ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF MEDICAL LABORATORY SCIENCES

Evaluation of Retention Mechanism of Medical Laboratory Professionals and Associated Factors in Selected Public Health Facilities of Addis Ababa, Ethiopia

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This is to certify that the thesis prepared by **Andnet Garedew,** entitled*:* ***Evaluation of Retention Mechanism of Medical Laboratory Professionals and Associated Factors in Selected Public Health Facilities of Addis Ababa, Ethiopia*** and submitted in partial fulfillment of the requirements for Master of Science degree in Clinical Laboratory Sciences (Clinical Laboratory Management and Quality Assurance) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ACRONYMS

AAHB	Addis Ababa Health Bureau
CEO	Chief of Executive Officer
DRERC	Departmental Research and Ethics Review Committee
HRM	Human Resource Managers
PI	Principal Investigator
SS	Sample Size
SLMTA	Strengthen Laboratory Management towards Accreditation
MD	Medical Director
HR	Human Resource Director
CEO	Chief Executive Officer
COR	Crude Odds Ratio
AOR	Adjusted Odds Ratio

ABSTRACT

Background: Retention of clinical laboratory professionals is the action of public health system to encourage employees to stay and maximize their period of employment in the health facilities. This can be done via different policies and practices which let the employees stay for a longer period in an organization. Evaluating retention strategies in the public health facilities and studying the corresponding determinants steps forward to retain these professionals in their current position.

Objective: To assess the retention mechanisms of clinical laboratory professionals and associated factors in selected public health facilities of Addis Ababa, Ethiopia in 2022

Methods: Cross-sectional study design was employed among 36 selected health facilities 282 medical laboratory professionals using quantitative data collection and additional 36 one of the three staff (medical directors, CEOs, and human resource managers) for qualitative approaches from January 01-March 31, 2022.Data were collected using a structured questionnaire and in-depth interviews. The quantitative data was coded, entered, and cleaned; using SPSS version 20 statistical packages such as frequencies, percentages, mean, and standard deviation were used. The qualitative data from the in-depth interview was categorized and discussed thematically. Binary logistic regression was also employed to identify significant factors which affect the retention of medical laboratory professionals in public health facilities of Addis Ababa

Results: The finding of the study revealed that only 30.5% of the respondents were willing to stay in their current position in the public health facilities of Addis Ababa. About 196 (69.5%) of the respondents were seemed to leave their job if they get some more benefits from other companies. Positive and significant Pearson correlation coefficients between the medical laboratory professionals' retention and the independent variables were founded. The findings from the binary logistic model also revealed that salary and benefits, job satisfaction, professional development, training and working environment have significant effect on the retention of medical laboratory professionals.

Conclusion: The results obtained from the quantitative analysis revealed that there is a low rate of retention of the medical laboratory professionals in public health facilities of Addis Ababa. It can also be concluded that working on salaries and benefits, employees job satisfaction, professional development and, training and working environment can retain the clinical laboratory professionals in their current position in the public health facilities.

Keywords: *Retention, Turnover, Job satisfaction, clinical laboratory professionals, public health facilities, Addis Ababa*

1. I NTRODUCTION

1.1. Background

Human resources are one of the most important assets of healthcare providing organizations that enable them to achieve the desired objectives (1). Medical laboratory professionals are among the most important building blocks of healthcare organizations. Therefore, organizations should fulfill all units of the health system by hiring appropriate professionals and retaining experienced and skillful professionals. Organizations invest a lot in their employees for familiarizing with the service, improving their knowledge and skills especially on newly recruited and hired employees. Turnover of health professionals not only affects the proper functioning of the health system but also reduces the health service outputs and creates a shortage of professionals in the system (2).

The turnover and shortage of qualified medical laboratory professionals is becoming a common challenge of health systems particularly in developing counties (3). A case study in East Africa revealed that the high turnover of laboratory personnel is one of the major challenges that affected the provision of good laboratory services in low-resource settings (4). This shows that there is a poor retention strategy for laboratory professionals the healthcare organizations. Also, the contribution of the clinical laboratory in overall health services is not well considered (5). Laboratory professionals play a vital role in patient care, providing health care practitioners with the results of laboratory analyses that are used to help diagnose and treat patients effectively. The study further explained that effects of the shortage of workers in the clinical laboratory department not only affect those working within these departments but also affect those working in other departments within health care. The clinical laboratory provides approximately 80% of the information that health care practitioners use to make decisions regarding patient care and treatment (6). Also, most developing countries are not aware of the shortage of laboratory professionals affecting the clinical laboratory and the reasons behind this shortage (7).

Shortage of labor affects a laboratory's ability to meet physician demands for accurate test results, which can affect patient safety and in turn, result in an increased patient length of stay (8). The issue of shortages in laboratory professionals is negatively affecting the delivery of quality health services. Therefore, improving the retention of laboratory workers contributes to the provision of quality health services since it builds up competencies, optimizes team relations, and strengthens the

relationship of health workers with local communities. Several factors are influencing the decision of health workers to stay in or leave their posts. Among these are low pay, uncomfortable working environment, poor career structure, lack of opportunities for graduate training, poor living condition, and lack of positions in leaderships of the facility for deciding on laboratory-related issues purchase of consumables and equipment (9).

One strategy to address the shortage of medical laboratory professionals is to encourage retention staff in the workplace. This approach not only increases the number of staff but capitalizes on the retention of the knowledge and expertise of experienced senior professionals. Furthermore, retention of current staff reduces the costs associated with hiring and training new employees. The need to retain in the workforce is not unique to the clinical laboratory profession but is important to many organizations in which hiring newly graduated professionals. Retention of existing employees is as important as the recruitment of new ones. Attracting a committed employee is only part of the equation and retaining them is the other part. As mentioned above, the shortage of medical professionals in public health facilities is a need to study the retention practices of medical laboratories (10). A cross-sectional study which was conducted in 2021 in Yeka sub-city of Addis Ababa revealed that 61% of the health professionals have the intension to leave their jobs. The most revealing associated factors are dissatisfaction with payment, and rewards, unhappy with working environment, lack of participation in decision making regarding their own profession (11).

1.2. Statement of the Problem

There are many studies and literatures on the retention of health workers in public health facilities of Ethiopia including in Addis Ababa (12). During the conduction of this study, though several studies, literatures, and journal articles on health workforce retention strategies in public health facilities have been reviewed, only a few are found on the retention of medical laboratory professionals in public health facilities of Addis Ababa (13).

The findings of these studies showed that most laboratories of public health facilities in Addis Ababa are challenged not only by the high turnover of trained and skilled laboratory professionals but also by the demotivated staff. High turnover of laboratory professionals' results in a shortage of laboratory staff which in-turn compromises the quality of services due to increased workload. These studies indicated that the associated factors of turnover are dissatisfaction with payments, rewards, workload, and unhappy with the work environments. The evaluation report of Strengthen Laboratory Management towards Accreditation (SLMTA) revealed that most laboratories of public health facilities of Addis Ababa are unable to meet the criteria of accreditation. One of the factors that mainly affected the success of the program is the turnover of trained professionals and poorly motivated staff (14).

A similar study conducted in seven countries of Sub-Saharan African by the University of Maryland has found that "Effective implementation and sustainability of quality laboratory programs rely on the development of appropriate staff retention strategies. Assessing the factors responsible for job satisfaction and retention is crucial for focusing on specific interventions aiming at improving the overall impact of health programs (15).

Staff retention strategies are needed to sustain quality laboratory program. Poor retention of laboratory professionals leads to a high turnover of experienced staff and results in a shortage of workforce in health care. It also affects the view of newly employed staff for the profession and leads to tasks shifting to other streams. Therefore, the objective of this study is to assess the retention of laboratory professionals and associated factors in public health facilities of Addis Ababa. The study explored associated factors that affecting the retention practices of medical laboratory professionals by the health facilities and synthesized recommendations to be implemented by the health system of Addis Ababa.

Many studies have identified different factors that influence the decision of health workers to leave their current health facilities (16). Other researchers have also identified the magnitude of turnover of laboratory professionals and associated factors in public health facilities. They have indicated the shortage of laboratory professionals in health facilities and its consequence on the health services. But the concern this study was to evaluate the retention mechanisms of public health facilities to retain laboratory professionals on their jobs and those factors influencing the retention activities. As mentioned above the retention mechanisms for laboratory professionals working in public health facilities of Addis Ababa was not indicated on the reviewed studies. Therefore, the intention of this study is to fill this gap in the study area by conducting assessment of the current retention mechanisms for medical laboratory professionals in public health facilities of Addis Ababa, Ethiopia.

1.3. Significance of the Study

The clinical laboratory professionals play a crucial role in overall health service delivery systems. Beyond assisting physicians in the detection, diagnosis, and treatment of diseases, they have a great impact on the quality of the overall services healthcare. Therefore, to provide quality health services, the laboratories should be manned by qualified, motivated, committed, and stable laboratory professionals. However, the review of literatures and many studies show that the turnover of laboratory professionals in public health facilities of Addis Ababa is high. Therefore, the underline factors behind the turnover of employees should be assessed and documented for developing intervention strategies. This study aims to provide important information on factors influencing the retention of medical laboratory professionals in the study area. It showed that factors associated with the turnover that help to indicate the way forward for addressing the problems.

