

**Physicians satisfaction with the quality of laboratory services in a Nigerian Teaching Hospital**Tyavyer J Akosu<sup>1</sup>, Chikezie Z Okorie<sup>1</sup>, Gurumding B Gurumding<sup>2</sup>, Namasodo Gobeno<sup>2</sup>, Bulus K Chidawa<sup>2</sup>, Iornumbe J Usar<sup>1</sup>, Tolulope O Afolaranmi<sup>1</sup>**Abstract**

**Background:** Physicians order laboratory tests expecting to receive accurate and timely results to support the management of their patients but it is not known to what extent Jos University Teaching Hospital laboratories satisfy their physicians in this regard. This study sought to determine physician satisfaction with the quality of services provided by the hospital's laboratories.

**Methods:** A pre-tested semi-structured self-administered questionnaire was used to obtain information from sixty seven (67) physicians selected using a cluster sampling technique about their satisfaction with the quality of services provided by the hospital's laboratories. A semi-structured questionnaire was also used to collect information from Laboratory Managers on how they report test results of in-patients to the requesting physicians. Winpepi version 11.65 was used for statistical analysis. to test for the presence of relationship between respondents specialty and their level of satisfaction. A p-value of 0.05 was considered statistically significant.

**Results:** Three methods were used to transmit laboratory test results to the requesting physicians: Non-critical results were picked from the laboratory by the responsible doctors (66.6%)

or the patient's relations (33.3%), or they were sent to the patients' ward through the laboratory support staff.

Only 6% of physicians were satisfied with the timeliness of reporting results (in-patient test turnaround time), and means of delivery of results to the requesting team. Just over a quarter (25.4 %) were satisfied with how samples are collected while 20.9% were satisfied with the technical quality/reliability of the results. There was no significant relationship between physician' specialty and their level of satisfaction with the laboratory services.

**Conclusion:** Physicians in Jos University Teaching Hospital are very dissatisfied with the timeliness and technical quality of the results received from the Hospital's laboratories. Laboratory managers and the Hospital management need to act urgently to improve quality and restore trust in the hospital's laboratories.

**Key words:** Physician, satisfaction, Medical, Laboratory, Services.

Highland Med Res J 2023;24(1):11-15

**Introduction**

Physicians order most of the tests performed by clinical laboratories and their satisfaction is essential for the continued utilisation of the services of these laboratories. As key customers, awareness of their level of satisfaction also serve as essential feedback since it provides the customer perspective and help correct any misconceptions the laboratories may have about customer preferences.<sup>1,2</sup> Knowledge of what the customer want is known to help organisations improve their quality of service. The American College of Pathologists, and The Joint Commission on Accreditation for Health Care Organisations, recognize the value of customer satisfaction assessment on laboratory quality assurance and nowadays require its performance for accreditation of clinical laboratories.<sup>2</sup>

There are several aspects of laboratory services that are considered important by physicians including quality/reliability of results, routine test turnaround time (TAT), Inpatient stat (tests performed immediately) test TAT, test menu adequacy, outpatient stat test TAT,

accessibility of pathologists, laboratory report format, critical value notification, esoteric test TAT, accessibility of laboratory staff, phlebotomy services, laboratory management responsiveness, accessibility of laboratory manager, staff courtesy and courier services.<sup>3</sup>

For hospital laboratories which are sited within the Hospital premises and primarily serve the specified hospital, external courier services may not be provided and transmission of specimens and results may be done using other methods. The Jos University Teaching Hospital is a reference centre that serves most of the states in North Central Nigeria. Its clinical laboratories support the training of pathologists and laboratory technologists, in addition to providing clinical laboratory services for the care of the Hospital's patients. Almost all the specimens analysed by these laboratories are requested by the hospital's physicians but their satisfaction with the quality of services provided by these laboratories has not been determined. The purpose of the study was to determine the physicians' level of satisfaction with the services provided by these laboratories.

**Method**

The study was carried out in Jos University Teaching Hospital which is located in North Central Nigeria and provides tertiary level health care services to catchment

<sup>1</sup>Department of Community Medicine, University of Jos

<sup>2</sup>Faculty of Clinical Sciences, University of Jos

All correspondences to:

Tyavyer J Akosu

Email: akosu2002@yahoo.co.uk

communities and serves as the teaching Hospital for the University of Jos.

It was a cross-sectional facility-based study. The study population included physicians (clinicians) and laboratory technologists in the Jos University Teaching Hospital, Jos. Only specialist physicians and the most senior Laboratory technologist were included in the study. Physicians in training (Resident Doctors) were excluded from the study because they do not have full responsibility for any in patients.

The sample size for physicians (clinicians) was calculated using the sample size formula for cross-sectional surveys:

$N = Z^2PQ/d^2$  where n = minimum sample size

Z= standard normal deviate at 95% confidence interval =1.96

P= proportion of physicians satisfied with quality of laboratory services which was 0.95 in a previous study.<sup>4</sup>

Q= complementary probability of P = P-Q= 1- 0.95= 0.05

d= level of precision= 0.05

Therefore n= 73.

