968	98.89	22	1.11

3.2. Distribution of Request Forms According to the Qualifications of Prescribers

According to these results, the majority of biological tests were drafted by medical doctors, with a total of 1670 (83.90%). Nurses and midwives wrote 15 (0.8%) and 4 (0.2%) request forms respectively. The number of request forms in which the profession of prescribers was not notified was 301 (15.1%), **Figure 1**.

3.3. Distribution of the Quality of Request Forms According to the Qualification of Prescribers Received at the Malaria and Parasitology Units

Out of 1990 medical exams, 108 (5.4%) were of good quality drafting according to the rules of good medical prescribing practice, compared with 1882 (94.6%) which were poorly written. Among 108 requests forms with a good quality writing, 105 (97.2%) were written by medical doctors and 3 (2.28%) did not mention the prescribers' qualifications. In this study, neither nurses nor midwives complied with the requirements for writing biological tests (**Figure 2** and **Figure 3**).

3.4. Distribution of Request Forms According to Their Place of Origin

The analyses of the origin of request forms were divided into 4 groups according to their place of origin. There are University Hospitals, other healthcare centres, the Institut Pasteur de Cote d'Ivoire and finally request forms where the healthcare center was not notified. After analysis, it seemed that the Institut Pasteur de Côte d'Ivoire was the biggest issuer of request forms with 984 (49.4%), followed by the other healthcare centers with 735 (36.9%) and finally University Hospitals with 249 (12.5%). Only 1.1% (22) of request forms in this study did not give information on issuers. In addition, on 108 request forms which drafting was deemed acceptable, 61 (56.5%) came from university hospitals, 34 (31.5%) from other healthcare centers and 13 (12%) from the Institut Pasteur de Cote d'Ivoire (**Figure 4** and **Figure 5**).

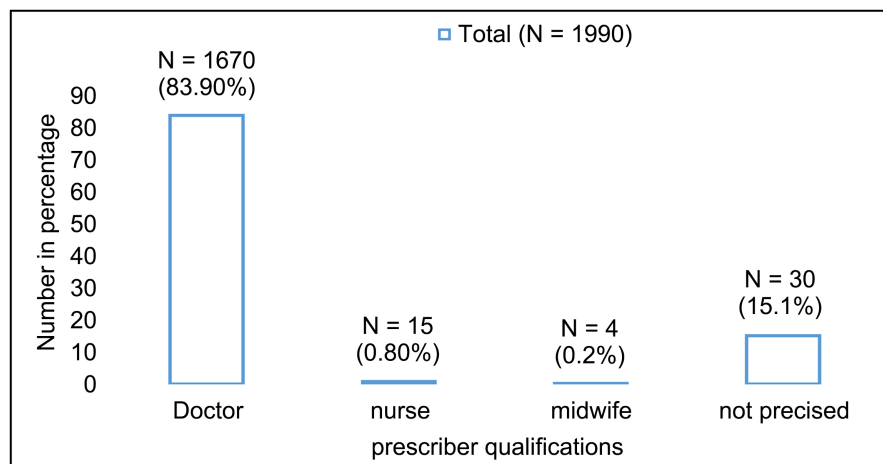


Figure 1. Distribution of request forms according to prescriber qualifications.