In addition, the finding of the study will create opportunities for further study by other researchers in the future.

2. LITERATURE REVIEW

2.1. Retention of Medical Laboratory Professionals in Public Health Facilities

The shortage of clinical laboratory and retention problems has been the major challenge in the health sector. Globally, the shortage of health workers was estimated at about 7.2 million which could increase twofold in the next few decades. The shortage of health professionals has many negative implications on the quality and sustainability of healthcare services (17). Retention of medical laboratory professionals remains a common challenge of public health facilities, especially in developing countries. This deficit is aggravated by increased disease burden and becoming higher in Africa, particularly sub-Saharan countries.

The finding of a study conducted in North Carolina indicated that the number of laboratory employees leaving the profession exceed the number of new graduates entering to study the profession making the retention of employees essential. Low salary payment is the most important factor for poor retention of medical laboratory professionals (18). Similarly, a study conducted in Ghana revealed that a turnover intention of clinical laboratory professionals is significantly influenced by their overall level of commitment to their organizations. It was also revealed that continuance commitment, as well as normative commitment, contributed significantly to the prediction of medical laboratory professionals' turnover intentions (19).

Assessment report on human resources of health care in Northern Kenya revealed that medical laboratory professionals are among poorly retained health professionals of Kenya (20). The problem of poor retention is prominently observed in developing countries like Africa. For example, a study conducted in Sub-Sahara Africa indicated that the sustainability of laboratory systems in Africa is also threatened by an acute shortage of medical laboratory professionals who have left the continent for a variety of reasons (21).

Health facility managers often experience loss of highly skilled, competent, and experienced employees as these workers search for better benefits and attractive work environments (22). Another study indicated that 65.5% of laboratory professionals working in public hospitals of Amhara regional state had an intention to leave their current jobs. Dissatisfaction with the provision of educational opportunities, low payments and benefits, lack of recognition and poor working

environments, high workloads and low affective commitments were factors significantly associated with the intension to leave jobs (23).

2.2. Factors that Influence the Retention of Medical Laboratory Professionals

Employees are the most valuable assets of organizations. In most cases, organizations are not concerned for the employee. One thing that, organizations should do regarding their employees is to know the turnover intention of employees and the factors leading to it. A study conducted in Mara Technology University revealed organizational commitment, job characteristics, promotion opportunities, pay level and rewards, and job satisfaction factors are directly related to turnover intentions (24). All these factors indicate that organizations should think about developing a staff retention strategy. Job satisfaction and professional development are important factors for staff retention.

Poor retention of employees affects the continuity of healthcare and raises the potential for turnover of remaining employees who suffer stress and burnout from taking on the additional burden of workloads. A study conducted in India revealed that the working environment, supervisor support, training, and professional development are important factors that influence an employee's organizational commitment. The study further indicated that organization provisions for training facilities to improve employee's skills which are linked with promotion and financial benefits contribute to retention of staff (25).

The findings of a study conducted in hospitals of Kenya revealed that leadership style, remuneration, training promotion influenced health workers' retention in public health facilities. The study further identified that the non-monetary factors like lack of recognitions affect the retention of employees (26). A survey conducted in Nigeria revealed that a lack of professional development is a major factor in leaving their previous jobs. The study found that a professional development opportunity is the most important factor for current job satisfaction and retention staff (27).

In Ethiopia the magnitude of turnover of the medical laboratory is high. A study conducted in Bahidar revealed that the prevalence of laboratory professionals' attrition from public health facilities is 32.3%. Low salary payments and dissatisfaction with working environments are the associated factors for attrition of the laboratory professionals (28). Similarly, a study conducted in a referral hospital of Gonder indicated that the intension of the turnover of laboratory professionals is

9.2% (29). A study conducted at Jimma University on retention factors of primary health care providers revealed that Job satisfaction and professional advancements are factors positively affecting the retention of an employee. Employees who attained their professional advancements are 3.5 times more likely retained than those not advanced. Similarly, the retention level for those professionals who satisfied at their job is 5 times higher than those unsatisfied at their jobs (30).

Implementation of effective and sustainable laboratory program requires qualified and committed staff and the development of appropriate staff retention strategies. Understanding and identifying the factors responsible for employee job satisfaction and retention is curtailing for interventions aim to improve the laboratory services in the health care facilities.

One of the major challenges facing organizations is retaining existing employees. Retaining employees will help in the long-term growth of an organization and will also add to their goodwill. However, the most difficult task faced by an organization today is retaining as well as satisfying employees. Even though many researchers have identified the different factors around employee retention and job satisfaction, but still, much scope remains for more exploration in the field of employee retention and influencing factors like compensation practices, leadership, and supervision, career planning and development, alternative work schedule, working conditions, flexible working hours (31).

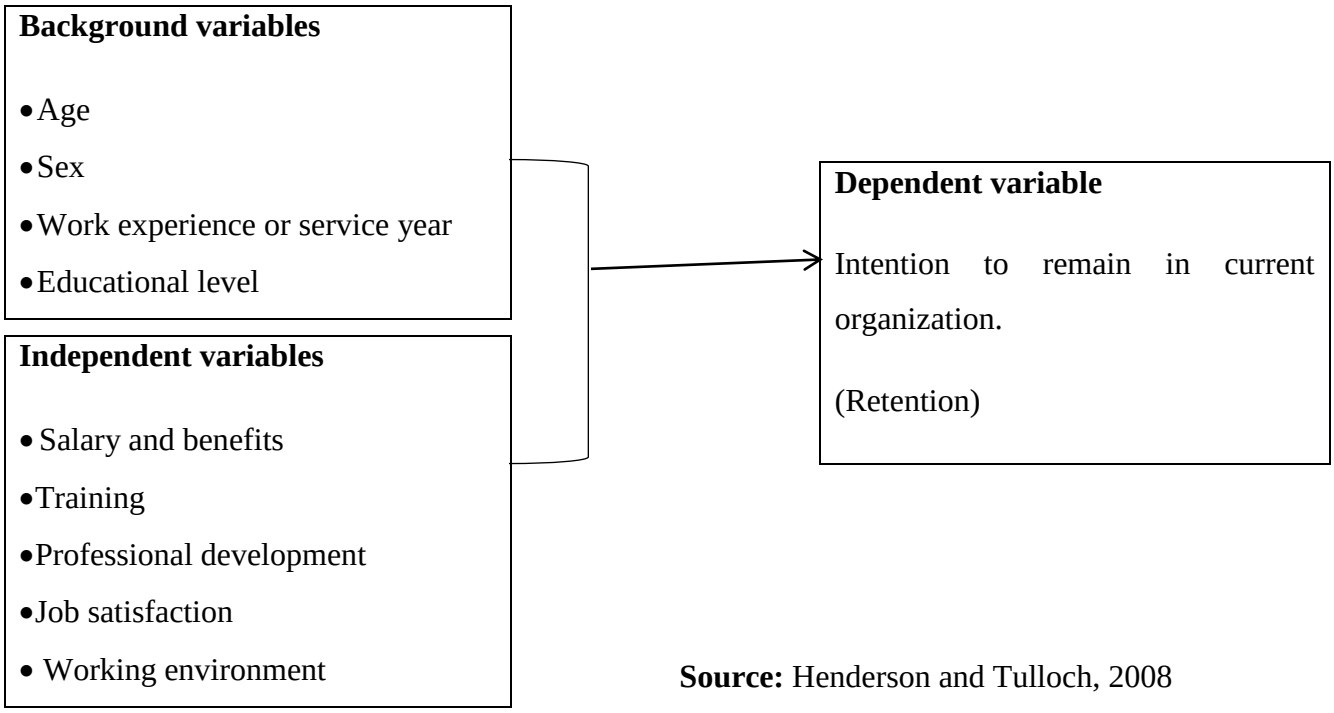
2.3. Research Questions

1. What retention strategies for medical laboratory professionals are being used in public health facilities of Addis Ababa?
2. Is the influence of poor retention of laboratory professionals on the overall healthcare recognized by public health facility managers?

2.4. Conceptual Framework of the Study

The conceptual framework which is used for this study was originally developed by Henderson and Tulloch in 2008, for explore motivation and retention factors for health workers in Pacific countries. This framework was further adopted by the World Health Organization (WHO) in 2010. The framework consists of three major factors: personal reasons, policy reasons, and organization or work reasons. These three major factors further divided into six sub-components. The framework helps to explore the financial and nonfinancial factors influencing the decision of the employee to stay or leave the current organization. Of the six sub-components, three of them were adapted to this study. These are:

1. **Financial related aspects include:**
    - Salary, benefits, and risk allowances consist of responsibility, extra duty, and on-call allowances.
    - Other benefits such as a pension, free medical services, and burial expenses
2. **Career and development related factors that include:**
    - Access to continuing education opportunities.
    - Monitoring and supervision include support from senior health workers and management.
    - Training and professional development
    - Promotion for senior positions
3. **Working and living condition includes:**
    - Working environment such as the condition of health facility building, water, and sanitation
    - Availability of technologies such as equipment, medicine, and supplies
    - Housing condition includes connection to water, sanitation, electricity/solar power, internet services for professional networking.
    - Countries facing a shortage of health workers use this framework to identify the underlying reasons for the shortages, determine what motivates health workers to remain in the health sector, and evaluate the incentives required for maintaining a competent and motivated health workforce (32).
    - To this end, the framework is adopted for this study since it helps to identify factors influencing the retention of employees. It also helps to organize the ideas and the analysis of factors influencing health workers' decision to leave or stay in the current health facility (33).