Respondents were selected using a two stage sampling technique. Stage one involved the selection of Departments while stage two involved the selection of respondents. Medicine, Obstetrics and Gynecology, Paediatrics and surgery, (including orthopaedics Surgery) departments were purposively selected from the list of clinical departments because they care for most of the more severely ill in-patients whose management often requires robust laboratory support; while chemical pathology and Haematology were selected from the list of Pathology departments. In stage two, The Heads of Departments and the most senior technologists in their main laboratory were selected from the pathology Departments while all the physicians in the selected clinical Departments that gave their consent for participation were selected. The Heads of Pathology departments and the most senior technologists were selected because, as managers they are responsible for coordinating the operationalization and implementation of the policies that guide the operations of their Laboratories regarding the handling and processing of requests, specimens and results.

A structured pre-tested self-administered questionnaire was used to obtain information from laboratory heads about how the laboratories report in-patients test results. Data for the Physician satisfaction survey was collected using a questionnaire that was developed based on the College of American Pathologists Q-probes studies and pre-tested in a nearby

Hospital not involved in the study.<sup>3</sup> Level of satisfaction was assessed using a likert-like scale unsatisfied (1), neutral (2) and satisfied (3). The questionnaire focused on four aspects of laboratory services: method of specimen collection from in-patients, technical quality and reliability of test results, timeliness of results (in patient test turnaround time) and how results are transmitted to the requesting physician. Responses were categorized into satisfied, neutral and unsatisfied. Trained research assistants distributed paper based questionnaires to respondents' in their offices and consulting rooms on clinic days and retrieved them after completion at the close of business on the same day or an otherwise agreed date. Those who failed to return the questionnaires on the agreed time were followed up with phone call reminders until the completed questionnaire was retrieved.

Collected data was analysed using Epi info statistical software package, version 3.5.1. and Winpepi version 11.65. The chi-squared test was used to test for the presence of association between Physician's specialty and their level of satisfaction. A p-value of 0.05 was considered statistically significant.

Ethical clearance was obtained from the Health Research and Ethics Committee of the Jos University Teaching Hospital. Informed verbal consent was obtained from all participants.

## Results

Sixty –seven out of the 73 questionnaires that were sent out were correctly completed and returned giving a response rate of 92%. Three methods were used to transmit laboratory test results to the requesting physicians: the responsible doctors picked up the results from the laboratory; the results were sent to the patients' ward or they were picked up by the patients' relations. Table 1.

Results with critical values are transmitted to the requesting physicians using different methods: They are either communicated to the responsible doctor by telephone, or sent to the patients' ward immediately by an orderly or, transmitted the same way non- critical results are reported..

Physician satisfaction was low with all the aspects of laboratory services studied. It was lowest with timeliness of reporting results (in patient test turnaround time), and means of delivery of results to the requesting team at 6% and, highest with how samples were collected at 25.4%. Table 2. There was no significant relationship between respondent's specialty and their level of satisfaction. Table 3.

Table 1: Methods used for reporting Laboratory results

Variables	frequency	Percentage
Results with non- critical values		
Results are sent to patient's ward	2	33.3
The managing Doctors (House officers) pick up results	5	83.3
Patient's relations pick results from laboratory	6	100.0
Results with critical values		
Call the Doctors immediately result is ready	4	66.7
Send result to the ward through laboratory support staff	4	66.7
Dispatch result the same way as non-critical result	2	66.7

Multiple responses allowed.

Table 2: Physician satisfaction with aspects of Laboratory services

Variables	satisfied	Neutral	Unsatisfied
How samples are collected	17 (25.4%)	18 (26.8%)	32 (47.8%)
Technical quality/reliability of results	15(20.9%)	17 (25.4%)	35 (52.2%)
Timeliness or results (TAT)	4 (6.0%)	10 (14.9%)	53 (79.1%)
Means of delivery of results	4 (6.0%)	14 (20.9%)	49 (73.1%)

Table 3: Relationship between Physician specialty and their level of satisfaction

Variables	satisfied	Neutral	Unsatisfied	$\chi^2$	df	p-value
Sample collection for in-patients						
Medicine	2 (12.5%)	4 (25.0%)	10 (62.5%)	3.651	6	0.724
Surgery	6 (30.0%)	6 (30.0%)	8 (40.0%)			
O&G	5 (35.7%)	3 (21.4%)	6 (42.6%)			
Paediatrics	3 (18.8%)	4 (25.0%)	9 (56.3%)			
Technical quality of results						
Medicine	2 (12.5%)	3 (18.8%)	11 (68.8%)	9.937	6	0.127
Surgery	5 (26.3%)	6 (31.6%)	8 (42.1%)			
O&G	6 (42.9%)	4 (28.6%)	4 (28.6%)			
Paediatrics	1 (6.25%)	4 (25.0%)	11 (68.8%)			
Timeliness of Results						
Medicine	0 (0.00)	3 (17.6%)	14 (82.4%)	2.181	6	0.902
Surgery	1 (5.0%)	3 (15.0%)	16 (80.0%)			
O&G	1(6.7%)	3 (20.0%)	11 (73.3%)			
Paediatrics	1 (6.3%)	2 (12.5%)	13 ()			
Means of delivery of results						
Medicine	0 (0.0%)	5 (31.3%)	11 (68.8%)	6.392	6	0.381
Surgery	2 (10.0%)	3 (15.0%)	15 (75.0%)			
O&G	1 (7.8%)	5 (38.5%)	7 (53.8%)			
Paediatrics	1 (6.3%)	2 (12.5%)	13 (81.3%)			

