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QUALITY ASSURANCE PROGRAMME AND PERFORMANCE OF CLINICAL LABORATOTY PRACTICE IN ENUGU STATE

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Abstract: The study evaluated quality assurance programme and performance of clinical laboratory practice in Enugu state. The specifics objectives were to: examine the relationship between standard operating procedures and customers feedback and ascertain the relationship between reference mentoring methods and turnaround time of clinical laboratory practice in Enugu state. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. A total population of 150 entrepreneurs was used. One hundred and twenty six (126) returned the questionnaire and accurately filled. Data was presented and analyzed using Likert Scale and the hypotheses using Z - test. The findings indicated that Operating procedures had significant positive relationship with customers' feedback, $Z(95, n = 126), 3.118 < 5.880, P. < .05$ and Reference mentoring methods, had significant positive relationship with turnaround time of clinical laboratory practices, $Z(95, n = 126), 4.677 < 6.325, P. < .05$. The study concluded that operating procedures and reference mentoring methods had significant positive relationship with customers' feedback and turnaround time of clinical laboratory practices. The study recommended among others that before the assurance of quality in/by an organization, standard operating procedures should be prioritized in the organization. Employees should be trained on the procedures required for carrying out a particular function. Hence, employee training should be carried out adequately.

Keywords: Quality assurance, programme, performance, standard operating procedures, reference mentoring methods

1.1 Background of the study

Quality assurance programme is a roadmap to success. Without establishing specific and measurable goals for quality product and services, organizations tend to fail. The consequences of having a substandard quality assurance plan can have many adverse effects in an organisation. In the 21st century, where customers are spoiled for choice, not having a quality assurance program guarantees that business will struggle to retain

customers and boost revenue. Essentially, predetermined standards are used to assess whether a product meets the specified requirements. In effect, this stage determines how the quality assurance program will be implemented (Turnkeymate, 2024). Quality assurance program is an essential part of the mechanical integrity program and will help maintain the primary and secondary lines of defense designed into the process to prevent unwanted chemical releases or to control or mitigate a release. Quality assurance, like quality control involves determining whether businesses can sell a product or service to customers using various procedures to test product performance and quality. Quality assurance programme is a fundamental part of the overall quality management process, which focuses on ensuring that the products and services delivered meet specific quality requirements and standards (Deltek, 2024).

Quality assurance in healthcare involves a set of activities that aim to improve the quality of patient care by preventing errors and ensuring that healthcare services meet or exceed predetermined quality standards. By implementing quality assurance measures, healthcare providers can reduce medical errors, improve patient outcomes, and increase patient satisfaction (Zenbit, 2023). In healthcare, quality assurance programme is the process of ensuring that healthcare services meet or exceed predetermined standards. It involves identifying potential problems, developing and implementing solutions, and monitoring the results to continuously improve patient care. It involves assessing or evaluating quality; identifying problems or issues with care delivery and designing quality improvement activities to overcome them; and follow-up monitoring to make sure the activities did what they were supposed to (Jevaji, 2016).

Performance Improvement focuses on performance within a healthcare organization relative to clinical or non-clinical processes or outcomes. Quality assurance programme and Performance Improvement is a data driven and proactive approach to quality improvement. The ultimate goal of quality assurance is to ensure customer satisfaction by preventing defects in products and services. It involves meeting customer expectations and exceeding them by consistently delivering high-quality goods and services. While Quality Assurance programs focused on the products or outputs of processes with an emphasis on inspection and quality control, Quality Improvement gives front line staff a voice at the table and an opportunity to improve care (Parisi, 2023). The reliability of laboratory tests, depends on the quality assurance system existing in the working place, which comprises not only the analytical activities but includes all preventive measures and their regular control in connection with the preanalytical phase, as well as the plausibility control and interpretation of results. The quality performance of clinical laboratories plays a basic role in the quality and effectiveness of health care. Hence, the need to examine the quality assurance programme and performance of clinical laboratory practice in Enugu State.

1.2 Statement of Problem

Quality programme is the umbrella term for a comprehensive quality initiative that includes activities such as credentialing, infection control, and regulatory compliance. By setting clear quality goals, defining criteria, and implementing control measures, organizations can ensure that their offerings are of high quality, reliable, and efficient. Quality assurance system helps to ensure the use of proper materials of construction, the proper fabrication and inspection procedures, and appropriate installation procedures that recognize field installation concerns. The quality performance of clinical laboratories plays a basic role in the quality and effectiveness of health care.

Quality management describes an organization's process to ensure that its products and services meet established standards. However, most organizations encounter challenges relating to quality as a result of poor standard operating procedures and reference mentoring methods. Also, Quality assurance professionals face various challenges in their work, such as changing requirements, tight deadlines, complex systems, and limited resources. Quality assurance issues are any defects, errors, or inconsistencies that affect the quality, functionality, or usability of the product or service.