Source: Henderson and Tulloch, 2008

Figure 1. A conceptual framework for analyzing the factors related to the retention of laboratory professionals in public health facilities of Addis Ababa, 2022.

3. Objectives

3.1 General Objective

The overall objective of the study is to assess the retention mechanism of medical laboratory professionals and associated factors in selected public health facilities of Addis Ababa, 2022.

3.2 Specific Objectives

1. To assess medical laboratory professionals' retention level in selected health facilities of Addis Ababa, Ethiopia
2. To assess the medical laboratory professionals' retention mechanisms in their duty working in health facilities of Addis Ababa, Ethiopia.
3. To identify factors that influence the retention of medical laboratory professionals who are working in public health facilities of Addis Ababa.

4. MATERIALS AND METHODS

4.1. Study Area

This study was conducted in the 36 public health facilities of Addis Ababa, Ethiopia. Addis Ababa is the capital city of Ethiopia. According to the 2022 Ethiopia metro area population estimation, the total population of Addis Ababa is more than 5.2 million (34). Administratively, the city is divided into 10 (ten) sub-cities and 116 Woredas. In the city, there are more than 98 public health centers and 6 public hospitals that provide healthcare services for the community at large. According to 2018, Addis Ababa Health Bureau (AAHB) reports more than 800 medical laboratory professionals are working in these public health facilities (35).

4.2. Study Design and Period

A facility-based cross-sectional study was used to assess the retention mechanism of medical laboratory professionals working in public health facilities of Addis Ababa using both quantitative and qualitative data collection methods that were used in selected health facilities during January 01-March 31, 2022.

4.3. Population

4.3.1. Source Population

The source population (N) for the quantitative study was all public health facilities laboratory professionals which are found in Addis Ababa city and the source population for the qualitative research was all medical directors, CEO, and human resource who have been working at the public health facilities.

4.3.2. Study Population

The study populations were medical laboratory professionals, and facility management personnel (one of the three personnel facility medical directors, CEO and human resource managers) who are currently working in the public health centers and hospitals of Addis Ababa.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

- Laboratory professionals with one and above service years and who are working in public health facilities.
- Permanently hired laboratory professionals who are working in the health centers and hospital for one year and above.
- For management personnel, one of the three staff (medical director, CEO and human resource managers) who has basic information about the health facility.

4.4.2. Exclusion Criteria

- Contract hire
- Free service staff

4.5. Study Variables

4.5.1. Dependent Variable

Level of retention of the medical laboratory professionals

4.5.2. Independent Variables

Age, sex, educational level, service year of laboratory professionals, job satisfaction, working environment, training, professional development, salary, and benefits.

4.6. Measurements and Data Collection

4.6.1. Sampling Size Determination

The sample size is calculated by using the formula for estimating a population proportion. Due to a lack of similar study in public health facilities of Addis Ababa, in this formula, a 5% marginal error is assumed, confidence interval of 95%, and 50% of proportion as shown below.

$$n_0 = \frac{Z^2 \times p \times (1-p)}{e^2}$$

Where $n_0 = sample\ size$

$Z = 95\%\ confidence\ interval\ which\ is\ expressed\ as\ 1.96$

e= the precision error (0.05)

$p = the\ proportion\ of\ retention\ (0.5)$

Then sample size needed for this study is calculated as:

$$n_0 = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

$$= \frac{0.9604}{0.0025} = 384$$

Since the sample is taken from a small population (N= 764, i.e., < 10, 000) the required minimum sample size is obtained from the above estimate adjusted by using finite population correction.

$$n = \frac{n_0}{1 + \frac{n_0}{N}}$$

$$= \frac{384}{1 + \frac{384}{764}} = 256$$

On the sample size, 10% is added for non-response rate, i.e., 26 so that the required sample size (n) is n=282

The sample size for the qualitative part: one of the three staff (medical director, CEO or human resource managers) of selected health facility was selected purposively and hence 36 representatives were included in the study.

4.6.2. Sampling procedures and sampling techniques

To ensure representation, all public health facilities of Addis Ababa were included in sampling frame. Then by using simple random sampling, 30 public health centers (3 health centers from each sub-city and all (6) public hospitals) totally 36 public health facility were selected for the study. The name of selected hospitals is Zewditu memorial hospital, Minlik hospital, Yekatit 12 hospital, Gandi memorial hospital, Ras- Desta Damtew memorial hospital and Tirunesh Beijing General hospital). Using English alphabet from A-F for hospital and for each health center Arabic number H1- H30 labeled. Therefore, all public health facilities in the ten sub-cities have had an equal chance of probability being selected. Also, list of health care providers working in public health centers and hospitals were collected from Addis Ababa city administration health bureau for proportional allocation of sample sizes for sub cities and hospitals. A stratified sampling technique with proportional allocation was used to allocate the sample size of each sub-city and hospital. First, by taking the sub-city as strata the sample size of each sub-city was allocated proportionally by using proportional sample size allocation formula.

$$n_0 = \frac{n \times n_i}{N}$$

Where:

n_0 = sample size of each sampled health center and hospital

n = total sample size

n_i = number laboratory professional of each sampled health center and hospital

N = total number of laboratory professionals in ten sub − cities of Addis Ababa

Furthermore, the sample size of each selected health center and hospital were allocated proportionally. For the quantitative data collection, the sample size was allocated proportionally based on the number of clinical laboratory professionals working in each selected health center and hospital by using probable population allocation formula. Finally, by using simple probability sampling method, a total of 282 respondents of clinical laboratory professionals were selected from

all selected public health centers and hospitals of Addis Ababa. Also, the respondents of qualitative data from all sampled health centers and hospitals were identified by using purposive sampling method. In this case, the respondents of qualitative data, were medical directors of health centers, chief of executive officers, and human resource managers (one of the three who is working in the facility and know the detailed facts of the facility) included in the study. For the qualitative data collection, a face-t-o face in-depth interview questionnaires was employed.

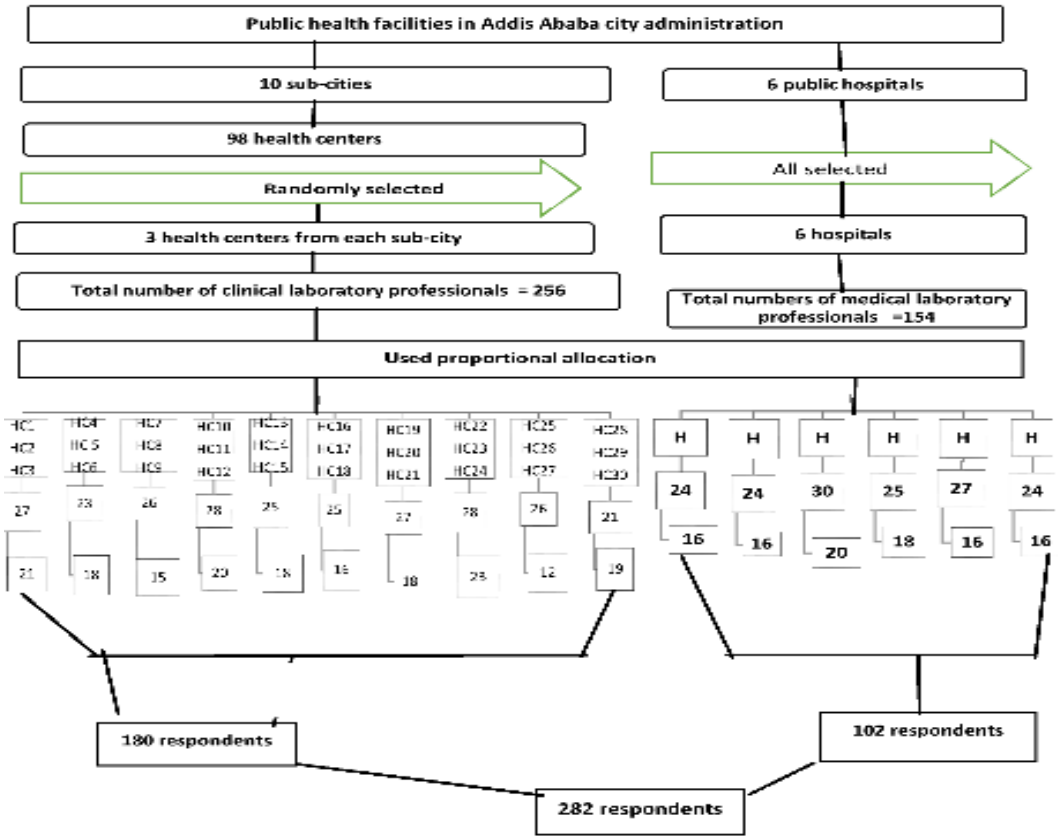


Figure 2: Diagrammatic representation for sampling health facilities and respondents of quantitative data from health centers and hospitals of Addis Ababa, Ethiopia, 2022