## Discussion

Majority of health care providers were interested in direct reporting of laboratory results in hospitals, however operational challenges might make this difficult. The methods used for transmitting results to the

requesting physician as found in this study are at variance with what has been reported in other studies. For instance, studies in America and Europe have reported that the methods laboratory testing centres use to communicate results to providers include automatic

alerting systems using mobile phones, pagers or other electronic devices; telephone, fax, e-mail and letters.<sup>5,6,7</sup> Relying on junior doctors (house officers) and patients relations to pick up results from the laboratory and hand delivery to the ward by laboratory staff is likely to cause delays in results delivery and consequent corrective action on abnormal results. This could adversely affect patient safety. Efforts should be made to provide fax and telephone services, reliable internet and related technology in the laboratories and wards to ensure timely and reliable transmission of test results to physicians to safeguard patient safety.

In this study, the reporting of critical laboratory values are in majority of cases handled differently from non-critical values, and this is similar to findings reported by other authors.<sup>8,9,10</sup> However, there is still room for improvement as about a third of results are still dispatched in the same traditional manner. One implication of this is that decision making on such critical results might be delayed further hampering patients' safety. Though, some laboratories send the critical laboratory results directly to the ward through the laboratory support staff, there is need for efforts to be made to ensure the result gets to the attending physician who requested for the test promptly. Otherwise, no clinical decision can be taken on the result which might affect the outcome for the patient.

Our satisfaction survey showed that timeliness in reporting of laboratory result was the commonest source of dissatisfaction with the quality of laboratory services. In this study, less than a tenth of respondents expressed satisfaction with the timeliness of getting laboratory results. This value is way lower than what was obtained from a national survey on physician satisfaction with laboratory services in Ethiopia where 55% of physicians expressed satisfaction. Other similar studies on physician satisfaction have also reported much higher values. The difference may be due to limited laboratory resources for processing the tests resulting in prolonged test turnaround time. It may also be due the methods the laboratories currently use to report results to the requesting physicians. In addition to the methods of transmitting test results suggested above, Investment in resources for analysing specimens and for improving the pre- analytic, analytic and post- analytic processes may be required to improve timeliness of reporting test results and physicians satisfaction with the service. In addition, since the test turnaround time for some tests is due to the inherently long testing times or the infrequency of their performance, communication between the laboratories and the physicians may need to be improved to manage expectations and thus improve tolerance and satisfaction.

Aside the timeliness of reporting test result, our

respondents were also dissatisfied with the methods used to deliver results to the managing teams as very few of them were satisfied with the delivery process. This unacceptable level of dissatisfaction could be due to the increased chance of delay, misplacement/loss of results when they are handled manually and by untrained patient relations. In addition, use of Junior Doctors for ferrying results (for results pick up) from the laboratory, in particular is an avoidable misuse of this skilled workforce whose time should be better used for patient care. Efforts should be made to provide pagers, fax machines and telephone services (inter com) in the laboratories and wards for efficient transmission of results to the wards/ managing physicians.

This study also found out that 47.8% of the respondents are dissatisfied with the way samples are collected. The conduct of staff during the sample collection process is a main determinant of the satisfaction of patients with the process. During sample collection, efforts should be made to get the client relaxed while the process should be made as stress free as possible. Factors such as cleanliness, courtesy, and empathy also play a vital role in improving clients satisfaction with the process.

Perhaps the most concerning finding of the study is the proportion of respondents dissatisfied with reliability/technical quality of the results which has been identified in several studies as the most important quality aspect to physicians.<sup>2,3,4</sup> Physicians order laboratory tests to support them in their clinical decision making and if over half of them find the results unreliable they will not base their decisions on the results of the tests. This has severe consequences for both patients and the laboratories. For patients it limits the quality of care they are able to get since their physicians are deprived of the support provided by high quality and reliable laboratory tests and any payments made for such tests may have been wasted. For the Laboratories, the finding indicates an existential threat because it shows that over 50% of their most important clients do not trust their products. Like any organisation in this situation, the laboratories need to urgently find out why most of the Hospital's physicians are unsatisfied with the reliability and technical quality of their results and also perform an audit of their activities/ services in order discover and address any deficiencies.

### Conclusion

Our results show that most of the hospital's physicians are unsatisfied with all aspects of laboratory quality studied. The hospital's management need to take urgent steps to address the deficiencies identified in order to improve the quality of laboratory services and patient outcomes.

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