Quality assurance provides a framework that helps streamline processes, enhance communication and ensure that every aspect of the organization's operations aligns with best practices. Therefore, Identifying and fixing quality assurance issues is a crucial part of the development cycle, as it can save time, money, and reputation. Additionally, it will help to prevent reduced customers feedback and turnaround time in organizations.

1.3 Objectives of the study

The main objective of the study was to evaluate quality assurance programme and performance of clinical laboratory practice in Enugu state. The specifics objectives were to:

i. Examine the relationship between standard operating procedures and customers feedback of laboratory practice in Enugu state

ii. Ascertain the relationship between reference mentoring methods and turnaround time of clinical laboratory practice in Enugu state

1.4 Research Questions

The following research questions guided the study

i. What is the relationship between standard operating procedures and customers feedback of laboratory practice in Enugu state?

ii. What is the relationship between reference mentoring methods and turnaround time of clinical laboratory practice in Enugu state?

1.5 Statement of Hypothesis

The following hypothesis suited the study relationship

i. Standard operating procedures has with customers feedback in Enugu state

ii. Reference mentoring methods has relationship with turnaround time of Enugu state

1.6 Significance of the Study

The study on quality assurance programme and performance will help organizations to understand that for quality products and services in the organizations, there should be programme which will help to guide the activities of the organization to achieve desired quality.

The study will also help organization managers and employees discover that there will be no quality assurance without their effort. Hence, employees should be trained and equipped to produce quality result.

2.0 Review of Related Literature

2.1 Conceptual Review

2.1.1 Quality

Quality is the degree of excellence of a substance or object. Quality is a perceptual, conditional, and somewhat subjective attribute and may be understood differently by different people (Nanda, 2016). In business, engineering, and manufacturing, quality – or high quality – has a pragmatic interpretation as the non-inferiority or superiority of something (goods or services); it is also defined as being suitable for the intended purpose

(fitness for purpose) while satisfying customer expectations. Quality in laboratory medicine should be defined as the guarantee that each and every step in the total testing process (TTP) is correctly performed, thus ensuring valuable decision making and effective patient care. The term "quality" in the healthcare context has been properly defined by the Institute of Medicine (IOM). It defines "quality of care as the extent to which health services for individuals and populations increase the probability of desired health outcomes and conform with current professional knowledge (Allen-Duck, Robinson, Stewart, 2017)".

2.1.2 Assurance

Assurance refers to coverage over a limited time, whereas assurance applies to persistent coverage for extended periods or until death. Assurance may also apply to validation services provided by individuals and other professionals (Kagan, Drury and Li, 2024). Assurance has dual meanings in business. It refers to the coverage that pays a benefit for a covered event that will eventually happen. Assurance also refers to the assurance given by auditing professionals regarding the validity and accuracy of reviewed documents and information. The Organizational Assurance is responsible for ensuring the overall integrity of operations by making sure there is ongoing compliance with legislation and policy, communication with the public and stakeholders is effective. Assurance is coverage that pays a benefit upon the eventual occurrence of a certain event. It also refers to a service rendered by a professional to confirm the validity and accuracy of reviewed documents and information (Kagan, Drury and Li, 2024)..

2.1.3 Programme

A programme is a unique and transient strategic endeavour undertaken to achieve a beneficial change and incorporating a group of related projects and business-as-usual activities. Programmes are often defined as delivering change and would typically incorporate the full utilisation of benefits to satisfy the business case, (APM, 2023). Programmes are the combination of goals, policies, procedures and rules. All these plans together form a program. Programme is a plan of things that are done in order to achieve a specific result. A program is a collection of projects that are managed as a group to achieve efficiencies of scale. Just as project management involves the coordination of individual tasks, program management is the coordination of related projects that are grouped together. A program manager's role is to coordinate all projects within a program to align with the strategies and long-term objectives of an organization (Wrike, 2024).

2.1.4 Quality assurance programme

Quality assurance (QA) is any systematic process of determining whether a product or service meets specified requirements. Quality Assurance establishes and maintains set requirements for developing or manufacturing reliable products. Quality assurance, like quality control (the differences between these terms will be discussed shortly), involves determining whether businesses can sell a product or service to customers using various procedures to test product performance and quality (Nonstop, 2021). The quality assurance process helps a business ensure its products meet the quality standards set by the company or its industry. A quality assurance system is meant to increase customer confidence and a company's credibility, while also improving work processes and efficiency, and it enables a company to better compete with others, (Gillis, 2023). For businesses and enterprises of all sizes, the products and services sold to and seen by customers reflect several quality processes during the production of the product. In other words, a quality assurance program is of the utmost importance for a company to keep product quality high (Nonstop, 2021).