4.6.3. Data Collection Procedure

A structured self-administered questionnaires were developed and used for quantitative data collection. The employed version of questionnaires were an English language since all participants were health professionals and able to manage the questionnaire. Therefore, Amharic version was not used for the data collection. Prior to the data collection, the data collectors and supervisors trained on the data collection tools. The data collection tools were pre-tested by laboratory professionals currently working in public health facilities. These health facilities, one hospital, and one health center were selected from Bishoftu town, Oromia region. Bishoftu town is located about 40kms from Addis Ababa. Since Bishoftu town has no major socio-demographic variation with Addis Ababa, it is selected for the pilot study. Laboratory professionals with different qualifications are found in most public health facilities of Bishoftu town. The nature of healthcare, the workload to laboratory staff, and living conditions are nearly like that of Addis Ababa city. Ones the validity of the questionnaires were ensured, it was distributed to sampled laboratory professionals who participated in this study during January 01- March 31, 2022. Also, the qualitative data were obtained by a face-t-o face in-depth interview of medical directors, CEOs, and human resource managers working in all selected public health centers and hospitals of Addis Ababa. For this purpose, a structured in-depth interview questionnaires were used for capturing qualitative data collection.

4.6.4. Data Quality Assurance

To ensure the quality of data, the questionnaires were submitted to the Advisors commenting on the contents and relevance of each item. The questionnaires were pre-tested by laboratory professionals currently working in two public health facilities (one hospital and health center) in Bishoftu town, Oromia region. The data collectors and supervisors were trained on the aim of the study, data collection procedures, confidentiality, and how to ensure the quality of data. During the data collection period, supervisors were undertaking to follow and supervise the data collection procedures in each sample site. To minimize the discrepancy of data, the collected data in each site was reviewed daily. Finally, the collected data was reviewed and checked for its completeness.

4.7. Data Analysis, Measurement, and Interpretation

The quantitative data from the questionnaire was coded, entered, and cleaned, by using SPSS version 20 statistical packages such as frequencies, percentages, mean, and standard deviation were used. To test for the associations of the outcome variables against the independent variables, correlation analysis as well as linear logistic regression were employed accordingly the p-value and odds ratio were computed and interpreted. For the qualitative study, data from in-depth interview questionnaires was categorized accordingly to main thematic areas manually. The findings are presented in narratives in triangulation with the quantitative results. The responses are transcribed for every individual separately. Finally, the findings are categorized and analyzed thematically.

4.8. Operational Definitions

1. **Employee retention:** Employee retention is a process in which the employees are encouraged to remain with the organization for the maximum period. It is a strategy put in place by an organization to retain its employees and reduce turnover (36).
2. **Retention scaling**: A set of new incentives schemes focuses on making encouraging and an individual employee more engaged with his or her jobs to improve employees' retention rates. It is best pricing scheme in terms of worker retention is based on punctual bonuses paid whenever the workers reach predefined objectives (35).
3. **Turnover**: is usually expressed in terms of that an employee leave the current organization and join another organization for various reasons, among which the main reasons as dissatisfaction with the current jobs, low pay, lack of incentives, uncomfortable working environment.
4. **Turnover Intention**: Turnover intention is defined as an employee's plan to leave his or her current institution within a certain period due to various factors like dissatisfaction on salary, carrier development opportunity, work environment condition, work overload and other personal factors.
5. **Job satisfaction**: The state of an employee being satisfied with his/her current job.
6. **Work environment**: characterized by a comfortable working area which include relationships with colleague, supervisor, and other staffs of the facility.

4.9. Ethical Considerations

The research was reviewed and approved by the departmental research and ethics review committee (DRERC) of the medical laboratory sciences, school of allied health sciences, College of Health Sciences, Addis Ababa University. Before starting data collection, ethical and support letter were obtained from Addis Ababa Health Bureau, Public Health Research and Emergency Directorate, permission from selected public health centers and hospital management was obtained to conduct the study. After permission is obtained, laboratory professionals were informed about the aim of the study. They were also asked whether they are voluntarily participating or refuse from participation. The discussion was made to clarify any issues related to the study. The data collectors were well oriented on how to maintain the privacy and confidentiality of study participants. Those who are voluntary were invited to participate in this study.

4.10. Dissemination of Results

The finding of the study was submitted to Addis Ababa University, College of Health Science Department of the medical laboratory after final defense for the partial fulfillment of Masters' Degree in Clinical Laboratory Sciences (with a specialty in Laboratory management and quality assurance). The result of the study is to be disseminated to Public Health Research and Emergency Directorate. In addition, the finding is also to be presented at annual conferences of professional societies. The manuscript will be submitted to peer-reviewed journals for publication.

5. RESULTS

5.1. Descriptive Analysis of Socio-demographic Characteristics

The total number of medical laboratory professionals included in this study was 282. The result given in Table 1 reveals that 162 (57.4%) respondents were male.

Table 1: Summary of Demographic Characteristics and Retention

Variables	Categories	Frequency	Percent
Gender	Male	162	57.4
	Female	120	42.6
Age Group	21 – 25	25	8.9
	26 -30	69	24.5
	31 – 35	90	31.9
	36 – 40	34	12.1
	41 – 45	44	15.6
	> 45	20	7.1
Marital Status	Married	158	56.0
	Single	105	37.2
	Divorced	12	4.3
	Widowed	7	2.5
Education Level	Diploma	75	26.6
	BSc	189	67.0
	MSc	18	6.4
Current Position	Lab head	32	11.3
	Quality officer	23	8.2
	Safety officer	23	8.2
	Lab personnel	186	66.0
	Other	18	6.4

Most of the respondents considered in this study were aged between 31 and 35 years which are 90 in number (31.9 %). The number of the medical laboratory professionals who are married is 158 (56.0%) which is the highest as compared to the number of the respondents with other marital statuses (Table 1). The descriptive analysis results presented in Table 1 show that majority of the respondents, 189 (67.0%) are BSc. degree holders. Only 18 (6.4%) of the respondents were MSc. degree holders while the rest 75 (26.6%) were diploma holders. The medical laboratory professionals included in this study, had been asked about their current position. Most of the respondents (66.0%) responded as they are serving in the lab personnel position.

Data on working experience of the respondents was collected. The minimum work experience of the respondents was 1 year, and the maximum was 29 years. The average work experience was found to be 9.05 years with standard deviation of 4.79 years.

5.2. Retention Rate

The descriptive analysis result presented in Table 2 showed that only 30.5% of the respondents are willing to stay in their current position in the public health facilities of Addis Ababa. About 196 (69.5%) of the respondents are seemed to leave their job if they get some more benefits from other companies.

Table 2: Summary of retention rate

Retention (intention to stay in the current public health facility)	Yes	86	30.5
	No	196	69.5
	Total	282	100.0

5.3 Descriptive Analysis of Independent Variables

5.3.1 Salary and Benefits and Job Satisfaction

The responses of the medical laboratory professionals on the different feature of salary and benefits as summarized in Table 3. The table indicates that the number of medical laboratory professionals who agreed and strongly agreed on 'fair payment and compensation in comparison with the professionals' experience and qualifications' is 21.2%.

Table 3: Summary of Salary and Benefits and Job Satisfaction

Salary and Benefits		Frequency	Percent
I am fairly paid and compensated in comparison with my experience and qualifications	Disagree Strongly and Disagree	208	73.8
	Not Sure	14	5.0
	Agree and Strongly Agree	60	21.2
I am satisfied with the benefits and allowance policies of the health facility	Disagree and Strongly Disagree	214	75.9
	Not Sure	23	8.2
	Agree and strongly agree	45	15.9
I am satisfied with the compensation I get and I think it matches with my responsibility	Disagree and Strongly Disagree	143	50.7
	Not Sure	59	20.9
	Agree and Strongly Agree	80	28.4
Job Satisfaction			
I am happy with my work responsibilities	Disagree and Strongly Disagree	44	15.6
	Not Sure	11	3.9
	Agree and Strongly Agree	227	80.5
I am satisfied with various activities in the laboratory, and I love participating in them	Disagree and Strongly Disagree	65	23.0
	Not Sure	51	18.1
	Agree and Strongly Agree	166	58.9
I am satisfied with the leaders in my workplace as positive role models	Disagree and Strongly Disagree	89	31.6
	Not Sure	45	16.0
	Agree and Strongly Agree	148	52.4
I am happy with the recognition and rewards for my works and contributions	Disagree and Strongly Disagree	172	61.0
	Not Sure	17	6.0
	Agree and Strongly Agree	93	33.0
I am comfortable with the planned competency assessment result executed a yearly basis	Disagree and Strongly Disagree	67	23.8
	Not Sure	34	12.1
	Agree and Strongly Agree	181	64.2
I am satisfied with the given right to put forward my opinions	Disagree and Strongly Disagree	80	28.4
	Not Sure	49	17.4
	Agree and Strongly Agree	153	54.3

These respondents believe that they are fairly paid and compensated in comparison with their experience and qualifications. The number of respondents who disagreed and strongly disagreed on this statement is 208 (73.8%). These respondents believe that they are not fairly paid and compensated in comparison with their experience and qualifications. The rest 17 (6.0%) of the

respondents were not sure about whether they are fairly paid and compensated in comparison with their experience and qualifications or not.