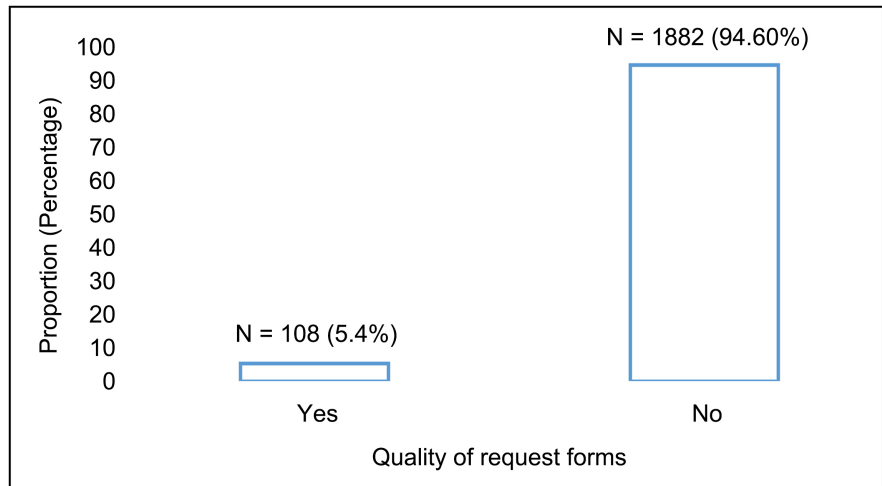


Figure 2. Distribution of the quality of request forms received at the Malaria and Parasitology Units.

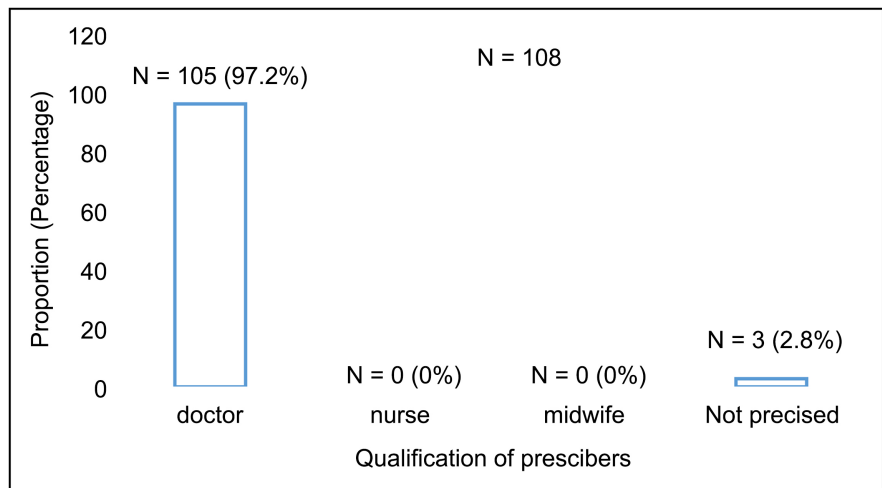


Figure 3. Distribution of good quality of request forms according to prescriber's qualifications.

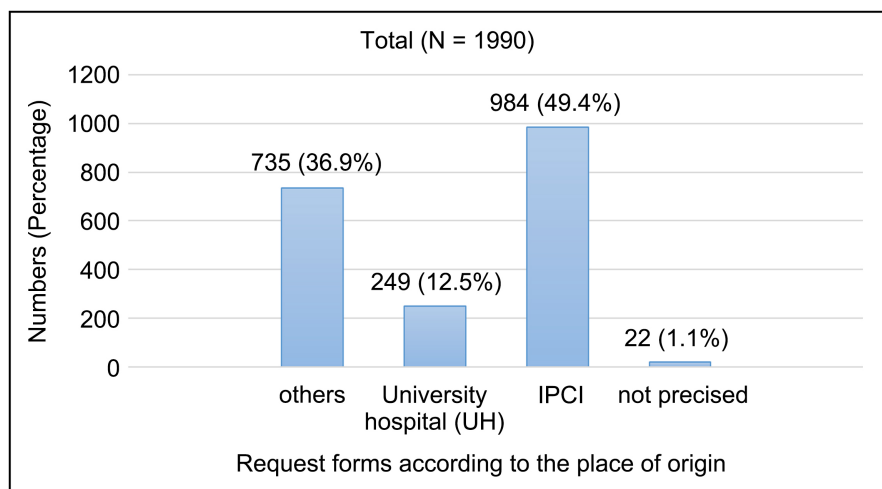


Figure 4. Distribution of request forms according to place of origin.