2.1.5 Components of Quality assurance programme used in the study

2.1.5.1 Standard operating procedures

Procedures are extensively employed to assist with working safely. They are sometimes called "safe work methods statements". A standard operating procedure (SOPs) is a set of written instructions that describes the step-by-step process that must be taken to properly perform a routine activity. It aims to achieve efficiency, quality output, and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations. Eisner, (2022) proposed that SOPs are clear, step-by-step guides that ensure tasks are completed correctly, efficiently, and in compliance with regulations, regardless of who's performing them. SOPs reduce the risk of errors, accidents, and inconsistent results. SOPs are used across all industries, and many organizations use dozens of them to ensure consistently high-quality work across the entire team. SOPs can consist of a simple bulleted list of action items, but effective employee onboarding and training benefit from the introduction of visual elements (Gaskin, 2022).

2.1.5.2 Reference mentoring methods

Mentoring is a training in which a more experienced employee (the mentor) provides expertise, support and guidance to a less experienced employee (the mentee), in an effort to advance their career growth and success in the workplace. Mentoring is a process where a trained individual offers advice, support and guidance to an individual or a group so that it can help in their learning and development process. The mentor acts as a guide, advisor or a counsellor and shares his knowledge, experiences and skills with a trainee or a junior within agreed bounds so that the words of wisdom can help in the professional career. It can be both short-term and long-term commitment as it depends entirely on the reason for the mentorship (Bhasin, 2020). Clinical/academic mentorship is a system of practical training and consultation that fosters ongoing professional development, to yield sustainable high- quality clinical/academic outcomes.

2.1.6 Performance in clinical laboratory

Laboratory Key Performance Indicators (KPIs) are measures of the performance of the laboratory and its activities, such as projects, processes, products, or services. KPIs in laboratories are also used to track the performance of the inventory, devices, environment, data, and results. Clinical performance describes the usability of the specific device in a clinical context. Together with the analytical performance and the scientific validity, it goes into performance evaluation: based on performance data, both the requirements relevant to performance and the assessment of risks and the acceptance of the benefit/risk ratio are demonstrated (Metecon, n.d). The quality performance of clinical laboratories plays a basic role in the quality and effectiveness of health care. The reliability of laboratory tests, however, depends on the quality assurance system existing in the working place, which comprises not only the analytical activities but includes all preventive measures and their regular control in connection with the preanalytical phase, as well as the plausibility control and interpretation of results (Endróczi, 1996).

2.1.7 Components of performance used in the study

2.7.1 Customers feedback

Customers' satisfaction is imperative for success. Without customer feedback, a company will never know if customers are getting value out of their product. Customer feedback is information provided by customers about their experience with a product or service. Its purpose is to reveal their level of satisfaction and help product, customer success, and marketing teams understand where there is room for improvement (Pendo, 2024).

Clinical laboratories continuously strive to attain very high levels of customer satisfaction to serve their clients and maintain accreditation. Patients' (clients/customer) services and satisfaction in Medical Laboratory Services and general healthcare is one of the twelve (12) quality essentials of Total Quality Management System (TQMS) emphasized by quality standards. Feedback from laboratory customers is a compulsory quality indicator in the preparation of the balanced scorecard for monitoring the effectiveness of the quality management system. One of the tools used to assess feedback is the clinician satisfaction survey (Fondoh, Awasom, Enow-Tanjong, Fondoh, Njukeng, Shang, Ndasi, Samje, Muluh and Kinge, 2020).

2.1.7.2 Turnaround time

Turnaround time also known as downtime is the amount of time taken to complete a process or fulfill a request. Turnaround time at an industrial plant is the amount of time needed to shut down a specific asset or an entire operation in order to conduct maintenance or some other process. It refers to the time from the submission of a process for execution to the return of the output of that process. Turnaround time (TAT) is the amount of time taken to complete a process or fulfill a request. The concept thus overlaps with lead time and can be contrasted with cycle time (Hawkins, 2007). Turnaround time is the amount of time it takes to complete a project. Knowing how long projects take, especially when your employees and suppliers do them is important. The turnaround time (TAT) as defined by most of the laboratories is the time interval between the specimens received in the laboratory to the time of reports dispatched with verification. Reporting in time is a crucial indicator of quality services along with accurate, precise and reliable reports, thus each clinical laboratory should identify affecting factors to eliminate them for the enhancement of quality services (Bhatt, Shrestha & Risal, 2019).