214 (75.9%) of the respondents strongly disagreed and disagreed with the benefits and allowance policies of the public health facilities of Addis Ababa. Only small number of the respondents agree d and strongly agreed with the benefits and allowance policies of the health facilities of Addis Ababa. Among the 282 medical laboratory professionals in public health facilities considered in this study, 143 (50.7%) of the respondents strongly disagreed and disagreed with the compensation they get, and they think that it doesn't match with their responsibility.

Table 3 illustrates summary of the job satisfaction of the respondents. Among the 282 respondents, 227 (80.5%) are happy with their work responsibilities and 44 (15.6%) are not happy with their work responsibilities. The rest 11 (3.9%) of the respondents were not sure with about their happiness in their work responsibilities. 23% of the medical laboratory professionals included in this study are not satisfied with various activities in the laboratory and they don't love participating in them. 166 (58.9%) of the respondents are satisfied with various activities in the laboratory and they love participating in them. The rest 51 (18.1%) are not sure about their satisfaction with the various activities in the laboratory and their love participating in them.

89 (31.6%) of the 282 respondents are not satisfied with the leaders in their workplace as positive role models and 148 (52.5%) are satisfied with the leaders in their workplace as positive role models. The rest 45 (16.0%) are not sure about their satisfaction with the leaders in their workplace as positive role models. 172 (61.0%) of the respondents are not happy with the recognition and rewards for their works and contributions and 17 (6.0%) are not sure about their happiness with the recognition and rewards for their works and contributions. The rest 93 (33.0%) of the respondents are happy with the recognition and rewards for their works and contributions.

Among the 282 respondents, 67 (23.8%) are not comfortable with the planned competency assessment result carried on a yearly basis. 34 (12.1%) of the respondents are not sure about whether they are comfortable with the planned competency assessment result carried on a yearly basis or not. The rest 181 (64.2%) of the respondents are comfortable with the planned competency assessment result carried on a yearly basis. 80 (28.4%) of the 282 medical laboratory professionals in public health facilities of Addis Ababa are not satisfied with the given right to put forward their opinions.

49 (17.4%) of the respondents are not sure about their satisfaction with the given right to put forward their opinions. Most of the respondents, 153 (54.3%), are satisfied with the given right to put forward their opinions.

5.3.2 Professional Development, Trainings and Working Environment

Among the 282 medical laboratory professionals in public health facilities of Addis Ababa, 50 (17.7%) are not comfortable with their actions in the laboratory in a professional manner. 42 (14.9%) of the respondents are not sure whether they are comfortable with their actions in the laboratory in a professional manner or not.

127 (45%) of the respondents believe that they are not growing professionally since they started working in the public health facility of Addis Ababa. Among the 282 respondents, 43 (15.2%) are not sure whether they are growing professionally since they started working in the public health facility or not. The rest 112 (39.7%) of the medical laboratory professionals believe that they are growing professionally since they started working in the public health facility of Addis Ababa.

As it can be seen from Table 4 that more than half of the medical laboratory professionals included in this study (51.4%) believe that fairness is practiced all the time in the implementation of training policy for the health workers. In the other hand, 91 (32.3%) the medical laboratory professionals do not believe that fairness is practiced all the time in the implementation of training policy for the health workers. The rest 46 (16.3%) of the respondents are not sure whether fairness is practiced all the time in the implementation of training policy for the health workers or not. Among the 282 respondents, 95 (33.7%) are not satisfied with the training by the health facility for their current job. 38 (13.5%) of the respondents are not sure about their satisfaction with the training by the health facility for their current job. The rest 149 (52.8%) of the respondents are satisfied with the training by the health facility for their current job.

The number of the respondents who are not satisfied with the working environment of the health facility is 124 or is 44% of the total respondents. 35 (12.4%) of the respondents are not sure about their satisfaction with the working environment of the health facility. The rest 123 (43.6%) are satisfied with the working environment of the health facility.

128 (45.4%) of the respondents said that the workload in the public health facilities of Addis Ababa is not manageable. 39 (13.8%) of the respondents are not sure about the manageability of the

workload in public health facilities of Addis Ababa. The rest 115 (40.8%) of the respondents said that the workload in the public health facilities of Addis Ababa is manageable.

Table 4: Summary of Professional Development, Trainings and Working Environment

Professional Development		Frequency	Percent
I am comfortable with my actions in the laboratory in a professional manner	Disagree and Strongly Disagree	50	17.7
	Not Sure	42	14.9
	Agree and Strongly Agree	190	67.4
I am growing professionally since I started working in this facility	Disagree and Strongly Disagree	127	45.03
	Not Sure	43	15.2
	Agree and Strongly Agree	112	39.7
Trainings			
Fairness is practiced all the time in the implementation of training policy for the health workers	Disagree and Strongly Disagree	91	32.3
	Not Sure	46	16.3
	Agree and Strongly Agree	145	51.4
I am satisfied with the training by the health facility for my current job	Disagree and Strongly Disagree	95	33.7
	Not Sure	38	13.5
	Agree and Strongly Agree	149	52.8
Working Environment			
I am satisfied with the working environment of the health facility	Disagree and Strongly Disagree	124	44.0
	Not Sure	35	12.4
	Agree and Strongly Agree	123	43.6
The workload is manageable	Disagree and Strongly Disagree	128	45.4
	Not Sure	39	13.8
	Agree and Strongly Agree	115	40.8
I have the supplies I need to do my job well and safely	Disagree and Strongly Disagree	87	30.9
	Not Sure	40	14.2
	Agree and Strongly Agree	155	55.0
I have the equipment I need to do my job well and efficiently	Disagree and Strongly Disagree	74	26.2
	Not Sure	30	10.6
	Agree and Strongly Agree	178	63.1
I feel a good interpersonal relationship	Disagree and Strongly Disagree	49	17.4
	Not Sure	32	11.3
	Agree and Strongly Agree	201	71.3
I am satisfied with the job location	Disagree and Strongly Disagree	76	27.0
	Not Sure	32	11.3
	Agree and Strongly Agree	174	61.7
I am satisfied with work relationships with the people around me	Disagree and Strongly Disagree	60	21.3
	Not Sure	22	7.8
	Agree and Strongly Agree	200	70.9

Among the 282 respondents, 87 (30.9%) said that they have no the supplies they need to do their job well and safely. 40 (14.2%) of the respondents are not sure about the availability of the supplies they need to do their job well and safely. The rest 155 (55.0%) witnessed the availability of the supplies they need to do their job well and safely.

Among the 282 medical laboratory professionals, 74 (26.2%) said that they have no the equipment they need to do their job well and efficiently. 30 (10.6%) of the respondents are not sure about whether they have the equipment they need to do their job well and efficiently or not. Most of the respondents (63.1%) believe that they have the equipment they need to do their job well and efficiently. 49 (17.4%) of the 282 medical laboratory professionals do not feel a good interpersonal relationship. 32 (11.3%) of the respondents are not sure about their feeling in the interpersonal relationships in the public health facilities. The rest 201 (71.3%) of the respondents feel a good interpersonal relationship in the public health facilities of Addis Ababa.

Moreover, 76 (27.0%) of the respondents are not satisfied with the job locations of the public health facilities of Addis Ababa. 32 (11.3%) of the respondents are not sure about their satisfaction with the job locations of the health facilities. The rest 174 (61.7%) of the respondents are satisfied with the job locations of the public health facilities of Addis Ababa. 60 (21.3%) of the respondents are not satisfied with the work relationships with the people around them. 22 (7.8%) of the respondents are not sure about their satisfaction with the work relationships with the people around them. The rest 200 (70.9%) which are more than half of the total respondents are satisfied with the work relationships with the people around them.

5.4. Analysis of the Detailed Interview

Detailed interview was conducted with 9 medical doctors, one CEO and one human resource director. The respondents have asked about different issues in their health facilities.

5.4.1 Causes and Effects of Laboratory Professionals' Turnover

The respondents have been asked about the causes of turnover of medical laboratory professionals in public health facilities of Addis Ababa. The respondents gave the following responses. Workload, low income, lack of respect by the organization leader and government. Lab professionals are engaged in routine lab activities not involved in any management position starting from ministry level to health facility level which is similar to the like pharmacy professions (MD2, MD 5 and MD 9).

According to CEO 1, upgrading/changing to other different departments is one of the causes of the laboratory professionals' turnover. Lack of attention to medical laboratory services by policy makers and upper management levels is another cause of laboratory professionals' turnover (MD 1, MD 7). Medical laboratory professionals' turnover affects service delivery in which patient service incompleteness occurs (MD 1). Shortage of lab personnel is also the cause of laboratory professionals' turnover as MD 8 said.