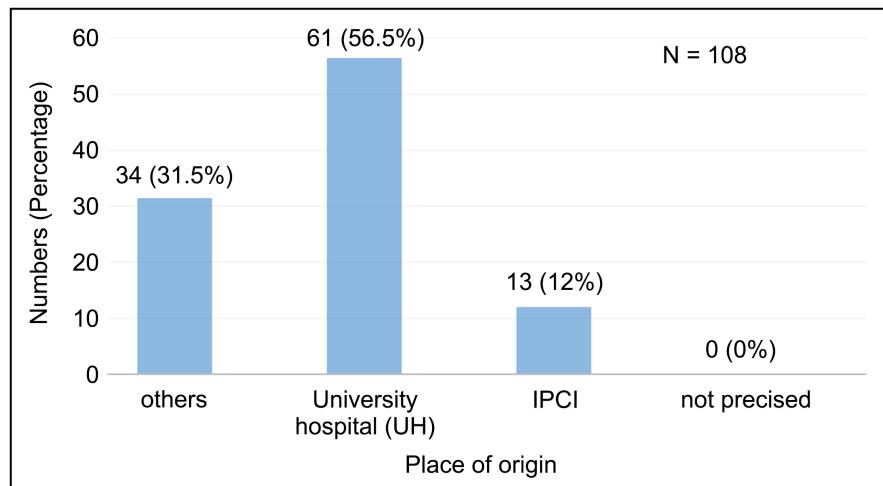


Figure 5. Distribution of acceptable request forms according to the place of origin.

4. Discussion

The drafting of a medical exam, an initial stage in the pre-analytical phase, initiates the start of a medical analysis. It requires some information about the prescriber and his department, the patient (his identity and clinical information), and about the sample. If an item is missing, the request forms will be non-compliant, which may have a direct impact on the results and therefore on the quality of healthcare provided to the patient, but this can also make thousand of data unusable by healthcare centers.

In this study, on 1990 request forms received at the Parasitology and Mycology Department, the place of residence, the clinical information, sex and age of the patient were the least to be noticed, with rates of 51.80%, 45.90%, 26.80% and 18% respectively. This might be due to the great number of patients, workload, as well as a lack of awareness among medical staff about essential information for a proper sample processing and reporting. According to the medical reference values, age and sex are important for some parameters, helping to improve interpretation of results, as in the case of request forms for toxoplasmosis.

Several recent studies, like those of Tola and colleagues in 2022 in Ethiopia and Kadour *et al.* 2022 in Niger, said that age and sex were not reported by 7.9% and 8.4% respectively in Ethiopia [8] and 11.31% and 38.93% [7]. In Burkina Faso, Yacouba *et al.* said that the absence of notification of these two elements (age and sex) represents about 3.3% and 5.7% of request forms respectively during their study [6].

In this study, the absence of clinical information represented 49.5% of the request forms. Reporting clinical information on the request forms highlights the prescriber's investigation about medical results. It is important to record clinical information when drafting a medical exam.

It helps the prescriber to transcribe useful information for the biologist. Our results are much better than those reported in the study of N'da in Cameroon, who found that 76.21% of the biological analysis bulletin did not include clinical

information [9]. Similarly, studies carried out in Nigeria reported that 54.7% of request forms did not include clinical information [10]. However, the proportion of request forms for which the clinical information was not reported was much higher than that found in the study of Keppens *et al.* Those authors pointed out that only 26.4% of the forms did not contain clinical information [11].

In this study, the majority of requests for request forms were prescribed by medical doctors (83.90%). Nurses prescribed 15 request forms (0.80%) and midwives 4 (0.2%). The results obtained in this study are clearly higher than those obtained in Kadour's study, in which medical doctors accounted for 69.42% of prescribers. In fact, the majority of prescribing medical doctors would like request forms to be carried out in the laboratories of the Institut Pasteur de Côte d'Ivoire [7].