2.1.8 Conceptual Framework of the study

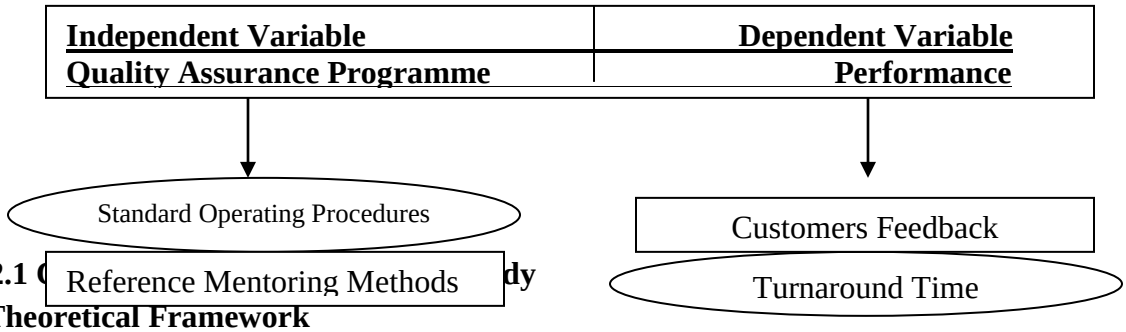

Fig 2.1 C dy

2.2 Theoretical Framework

The study reviewed Deming's theory in line with the study. The study was anchored on this theory. This theory explain ways to go about achieving better quality management practices which will translate into improvements in organizational performance.

2.2.1 Deming's Theory

Deming's theory of total quality management rests upon fourteen points of management. He identified, the system of profound knowledge, and the Shewart Cycle (Plan-Do-Check-Act). He is known for his ratio - Quality is equal to the result of work efforts over the total costs. If a company is to focus on costs, the problem is that costs rise while quality deteriorates. Deming's system of profound knowledge consists of the following four points: System Appreciation - an understanding of the way that the company's processes and systems work; variation knowledge – an understanding of the variation occurring and the causes of the variation;

knowledge theory - the understanding of what can be known; psychology knowledge - the understanding of human nature (Deming, 1986).

By being aware of the different types of knowledge associated with an organization, then quality can be broached as a topic. Quality involves tweaking processes using knowledge. The fourteen points of Deming's theory of total quality management are as follows: Create constancy of purpose, adopt the new philosophy, stop dependency on mass inspections, don't award business based upon the price, aim for continuous production and service improvement, bring in cutting-edge on the job training, implement cutting-edge methods for leadership, abolish fear from the company, deconstruct departmental barriers, get rid of quantity-based work goals, get rid of quotas and standards, support pride of craftsmanship, ensure everyone is trained and educated, make sure the top management structure supports the previous thirteen points(Deming, 1986).

2.3 Empirical Review

2.3.1 Standard operating procedures and customers feedback of clinical laboratoty practice

Mbah, Ekechukwu & Ugochukwu (2018) conducted a study on the relationship between customer satisfaction and customer retention. The specific objectives include to: examine the relationship between service quality and customer trust and evaluate the relationship between customer's involvement and customer loyalty. The survey method of co-relational design research was used. The area of study comprised of three banks: First Bank Okpara Avenue, Zenith Bank Okpara Avenue and Ecobank Ogui road in Enugu metropolis, Enugu State. A population of 208 management and staff were used. The primary sources were personal interview and the administration of questionnaire to the management and staff of the banks. The data collected from the questionnaire were presented in a frequency tables and the hypotheses were tested using F-statistic tool (ANOVA). It was found there is positive relationship between service quality and customer trust F (n = 208) = 32746.632, $P<0.05$.; there is positive relationship between customer's involvement and customer loyalty F (n = 208) = 31298.328, $P<0.05$.

Akpan, Abdulrahman & Pepple (2020) conducted a study to compare service quality by assessing the level of adherence to quality system essentials (QSEs) in laboratory services delivered by public and private health institutions in Southern Nigeria. Quarterly Internal quality audit was conducted in the ART Laboratory section of the selected health facilities spanning July 2015 to September 2016. 200 audit reports were checked, cleaned, and analyzed using SPSS version 23. We analyzed changes in mean performance scores over time across 6 quality management essentials using Repeated Measures ANOVA. Results were considered significant at $P<0.05$. The result of the study showed that the private health facilities laboratory achieved a significantly higher improvement in Facility and Safety score over time ($p=0.019$) compared to public health facilities. Overall, temporal improvements were recorded in all facilities in three out of the six QSEs (document and record, $p=0.045$; organization and personnel, $p=0.020$; equipment, $p<0.001$) and total laboratory quality score ($p=0.004$).

Anagor, Lukpata, Ikechukwu-Okoroezi & Obiora (2021) conducted a study on the attitude of nursing students towards work in the clinical learning environment. Electronic searches using scholarly databases were employed and only significant articles that met the review objective were utilized. This review revealed that there is a high rate of unauthorized student nurses' absenteeism as majority are absent from clinical work without permission. There is also an appalling display of lateness behavior as students arrive at work after the scheduled time. Interestingly, most students are willing to carry out procedures while some are nonchalant due

to the stressful and anxiety provoking tasks. Student nurses felt that there is an unspoken comparison, discrimination and disrespect displayed by their seniors and medical colleagues towards them. There is overwhelming evidence from literature supporting the negative attitudes of nursing students in the clinical environment.