The third medical doctor (MD 3) interviewed has been working for 11 years in the facility and for five years in the medical director position. The medical director said that laboratory work naturally needs mobility so that it is tedious. Most of the services in the health center need the laboratory service. Therefore, the medical laboratory professionals' attrition makes the public health service difficult. The medical laboratory professionals are changing their professions to other professions. Based on the interview with some of the higher management of the public health facilities, The medical laboratory professionals are changing their profession to economics, pharmacy, health officer, accounting, merchant, mph, medical doctor, management health management service, accelerated medicine, etc.

The fourth medical director asked about the causes of the causes of laboratory professionals' turnover, answered that lack of laboratory professionals, absence of risk payments and the behavior of the job are the reasons for laboratory professionals' turnover. The laboratory professionals' turnover affected service delivery at the health facility in such a way that decrease in laboratory service exposes the patients for unnecessary expense so that customer satisfaction decreases (MD 4).

The interviewees have been asked about the effects of laboratory professionals' turnover on service delivery. CEO 1 said that losing experienced professionals affects service quality. Laboratory professionals' turnover decreases customers' satisfaction (MD 8, HR 1). As stated by MD 5, it results in patient service incompleteness/affect the types of services that the patients must receive and shortage of manpower. It needs additional cost to train and orient new staffs about the services as indicated by MD 9. Laboratory professionals' turnover affects service delivery because trained and competent staff are leaving the lab and it increase workload to the remaining lab staffs (MD 7,

HR 1). Laboratory professionals' turnover has highly affected service delivery at the health facility since it is an information source for confirmed case management (MD 2).

5.4.2. Ensuring a clean and safe working environment

The respondents of the detailed interview were asked to explain how the ensure clean and safe working environment in their health facilities and respond as follows. We ensure clean and safe working environment by consulting lab safety officers and infection prevention comments of health center, assess risks and plan to control to minimize the risks (CEO 1, MD 4). MD 5 also said that there must be standard building or enough spaces and rooms for lab services, and they work hard on it. Clean and safe working environment is maintained by discussing with the laboratory safety officer and providing the inputs needed (MD 3).

According to MD 7, they ensure clean and safe working environment in their health facility by using standard guidelines of international laboratory to minimize the workload, allocating adequate financial resources and minimize political related issues. Renovation of lab service rooms and availing training for staffs are ways being used in health facilities to ensure clean and safe working environment (MD 9, MD 8). HR 1 also said that they keep clean and safe working environment by Providing appropriate training, monitoring, and providing sufficient e safety equipment. According to the MD 2, they ensure a clean and safe working environment for medical laboratory professionals by budget allotment for this purpose and working together with the professionals.

5.4.3 Hiring and retaining medical laboratory professionals

Public health facilities of Addis Ababa are experiencing difficulties in hiring and retaining medical laboratory professionals. MD 1 said that "Addis Ababa city health bureau invites candidates by announcement, then professionals who passed will be allocated to the regarding public health facilities. We hire employees using the delegate city health bureau." MD 5, MD 7, MD 9 CEO 1 and HR 1 also supported this that Addis Ababa health facility hires the medical laboratory professionals. The public health facilities can only propose how many new staff are needed.

MD 2 told the researcher that he is experiencing difficulties in hiring and retaining medical laboratory professionals. The public health facility sometimes hires employees by its own and by the city health bureau invitation.

5.4.4 Training and development for medical laboratory professionals

MD 1 the public health facility doesn't practice coach and mentoring with medical laboratory professionals. The medical director explained that training and development for the medical laboratory professionals are important opportunities to have information and knowledge. The next question raised to the medical director 1 was 'how does the health facility practice continue professional development for its employees?' and he answered employees upgrade their profession by their own investment as well as the gate given from the city health bureau.

Training is an opportunity to have information and knowledge which is very important to improve quality of services (MD 7, MD 8). Trainings are also important to assure the technical skills of staff, enhance employee performance and boost productivity, decreases employee turnover, improve service delivery, and improve lab quality (MD 9, HR 1, MD 5). Training provides /equips the professionals with new and advanced knowledge, so helps to improve work outputs. It is a capacity building, backbone for medical laboratory profession by upgrading laboratory related experiences (HR 1).

The fourth medical director said that the health facility he is working in, practices coach and mentoring with medical laboratory professionals. Trainings are important to introduce new things and to train laboratory professionals about a new laboratory machine. Continual professional development is not started for the health facility yet. It works only for hospitals (MD 4). Regional and sub city lab mentors' mentor the health facilities (MD 5, MD 8, MD 9, CEO 6). Laboratory professionals started applying and getting trained ISO 15189 international standard (MD 5).

Continual professional development is given with selected hospitals and by the help of city health bureau some professional gain CPD (MD 9). MD 7 also said that there is no professional development plan because we are not preparing professional training activity plan at health institution levels. Our facility is CPD center so that it provides training of interview as well as external personnel / professionals. So, it will develop professional skill, MD 8 said.

5.4.5 Strategies to retain medical laboratory professionals.

The interviewed personnel explained that there are no retention strategies that their public health facilities use to retain medical laboratory professionals (MD 1, MD 2, MD 5, MD 7, MD 8, CEO 1). The salary structures and allowances have no role in retaining the medical laboratory professionals,

he said. Duty hour benefits are used by his health facility for the retention of medical laboratory professionals. The duty rate that the medical laboratory professionals participate in a month is better than other employees which might be taken as retention strategy (MD 2).

Some public health facilities of Addis Ababa use some retention strategies to retain medical laboratory professionals. These include applying good communication with lab heads and lab personnel, allowing leaves at appropriate time, refreshment training ,minimizing workloads and recognitions, providing chances for professional development or creating educational opportunities for lab staff, ISO 15189 standard facilities assessed and by their result we give for professional monetary reward and give the recognition, Encouragement (incentives at the end of year) and Recognition (certification for best performance) punishment (for poor performance) (MD 6, MD 9, HR 1).

5.4.6 Challenges in retaining laboratory professionals and solutions

The challenge faced by the medical director in retaining laboratory professionals is that other employees in the public health facility need equal treatment as the medical laboratory professionals (MD 1). The challenges that the public health facility is facing in retaining laboratory professionals is that the facility can do nothing by its own as a facility (MD 2). Lack of laboratory professionals, the laboratory professional assigned to the emergency unit being one and lack of laboratory office are the main challenges that the health facility is facing (MD 3, CEO 1). The medical director said 'the solutions to these challenges are, increase the number of laboratory professionals, assign more than one laboratory professional to the emergency unit, separate the laboratory office from the health facility's main building and setup it in its own building.'

Absence of clear job description for diploma, BSc, masters is another challenge (they do the same work) and budget constraint are some challenges faced by health facilities (MD 7, MD 5). The other challenges of retaining medical laboratory professionals are no home allowance, no risk allowance, no satisfactory monitory fee, rigid structure which do not allow for flexibility to motivation, absence of continual education problem and very low salary payment especially for lab worker (MD 5, MD 8, MD 9).

The solutions to overcome challenges in retaining medical laboratory professionals include special treatments for the professionals or benefiting packages might help in simplifying this challenge, add number of personnel in night and day duty of health center, renovate laboratory rooms for better work environment, having a clear job description for lab personnel, set or review the salary, set

attractive duty fees, set/review professional risk allowance, make good professional structure and integrated government support (MD 2, MD 7, MD 9, CEO 1, MD 8, HR 1). MD5 also said that 'starting from ministry of health, there should be responsible body who could ask for laboratory professionals and the ministry should understand laboratory is a pillar for health system and provide necessary motivational tools and treated as other departments at least parallelly.'

5.5 Correlation Analysis of Independent Variables and Employees' Retention

Correlation analysis was conducted to examine a linear relationship between employee retention strategies and the retention of medical laboratory professionals in public health facilities of Addis Ababa. Pearson correlation coefficients between the independent variables and employees' retention were computed and their significancy was tested. The findings of the correlation analysis are presented in Table 5. The Pearson correlation coefficient (r) values between all independent variables (salary and benefits, job satisfaction, professional development, training and working environment) and the medical laboratory professionals' retention indicate positive linear relationship between the independent variables and the professionals' retention (Table 5). All correlation coefficient values are greater than zero which imply positive linear relationship between the independent variables and the medical laboratory professionals' retention.

In addition to the positive linear relationship, the result of the correlation analysis presented in Table 5 depicts a significant linear relationship between the independent variables and the medical laboratory professionals' retention. The table shows that there is significant (since all p-values are less than 0.05) positive relationship between the given independent variables and the medical laboratory professionals' retention.

Table 5: The results of the correlation analysis

		Retention
Salary and benefits	Pearson Correlation	.600**
	Sig. (2-tailed)	.000
Job satisfaction	Pearson Correlation	.479**
	Sig. (2-tailed)	.000
Professional development	Pearson Correlation	.357**
	Sig. (2-tailed)	.000
Training	Pearson Correlation	.362**
	Sig. (2-tailed)	.000
Working Environment	Pearson Correlation	.406**
	Sig. (2-tailed)	.000

The highest correlation (0.600) is between salary and benefits and the medical laboratory professionals' retention as compared to the other independent variables. The weakest correlation (0.357) is between professional development and the medical laboratory professionals' retention as compared to the other independent variables.