Those prescribers recommend patients to perform their request forms at the Institut Pasteur de Côte d'Ivoire because of the reliability of results. Furthermore, this research institution has not only a high-performance, new-generation diagnostic tools, but also has a qualified staff in all disciplines. Medical confirmation of suspicion is the proof of diagnosis before the patient is given the recommended treatment by doctors.

The quality of request forms received at the Institut Pasteur de Côte d'Ivoire at the Malaria and Parasitology units was assessed according to the recommendations of the request forms good drafting practice. The results showed that out of a total of 1990 request forms, only 108 (5.4%) were deemed acceptable. Not a single request forms complied with the request forms drafting requirements. This appalling result reflects the poor quality of request forms drafted by prescribers of healthcare centers in Côte d'Ivoire.

Omission of a single item could affect the quality of the request forms drafting, patient care could even increase the delivery time of result. Furthermore, this poor quality drafting could make unusable thousands of data providing by healthcare centers. Studies carried out by Kadour and colleagues in 2022 in Niger found that 9.45% of request forms contained all required items [7]. In Burkina Faso, the results reported by Yacouba and colleagues in 2019 showed that only 4.2% of the request forms in their study had the required drafting quality [6]. Another study conducted in Nigeria showed that only 8% of a total of 4638 forms provided all the required data [12]. The results of Kipkulei *et al.* 2019 showed that on 289 forms evaluated, only 1% (3/289) had all the required information [13]. It should be noted that among those deemed acceptable, almost all (97.2%) were requested by medical doctors. This confirms not only the professionalism of medical doctors, but also the authenticity of the request forms they issued.

Three places of origin of request forms were mentioned in this study. After analysis, it was found that the Institut Pasteur de Côte d'Ivoire was the biggest issuer of request forms with a rate of 49.4%, followed by the other healthcare centres with a rate of 36.9% and finally University Hospitals with a rate of 12.5%.

Only 1.1% request forms included in this study did not bear the name of issuing departments. It should be noted that, in order to improve the management of samples by target laboratories, additional tests are internally added, depending on the number of laboratories involved. This might be the reason for the large number of request forms coming from the Institut Pasteur de Côte d'Ivoire.

Moreover, out of 108 request forms which quality drafting was deemed acceptable, 56.5% were from University Hospitals. This could be explained by the large number of medical doctors at university hospital departments. University Hospitals are the main place for medical doctors practical training in Côte d'Ivoire. The majority of prescribers at the University Hospitals rely on their professionalism and rigor.

5. Conclusion

The conformity of request forms received at the malaria and parasitology laboratories at the Institut Pasteur de Côte d'Ivoire was assessed according to the requirements on good drafting practice. The results of this study show that the quality of drafting for request forms is poor in healthcare centers in Côte d'Ivoire. The essential information required on request forms is often missing. Conversely, the availability of key information could help to easily use data from healthcare centers.

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Authors' Contributions

YSS participated in data collection and entry. OY contributed in data analysis. YSS, SB and AAB were involved in drafting of manuscript. YSS, NKBT and NTL contributed in topic framing. SB helped to proofread the manuscript. SB and TAO oversaw the study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Nutt, L., Zemlin, A.E. and Erasmus, R.T. (2008) Incomplete Laboratory Request Forms: The Extent and Impact on Critical Results at a Tertiary Hospital in South Africa. *Annals of Clinical Biochemistry*, **45**, 463-466.
<https://doi.org/10.1258/acb.2008.007252>
- [2] Bonini, P., Plebani, M., Ceriotti, F. and Rubboli, F. (2002) Errors in Laboratory Medicine. *Clinical Chemistry*, **48**, 691-698.
<https://pubmed.ncbi.nlm.nih.gov/11978595/>