Mohamed, Marwan and Hutchinson (2021) conducted a study on the existence and accessibility of a procedure through which patients, stakeholders, and employees can communicate feedback or complaints regarding an organization`s services, functions, or operations. We also describe how to respond to a complaint through a systematic approach for immediate recall, investigation, and remedial measures. Such policies enable organizations to benefit from feedback and complaints by ensuring they are recorded, considered, resolved, and monitored. Organizations should ensure that patients, stakeholders, and employees are aware of the content of this policy and relevant procedures and that each person making a complaint receives support that reflects their individual, cultural and linguistic needs to aid them in understanding and participating in the complaint's management process.

Onwuka & Chukwura (2022) conducted a study on Medical laboratory Supply Chain Management is the planning and management of all processes from sourcing through procurement and logistics management of the laboratory commodities and services through commodity security and reduction of laboratory wide cost to ensure client satisfaction. The performance measurement of Medical Laboratory Supply Chain Management revealed low percentage statistics globally especially in Africa and Nigeria in particular which has affected the nation's health system and outcomes.

2.3. Reference mentoring methods and turnaround time of clinical laboratory practices

Udoye (2018) conducted a study on the connection between learning of research methods and conducting research among postgraduate students in the universities of south eastern Nigeria. The purpose was to describe the experiences of postgraduate students with regards to learning and doing research. Two research questions and two null hypotheses guided the study. A mixed-methods employing descriptive-survey and grounded theory designs were adopted. 102 postgraduate students from four universities were sampled through a snowball convenience technique. The study used 20-item structured and unstructured surveys to collect data over a period of twenty six months. Major findings of the research revealed that there was disconnect between what postgraduate students learned in research methods classes and what they experienced during the conducting of research. Studied postgraduate students fell into LEDOR quadrants, and their percentile ranking reported high-high LEDOR = 42%, low-high LEDOR = 3%, low-low LEDOR = 39%, high-low LEDOR =16%. Based on the findings, it is recommended that teacher-researchers provide commensurate hands-on during research classes, and supervisors provide differentiated mentoring.

Mebrat, Abay, Tegen, Abushet & Mistire (2020) conducted a study on the laboratory performance and associated factors towards achieving TAT in clinical chemistry and hematology tests at Armed Force Comprehensive Specialized Hospital, Addis Ababa, Ethiopia. Hospital-based cross-sectional study was conducted from April 2019 to June 2019. Standardized questionnaire was designed to collected data on awareness of laboratory staffs about TAT. The data was entered, cleaned and analyzed using SPSS version 24.0 Software. Logistic regression analysis was done to find out statistically significant association and strength of association between dependent and independent variables at p- value <0.05. A total of 422 test results were systematically selected with 100% response rates. Of these, 253(59.9%) were chemistry tests. From the

expected < 90min TAT clinical chemistry tests, only 41(16.2%) and from < 60min TAT time for hematology tests, 37(21.9%) met the target. The laboratory TAT was affected by factors including high work load, laboratory information system problem, power interruption and sample collection time. Moreover, the level of knowledge, attitude and practices of laboratory staffs towards laboratory TAT were 60%, 85.7% and 62.9% respectively. Overall achievement of clinical Chemistry and hematology tests TAT was poor. The finding might reflect other public hospital situation in Addis Ababa.

Ukaigwe, Nnabuenyi, Nwafor and Louis-Egbuchiem (2020) conducted a study on Clinical learning and skills development is the core of nursing education and practice necessary for nurses to function competently. Limited competencies and lack of readiness for workforce pose concerns to graduating nursing students, faculty and hospital administrators and result in poor patient outcomes. This paper described the strategic priorities and collaborative engagement of the school of nursing instructors and hospital bedside nurses to improve student learning in the clinical area. Components of the project include aligning the course objectives with individual student learning outcomes, developing workshop modules in addition to training and mentoring the staff. Collaborative efforts increased student learning and patient outcomes. Challenges include increased workload, and frequent night shifts, which affected the ability of the preceptors to guide students' learning. Nurses in the Diaspora can influence nursing education and practice through collaboration using the Training of Trainers (ToT) Model.