5.6 Result of the Binary Logistic Regression

The correlation between each of the independent variables (Salary and benefits, job satisfaction, professional development, training and working environment) with the dependent variable (Retention of medical laboratory professionals) has been done with the Pearson correlation analysis. Here, binary logistic regression is employed to see the type and magnitude of the relationship

between all the independent variables and the dependent variable (retention). To identify the associated factors for medical laboratory professionals' retention, both bivariate and multivariable binary logistic analyses were employed. The findings from the bivariate analysis showed that the five independent variables (salary and benefits, job satisfaction, professional development, training and working environment) were found to be statistically and significantly associated with medical laboratory professionals' retention (Table 6).

Table 6: Results of the binary logistic regression

Variables	**COR (95% CI)**	**P-value**	**AOR (95% CI)**	**P-value**
Salary and Benefits	5.236 (3.503, 7.825)	.000	3.475 (2.116, 5.706)	.000
Job Satisfaction	10.358 (5.393, 19.892)	.000	5.143 (2.204, 12.002)	.000
Professional development	2.820 (1.968, 4.040)	.000	1.858 (1.104, 3.129)	.020
Training	2.692 (1.911, 3.794)	.000	1.659 (1.080, 2.548)	.021
Working Environment	7.357 (3.973, 13.624)	.000	5.677 (2.504, 12.871)	.000

The result of the binary logistic regression revealed that all the employee retention strategies have significant effect on the retention of medical laboratory professionals in public health facilities of Addis Ababa. The variable salary and benefits are found to have significant effect on the probability of retention with p-value of 0.000 which is less than 0.05. The odds ratio of salary and benefits is 3.475 which implies that for every increase in salary and benefits, the odds of retention increase by a factor of 3.475.

Job satisfaction is also significant factor with p-value=0.000 and odds ratio of 5.143. The odds ratio, 5.143 depicts that for a unit increase in job satisfaction, the odds of retention increase by a factor of 5.143. The next significant factor is professional development with odds ratio equal to 1.858 and p-value of 0.02. This indicates that for a unit change in professional development, the odds of retention changes by a factor of 1.858. Training and working environment have also significant effect on the retention of medical laboratory professionals with p-values of 0.021 and

0.000, respectively. The result of the odds ratio implies that a unit change in trainings changes the odds of by a factor of 1.659. A unit increase in working environment increases the odds of retention by a factor of 5.677.

6. DISCUSSION

The aim of this study is to understand retention rate and associated factors affecting retention of medical laboratory professionals in public health facilities of Addis Ababa. The findings of a research conducted by (37) indicated that job stress, job satisfaction, job security, work environment, motivation, wages, and rewards among others, are some reasons for employees to leave their workplaces. Employee turnover has a huge impact on an organization due to the costs associated with employee turnover and can negatively impact the productivity, sustainability, competitiveness, and profitability of an organization (38). In this study, 282 medical laboratory professionals in public health facilities of Addis Ababa were considered to examine the retention rate and associated factors affecting the medical laboratory professionals' retention.

Among the 282 medical laboratory professionals included in this study, most of the respondents are men. Among the 282 medical laboratory professionals considered in this study, most are young adults. The findings of the descriptive analysis also revealed that most of the respondents are married as compared to the other marital status groups. The education level of the respondents depicted that most of the medical laboratory professionals are BSc degree holders as compared to other education level groups. Most laboratory professionals in the public health facilities of Addis Ababa are working in the lab personnel position. Although there is high variation in the experience of medical laboratory professionals in public health facilities of Addis Ababa, on average, the professionals are well-experienced with an average work experience of 9.05 years.

The descriptive analysis on retention indicated as there is high intention of medical laboratory professionals to leave their current job which means they are not happy with their current jobs. Only 30.5% of the medical laboratory professionals said that they are willing to continue working in the public health facility in the future. Pearson correlation analysis was conducted to see the relationship between independent variables and the medical laboratory professionals' retention. The results of the Pearson correlation coefficient indicated that there is a positive linear correlation between all the independent variables and medical laboratory professionals' retention. The test also confirmed the

significance of the positive linear relationships. This implies that improving these employees' retention strategies will increase the retention of medical laboratory professional in public health facilities of Addis Ababa.

The results obtained from the binary logistic regression revealed that salaries and benefits have significant effect on retention of medical laboratory professionals. This implies that improving satisfaction of medical laboratory professionals will improve their retention the public health facility. This finding is consistent with the one obtained by (39) which examined that committed practitioners believe that salaries comparable to nurses are needed to improve retention of staff. In addition to this the authors got respondents who said that being appreciated by hospital administrators, nurses, and physicians would also contribute to improved retention (40).

Descriptive analysis to each attribute of the independent variables was done using frequencies and percentages. The results obtained from the analysis revealed that most of the medical laboratory professionals disagreed and strongly disagreed on 'fair payment and compensation in comparison with the professionals' experience and qualifications. Most of the medical laboratory professionals are not satisfied with the benefits and allowance policies of the public health facility of Addis Ababa. A high number of respondents included in this study were not satisfied with the compensation they get, and they that think it matches with their responsibility.

The findings obtained from the detailed interview revealed that most of the public facilities in Addis Ababa are not able to hire employees by their own. There were no retention strategies used to retain medical laboratory professionals in most of the public health facilities which might contribute to high medical laboratory professionals' turnover. Some public health facilities use retention strategies including, applying good communication with lab heads and lab personnel, allowing leaves at appropriate time, refreshment training, minimizing workloads and giving recognitions, providing chances for professional development, or creating educational opportunities for lab staff and certifying good performers. The interviewed top-level management members witnessed as there is high medical laboratory professionals' turnover. Medical laboratory professionals are changing their profession to other professions like, economics, accounting, public health officer, etc. The interviewed medical directors of the public health facilities suggested special treatments for the professionals or benefiting packages, adding number of personnel in both night and day duty, renovate laboratory rooms for better work environment, having a clear job description for lab

personnel, set or review the salary, set attractive duty fees, set/review professional risk allowance, make good professional structure and integrated government support as solutions for the high medical laboratory professionals' turnover.

Based on the results obtained from this study retention of medical laboratory professionals in the public health facilities of Addis Ababa are found to be affected by the professionals' job satisfaction in the health facility. This finding depicted that an increase in the job satisfaction of the medical laboratory professionals increases their retention to stay in their current health facilities. This finding is in line with the findings of (41). Haso et al. assessed factors affecting retention of primary health care workers of public health centers in Jimma zone, Oromia region, and southwest of Ethiopia and found that job satisfaction and professional advancements were factors positively affecting retention of the respondents (42). Professional development and trainings are other significant determinants of medical laboratory professionals' retention. These strategies contribute much to retain medical laboratory professionals in the public health facilities. Providing fair professional development and trainings for medical laboratory professionals increases their retention to stay in the public health facilities. This result is equivalent with the findings of (43). The authors found that most of the medical laboratory professionals included in their study indicated that professional development/training opportunities are very important factors for satisfaction at their current job as well as retention (11, 37, 40). Pallangyoand and Hanai, in their study, examined, the influence of training and development on employee retention in the banking industry of Tanzania and using binary logistic regression analysis, they demonstrated that training and development was significantly influencing employee retention (44).

Working environment is also found to be significant factor which affects retention of medical laboratory professionals in the public health facilities of Addis Ababa. Working hard in improving the working environment of the health facility helps to retain medical laboratory professionals. Making workload manageable, providing sufficient supplies and equipment to conduct laboratory activities, and creating good interpersonal relationships are among the helpful mechanisms to retain medical laboratory professionals in public health facilities of Addis Ababa. The findings of this study are in line with a study conducted by (45) in which working environment significantly influences employees' retention and work environment attributes (responsibility for the job and bank reputation) have also significant influence on employees' retention (44).

A study conducted by (46) suggested that training and development, recognition/reward for good performance, a competitive salary package and job security are variables which are crucial in influencing the employees' decision to either leave or remain in an organization (39). This coincides with the findings of the current study. Fairly pay and compensate the medical laboratory professionals in comparison with their experience and qualifications, preparing benefits and allowance packages, Fair implementation of training policy for the health workers and give continuous trainings might help the public facilities of Addis Ababa to retain medical laboratory professionals.

In general, the findings of the study revealed that working environment, job satisfaction and salary and benefits, respectively have highest effect on retention of the medical professionals as compared to trainings and professional developments. Working to increase the work satisfaction of the medical laboratory professionals in public health facilities of Addis Ababa helps much to retain the professionals. An increase in the comfortability of the working environment also results a high increase in the retention of the medical laboratory professionals in public health facilities of Addis Ababa. Salary and benefits also take the third place in contributing for retention of the medical laboratory professionals. Providing salaries, benefits and allowances which are equivalent to the qualifications and experience of the medical laboratory professionals helps the health sector to reduce the high attrition of the professionals. The other two variables (professional development and trainings) have also significant and positive effect on the medical laboratory professionals' retention.

7. STRENGTH AND LIMITATION OF THE STUDY

7.1 Strength

- The finding of the study lays benchmark information on retention mechanisms and may encourages for future study.