- <https://doi.org/10.1093/clinchem/48.5.691>
- [3] Erasmus, R.T. and Zemlin, A.E. (2009) Clinical Audit in the Laboratory. *Journal of Clinical Pathology*, **62**, 593-597. <https://doi.org/10.1136/jcp.2008.056929>
- [4] Lopis, M., Alvarez, V., Martínez Brú, C., Gómez, R., Barba, N., Ibarz, M., Cortés, M., Ventura, M. and Alsina, M.J. (2011) Quality Assurance in the Preanalytical Phase. Applications and Experiences of Quality Control. *IntechOpen*, 704.
- [5] Adeoti, M.F., Silue, A., Sawadogo, D., Dosso, M. and Sess, E.D. (2004) Réflexion sur les bonnes pratiques de la rédaction du bulletin d'analyses de biologie médicale. *Immuno-Analyse et Biologie Spécialisée*, **6**, 370-373. <https://doi.org/10.1016/j.immbio.2004.08.001>
- [6] Yacouba, A., Kiello, K., Kiba-Koumare, T.C.R.A., Kabre, E. and Sakande, J. (2019) Etude de la qualité rédactionnelle des bulletins d'analyses biologiques au CHU Yalgado Ouédraogo, Burkina Faso. *International Journal of Biological and Chemical Sciences*, **13**, 2683-2690. <https://doi.org/10.4314/ijbcs.v13i6.20>
- [7] Djobo, K., Yacouba, A., Alhousseini, D., Soumana, B.M., Chaibou, S., Boutchi, M. and Mamadou, S. (2022) Analyse multicentrique de la qualité rédactionnelle des bulletins d'analyses biologiques au Niger. *Pan African Medical Journal*, **43**, 1-13. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9755713/>
- [8] Tola, E.K., Dabi, Y.T. and Dano, G.T. (2022) Assessment of Types and Frequency of Errors in Diagnostic Laboratories among Selected Hospitals in East Wollega Zone, Oromia, Ethiopia. *Pathology and Laboratory Medicine International*, **14**, 1-6. <https://doi.org/10.2147/PLMI.S351851>
- [9] Pierre, N.M.J., Arnauld, O.J., Pierre, N.J., Emmanuel, M.T.J., Elodie, N.M., Clémence, O., Christian, N.C., Gisèle, E.L. and Cécile, O.E. (2023) The Compliance and Quality of Biological Examination Requests at the Douala General Hospital. *Journal of Advances in Biology & Biotechnology*, **26**, 37-45. <https://doi.org/10.9734/jabb/2023/v26i2621>
- [10] Uchejeso, O.M., Olumide, O.B., Joel, A.O., Paul, M.E., Angela C, N., Steve K, O., Ikechukwu OU, I., Charity, I.U., Dennis, N.B., Yakubu, F.B., Kizito, J.P., Emmanuel, O.A. and Elisha, S. (2019) Assessment of Patients' Medical Laboratory Request Forms for Incomplete Data in Jos University Teaching Hospital, Jos Nigeria. *American Journal of Biomedical Science and Research*, **6**. <https://doi.org/10.34297/AJBSR.2019.06.001056>
- [11] Keppens, C., Royen, Y.V., Brysse, A., Cotteret, S., Hogdall, E., Kuhlmann, T.P., O'Sullivan, B., Pauwels, P., Pauwels, S., Rot, M., Vanderheyden, N., Hee, I.V. and Dequeker, E. (2021) Incidents in Molecular Pathology Frequency and Causes during Routine Testing. *Archives of Pathology & Laboratory Medicine*, **145**, 1270-1279. <https://doi.org/10.5858/arpa.2020-0152-OA>
- [12] Adamu, S., Mohammed, A., El-Bashir, J.M., Abubakar, J.D. and Mshelia, D.S. (2018) Incomplete Patient Data on Chemical Pathology Laboratory Forms in a Tertiary Hospital in Nigeria. *Annals of Tropical Pathology*, **9**, 47-49. https://doi.org/10.4103/atp.atp_44_17
- [13] Kipkulei, J.C. and Lotodo, T.C. (2019) Evaluation of the Completeness in the Filling of Laboratory Request Forms Submitted to the Haematology Laboratory at a Tertiary Hospital in Kenya. *Health*, **11**, 862-868. <https://doi.org/10.4236/health.2019.117069>