Alain, Rostin, Joël, Hypolite, Donatien, Koffi, Jérémie and Hippolyte (2021) conducted a study on how to develop practical management strategies to shorten clinical laboratory tests' TAT. This was a qualitative study conducted in Kinshasa. Based on the identified root causes of delay, focus groups participants reported that there is a lot of scope for the improvement of TAT in DRC. Consistent attendance and punctuality are essential. The hospital management should implement the Laboratory Information Systems (LIS) and install Middleware. Total laboratory automation, inventory system for all reagents and supplies used in the laboratory, expansion of the sampling area, sufficient number of high-power machine and a clear job description are indispensable. LIS, 3.5 mL BD vacutainer Barricor^{TM} tube and point-of-care testing (POCT) are necessary for workflow improvement. Applying the suggested key strategies, and particularly the new workflow process, is a basis for improving the laboratory tests' TAT. The algorithm presented can be easily implemented in other laboratories that face this type of problem.

Adegbe (2021) conducted a study on the associations between socio-demographic, obstetric, and health service factors and the place of delivery used by pregnant women in predominantly urban, cosmopolitan Lagos, Nigeria. Because both service delivery and demand factor categories contribute to utilization, the focusing on the barriers theoretical model—with the constructs of availability, accessibility, affordability, and acceptability of health care provision as contributors to utilization—was used along with the health belief model. For this cross-sectional study, secondary data from the 2018 Nigeria Demographic Health Survey were analyzed using logistic regression. The results showed that there are two important predictors for a pregnant woman to have an institutional delivery. First is having four or more ANC visits, OR = 9.2 [95% CI: 3.7, 22], and second is where ANC was obtained with OR = 6.4 [95% CI: 2.3, 18] if it was at a public health center, OR =11.7 [95% CI: 4.1, 33] if it was at a private facility, and OR = 15.3 [95% CI: 1.6, 146] if ANC was at any other place.

Louis-Egbuchie, Ilo, Uchenwoke, Ehiemere, Ede, Ezenduka & Nwafor (2022) conducted a study on the hindrances to "Effective Mentoring in the Nursing Profession as Perceived by Nurses in Tertiary Hospitals in Enugu State, southeast Nigeria" in Nigeria. Most experienced proficient nurses (83.1%) indicated that the mentees lacked commitment to the mentor's relationship, while the majority of the protégés (85.4%) indicated the mentor's poor interpersonal relationship and poor communication skills as hindrances. Most of these beginner nurses (77.1%) also indicated that the mentors showed a disrespectful attitude toward them.

Organizational factors were also rated highly in the form of the absence of formal mentoring in health institutions (89.0%).

2.5 Gap in Knowledge

The study on quality assurance programme and performance of clinical laboratory practice reviewed literatures which were of great importance to the study. From these literatures, the researcher was able to establish the gaps in literature. These gap showed that objectives, methodology and analytical of the reviewed studies differs with that of the present study.

3.0 Methodology

The area of the study was Enugu state, Nigeria. The study was conducted among 150 health facilities' laboratories in Enugu metropolis. Randomly selected sample of secondary health facilities' laboratories who had been providing medical tests services to clients for a minimum of two years and above, were included in the study The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. A total population of 150 staff was selected from the study organisations. The whole population was used to due small number. One hundred and twenty six(126) staff returned the questionnaire and accurately filled. That gave 84 percent response rate. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.81 which was also good. Data was presented and analyzed by mean score (3.0 and above agreed while below 3.0 disagreed) and standard deviation using Sprint Likert Scale. The hypotheses were analyzed using Z – test statistic tool.

4.0 Data presentation and Analyses

4.1 Data Presentation

4.1.1 The relationship between standard operating procedures and customers feedback of clinical laboratory practice in Enugu State

Table 4.1.1: Responses on the relationship between standard operating procedures and customers feedback of clinical laboratory practice in Enugu State

		5 SA	4 A	3 N	2 DA	1 SD	∑FX	- X	SD	Decision
1	The increase in safety help avoid errors and on boarding of new staff members.	175 35 27.8	36 9 7.1	156 52 41.3	46 23 18.3	7 7 5.6	420 126 100%	3.33	1.220	Agree
2	Achieving consistency help reduce accidents and smooth knowledge transfer.	280 56 44.4	36 9 7.1	93 31 24.6	20 20 15.9	10 10 7.9	439 126 100%	3.48	1.388	Agree
3	Improving quality assurance enhances continuity within the research.	245 49 38.9	36 9 7.1	126 42 33.3	26 13 10.3	13 13 10.3	446 126 100%	3.53	1.366	Agree
4	Saving time and money brings or attracts more customers.	265 53 42.1	96 24 19.0	75 25 19.8	36 18 14.3	6 6 4.8	478 126 100%	3.79	1.261	Agree
5	The avoiding of knowledge loss ensures data integrity and accuracy.	330 66 52.4	104 26 20.6	42 14 11.1	22 11 8.7	9 9 7.1	507 126 100%	4.02	1.280	Agree
	Total Grand mean and standard deviation							**3.486**	**1.5304**	

Source: Field Survey, 2024

Table 4.1.1., 44 respondents out of 126 representing 34.9 percent agreed that The increase in safety help avoid errors and on boarding of new staff members with mean score 3.33 and standard deviation of 1.220. Achieving consistency help reduce accidents and smooth knowledge transfer 65 respondents representing 51.5 percent agreed with mean score of 3.48 and standard deviation of 1.388. Improving quality assurance enhances continuity within the research 58 respondents representing 46.0 percent agreed with mean score of 3.53 and standard deviation of 1.366. Saving time and money brings or attracts more customers 77 respondents representing 61.1 percent agreed with mean score of 3.79 and 1.261. The avoiding of knowledge loss ensures data integrity and accuracy 88 respondents representing 73.0 percent agreed with a mean score of 4.04 and standard deviation 1.280.

4.1.2 The effect of technology enablement on the reduction of costs or SME in Enugu state

Table 4.1.1.1: Responses on the effect of gain commitment on the improved employee productivity of food and beverage manufacturing firm in Enugu state

		5 SA	**4 A**	**3 N**	**2 DA**	**1 SD**	**∑FX**	**- X**	**SD**	**Decision**
1	Mentoring encourages personal development and helps complete work on time.	260 52 41.3	140 35 27.8	30 10 7.9	26 18 14.3	11 11 8.7	467 126 100%	3.70	1.348	Agree
2	There is achieving and identifying of career goals which helps customers to conceive their products or service more quickly.	260 52 41.3	160 40 31.7	33 11 8.7	24 12 9.5	11 11 8.7	488 126 100%	3.87	1.290	Agree
3	Correcting of gaps in generic skills and knowledge helps to process orders in a shorter period.	355 71 56.3	124 31 24.6	30 10 7.9	28 14 11.1	40 40 17.1	577 126 100%	4.57	1.278	Agree
4	Mentoring help and guide people into research process and execute processes quickly.	310 62 49.2	144 36 28.2	27 9 7.1	82 42 9.5	31 31 5.6	594 126 100%	4.71	1.205	Agree
5	Effective feedback on the progress helps to foster on the fulfillment of customers' needs.	165 33 26.2	204 51 40.5	27 9 7.1	46 23 18.3	10 10 7.9	452 126 100%	3.59	1.273	Agree
	Total Grand mean and standard deviation							**3.486**	**1.5304**	

Source: Field Survey, 2024

Table 4.1.2., 87 respondents out of 126 representing 69.1 percent agreed that Mentoring encourages personal development and helps complete work on time with mean score 3.70 and standard deviation of 1.348. There is achieving and identifying of career goals which helps customers to conceive their products or service more quickly 92 respondents representing 73.0 percent agreed with mean score of 3.87 and standard deviation of 1.290. Correcting of gaps in generic skills and knowledge helps to process orders in a shorter period 102

respondents representing 80.9 percent agreed with mean score of 4.57 and standard deviation of 1.278. Mentoring help and guide people into research process and execute processes quickly 98 respondents representing 77.4 percent agreed with mean score of 4.71 and 1.205. Effective feedback on the progress helps to foster on the fulfillment of customers' needs 84 respondents representing 66.7 percent agreed with a mean score of 3.59 and standard deviation 1.273.

4.2 Test of hypotheses

4.2.1 Hypothesis One: Statement operating procedures has relationship with customers feedback of clinical laboratory practice

Table 4.2.1 shows the One-Sample Kolmogorov-Smirnov test on operating procedures has relationship with customers feedback of clinical laboratory practice

One-Sample Kolmogorov-Smirnov Test

		The increase in safety help avoid errors and on boarding of new staff members.	Achieving consistency help reduce accidents and smooth knowledge transfer.	Improving quality assurance enhances continuity within the research.	Saving time and money brings or attracts more customers.	The avoiding of knowledge loss ensures data integrity and accuracy.
N		126	126	126	126	126
Uniform Parameters[a, b]	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.278	.444	.389	.421	.524
	Positive	.151	.079	.103	.048	.071
	Negative	-.278	-.444	-.389	-.421	-.524
Kolmogorov-Smirnov Z		3.118	4.989	4.365	4.722	5.880
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from 3.118 < 5.880 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that operating procedures had significant positive relationship with customers' feedback of clinical laboratory practice

Decision

Furthermore, comparing the calculated Z- value ranges from 3.118 < 5.880 against the critical Z- value of 0.000 (2-tailed test at 95percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that operating procedures had significant positive relationship with customers' feedback of clinical laboratory practice

4.2.2 Hypothesis two: Reference mentoring methods has relationship with turnaround time of clinical laboratory practices

Table 4.2.2 shows the One-Sample Kolmogorov-Smirnov test on reference mentoring methods has relationship with turnaround time of clinical laboratory practices

One-Sample Kolmogorov-Smirnov Test

		Mentoring encourages personal development and helps complete work on time.	There is achieving and identifying of career goals which helps customers to conceive their products or service more quickly.	Correcting of gaps in generic skills and knowledge helps to process orders in a shorter period.	Mentoring help and guide people into research process and execute processes quickly.	Effective feedback on the progress helps to foster on the fulfillment of customers' needs.
N		126	126	126	126	126
Uniform Parameters[a,b]	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.440	.480	.563	.528	.417
	Positive	.087	.087	.111	.056	.079
	Negative	-.440	-.480	-.563	-.528	-.417
Kolmogorov-Smirnov Z		4.944	5.390	6.325	5.924	4.677
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from 4.677 < 6.325 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that reference mentoring methods had significant positive relationship with turnaround time of clinical laboratory practices

Decision

Furthermore, comparing the calculated Z- value ranges from 4.677 < 6.325 against the critical Z- value of 0.000 (2-tailed test at 95percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis

was accepted which states that reference mentoring methods had significant positive relationship with turnaround time of clinical laboratory practices

4.3 Discussion of findings

4.3.1 Operating procedures had significant positive relationship with customers' feedback of clinical laboratory practice

The result of hypotheses one shows that comparing the calculated Z- value ranges from 3.118 < 5.880 against the critical Z- value of 0.000, which implies that operating procedures had significant positive relationship with customers' feedback of clinical laboratory practice. In support of these hypotheses, Mbah, Ekechukwu & Ugochukwu (2018) conducted a study on the relationship between customer satisfaction and customer retention. It was found there is positive relationship between service quality and customer trust F (n = 208) = 32746.632, P<0.05.; there is positive relationship between customer's involvement and customer loyalty F (n = 208) = 31298.328, P<0.05. Also, the study of Akpan, Abdulrahman & Pepple (2020) on comparing service quality by assessing the level of adherence to quality system essentials (QSEs) in laboratory services delivered by public and private health institutions in Southern Nigeria. The result of the study showed that the private health facilities laboratory achieved a significantly higher improvement in Facility and Safety score over time (p=0.019) compared to public health facilities. Overall, temporal improvements were recorded in all facilities in three out of the six QSEs (document and record, p=0.045; organization and personnel, p=0.020; equipment, p<0.001) and total laboratory quality score (p=0.004).

4.3.2 Reference mentoring methods had significant positive relationship with turnaround time of clinical laboratory practices

Hypotheses two revealed that the calculated Z- value ranges from 4.677 < 6.325 against the critical Z- value of 0.000, which implies that reference mentoring methods, had significant positive relationship with turnaround time of clinical laboratory practices. In line with these study Mebrat, Abay, Tegen, Abushet & Mistire (2020) conducted a study on the laboratory performance and associated factors towards achieving TAT in clinical chemistry and hematology tests at Armed Force Comprehensive Specialized Hospital, Addis Ababa, Ethiopia A total of 422 test results were systematically selected with 100% response rates. Of these, 253(59.9%) were chemistry tests. From the expected < 90min TAT clinical chemistry tests, only 41(16.2%) and from < 60min TAT time for hematology tests, 37(21.9%) met the target. The laboratory TAT was affected by factors including high work load, laboratory information system problem, power interruption and sample collection time. Moreover, the level of knowledge, attitude and practices of laboratory staffs towards laboratory TAT were 60%, 85.7% and 62.9% respectively. Overall achievement of clinical Chemistry and hematology tests TAT was poor. The finding might reflect other public hospital situation in Addis Ababa.

5.0 Summary of findings, Conclusion and Recommendation

5.1 Summary of findings

i. Operating procedures had significant positive relationship with customers' feedback of clinical laboratory practice, Z(95, n = 126), 3.118 < 5.880, P. < .05

ii. Reference mentoring methods, had significant positive relationship with turnaround time of clinical laboratory practices, Z(95, n = 126), 4.677 < 6.325, P. < .05

5.2 Conclusion

The study concluded that operating procedures and reference mentoring methods had significant positive relationship with customers' feedback and turnaround time of clinical laboratory practices. Quality assurance programmes increase the distribution of organizational performance substantially. The reliability of laboratory

tests, depends on the quality assurance system existing in the working place, which comprises not only the analytical activities but includes all preventive measures and their regular control in connection with the pre-analytical phase, as well as the plausibility control and interpretation of results.

5.3 Recommendations

The following recommendations were made by the study

i. Before the assurance of quality in/by an organization, standard operating procedures should be prioritized in the organization. Employees should be trained on the procedures required for carrying out a particular function. Hence, employee training should be carried out adequately.

ii. Managers of organization should desists from acts that leads brain drain and turnover in the organization as these can foster the loss of individuals who are the brain behind achieve quality standard in the organization thereby hindering mentoring and coaching of inexperienced individuals.

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