7.2 Limitation

- This study was conducted only in the public health facilities of Addis Ababa and did not illustrate all clinical laboratory professionals in the country.
- For the qualitative data collection, it was not possible to address all medical directors and CEO of sampled health centers and hospitals of Addis Ababa

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusions

The main purpose of this study was to assess the retention of medical laboratory professionals and associated factors in the public health facilities of Addis Ababa. To address the objective of the study, 282 medical laboratory professionals in public health facilities of Addis Ababa, were selected and the data obtained from these respondents was analyzed using both descriptive and inferential data analysis methods. The findings obtained from both analyses revealed that, on average, most of the medical laboratory professionals in public health facilities of Addis Ababa are intending to leave their jobs for the different reasons.

The detailed interview also revealed that majority of health facilities has no special retention strategies to retain medical laboratory professionals. The professionals' turnover is affecting the service quality in the health facilities and decreasing customers' satisfaction. Lack of risk allowances, absence of comparable salary and benefits equivalent to the professionals' education and experience and high workload are some causes of medical laboratory professionals' turnover.

Although, on average, most of the medical laboratory professionals are satisfied with most of their job, professional development, training and working environment attributes, they are not satisfied with some attributes of these variables, especially on salaries and benefits. Based on the descriptive analysis, most of the medical laboratory professionals are not happy with the salary and benefits of the public health facilities. They believed that they are not fairly paid and compensated in comparison with their experience and qualifications, and they are not satisfied with the benefits and allowance policies of the health facility. This might be the root cause for the low retention rate of the medical laboratory professionals in public health facilities of Addis Ababa.

The Pearson correlation analysis revealed that there is positive and significant linear relationship between the independent variables and the dependent variable (retention). The findings obtained from the binary logistic regression model revealed that salary and benefits, job satisfaction, professional development, training and working environment have positive and significant effect on the retention of the medical laboratory professionals in public health facilities of Addis Ababa. This implies that these variables contribute much to the variation in the retention of the medical laboratory professionals in public health facilities of Addis Ababa.

8.2 Recommendations

The findings of this study revealed that there is high attrition of medical laboratory professionals in public health facilities of Addis Ababa. Salary and benefits, job satisfaction, working environment, professional development and trainings are found to have significant effect on the medical laboratory professionals' retention. Therefore, the researcher recommends the health sector consider competitive salaries and benefit packages which are equivalent to the qualifications and experiences of the medical laboratory professionals. The sector should also work on creating good working environments by well-equipping the laboratories, supplying materials needed in laboratory activities and distributing manageable workloads, etc.

The retention of the medical laboratory professionals can also be improved by preparing guidelines in which the professionals can grow professionally since they started working in public health facilities, ensuring fairness in the implementation of training policy for the medical laboratory professional and preparing recognition and rewards for the works and contributions that the medical laboratory professionals did, etc. In general, working hard in different dimensions, preparing retention strategies, and applying them in the public health facilities will help the health sector to retain its medical laboratory professionals.

9. References

1. Ogedegbe RJ. Achieving organizational objectives through human resource management practices. European journal of business and management.2014;6(16):1
2. Worku N, Feleke A, Debie A, Nigusie A. Magnitude of intention to leave and associated factors among health workers working at primary hospitals of north Gondar zone, Northwest Ethiopia. BioMed research international.2019: 3-7.
3. Schneidman M, Dacombe R, Carter J. Laboratory professionals in Africa.2014: ii
4. Helen LZ, Michael WO, Augustine MM, Isaac AA, Remigi PS, Francis PK, et al. Challenges of maintaining good clinical laboratory practices in low-resource settings. A health program evaluation framework case study from East Africa, 2016, (146)
5. Mensah R, Kosi I, Organizational commitment, and turnover intentions of clinical
6. laboratory scientists in Ghana. European journal of business and management.2016,8(2): 6-7
7. Schneidman M, Russell J.D, Carter J. Laboratory Professionals in Africa. Health, nutrition and population discussion paper; The world bank, 2014 April; Washington D.C., USA.
8. Hilton T.L. Effect of burnout and organizational commitment on the turnover intention of clinical laboratory employees in Florida; Walden University;2015;2-4.
9. Browning R. The labor shortage, patient safety, and length of stay: new era of change agents prompt process improvements through laboratory automation. 2004:2.
10. Iwu1 CG, Allen-Ile CO, Ukpere WI. Key factors of employee satisfaction for the retention of health-related professionals in South Africa. African journal of business management.2012; 6(39):16-20.
11. Laundicina RJ, Moon TC, Beck S, Morgan JC. Retention incentives of clinical laboratory professionals. Clinical laboratory science.2014; 27(3).
12. Shimelis RS. Intentions to leave and associated factors among health professionals in health centers of yeka sub city public health centers. Journal of medical and dental science research.2022, Sep 19;9(10):4-6.
13. Girma F, Worku W, Alayu M, Bizuneh H. Turnover intention among health professionals working at primary public health facilities. Addis Ababa, Ethiopia. 2021;11(6).
14. Girma B, NigussieJ, Molla A, Mareg M. Health professional's job satisfaction and its determinants in Ethiopia: a systematic review and meta-analysis; 20211,4-9.

15. Beyene K. Assessment on the stepwise laboratory improvement process towards accreditation (SLIPTA) implementation in selected public hospital laboratories in Ethiopia.2015:28-30.
16. Marinucci F, Majigo M, Wattleworth M, Paterniti AD, Hossain MB, Redfield R. Factors affecting job satisfaction and retention of medical laboratory professionals in seven countries of Sub-Saharan Africa. BioMed Central. 2013.
17. Kebede B, Ololo S, Megersa B,Sorsa A.Health professionals' job satisfaction and associated factors at public health centers in West Ethiopia.2017
18. Alemnji GA, Zeh C, Yao K, Fonjungo PN. Strengthening national health laboratories in sub-Saharan Africa: a decade of remarkable progress. Trop Med Int Health.2016:7-8.
19. Beck S, Doig K. Laboratory managers' views on attrition and retention of laboratory personnel. Clinical laboratory science.2005;18 (4).
20. Available at http://hwmaint.clsjournal.ascls.org/
21. Mensah R, Kosi T. Organizational commitment and turnover intentions of clinical laboratory scientists in Ghana. European Journal of Business and Management.2016; 8(20): 6-7.
22. The Ministry of state for the development of northern Kenya and other arid lands human resources for health assessment report for northern Kenya: an overview of health workforce distribution across 10 counties.2013:70-73.
23. Alemnji GA, Zeh C, Yao K, Fonjungo PN. Strengthening national health laboratories in sub-Saharan Africa: a decade of remarkable progress. Trop Med Int Health.2016:7-8.
24. A universal truth. No health without a workforce. Global Health Workforce Alliance, World Health Organization. Available online:http://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/.
25. Dellie E, Andargie GB,Asrade G, Gebremedhin T. Intentions to leave and associated factors among laboratory professionals working at Amhara national regional state public hospitals, Ethiopia.2016
26. Hassan R. Factors influencing the turnover intention among technical employees in an information technology organization. International journal of arts and commerce. 2014;3(9):9-14.
27. Sathyabama U, Krishnan J. Workforce retention: The role of the work environment, organization commitment, supervisor support, and training and development in ceramic

sanitary ware industries in India. Journal of industrial engineering and management. 2016;9(3):11-14.

28. Ngure KP, Waiganjo E. Factors' influencing retention of health workers in the public health sector of Kenya. A case study of Kenya's National hospital. International journal of scientific and research publications.2017: 7(5):11-25.
29. Mafuyai GM, Ayuba MS,Atsen SN. An assessment of factors affecting job satisfaction and retention of medical laboratory professionals in north-central Nigeria. The International journal of humanities and social studies.2015;3(1):2-6.
30. Atnafu K, Tiruneh G, Ejigu T. Magnitude, and associated factors of health professionals' attrition from public health sectors in Bahirdar city, Ethiopia.2013:3-7.
31. Abera E, Yitayal M, Gebrselassie M. Turnover intention and associated factors among health professionals in the University of Gondar referral hospital, northwest Ethiopia.2014;3(4): 2-3.
32. Koshe T, Shemsi S, Amme S. Retention, and factor affecting primary health care workers of public health centers in Jimma zone, Oromia region. European Journal of Biomedical and Pharmaceutical Sciences.2019; 6(1):3-6.
33. Das BL, Baruah M. A literature review on retention of employees IOSR journal of business and management.2013; 14 (2):13-14.)
34. Ntangu G. Exploring factors affecting attraction and retention of health workers in rural areas of Tanzania. 50th International Course in Health Development.2014:37-38.
35. Henderson L.N, Tulloch J. Incentives for retaining and motivating health workers in Pacific and Asian countries.2008
36. Addis Ababa, Ethiopia metro area population 1950-2023[Internet]. Available https://www.macrotrends.net>cities>population
37. Al-Suraihi, W. A., Samikon, S. A., Al-Suraihi, A. A. and Ibrahim, I. (2021). Employee Turnover: Causes, Importance and Retention Strategies. European Journal of Business and Management Research, 6 (3).
38. Addis Ababa health bureau, human resource database, 2018.
39. Doing, K. and Beck, S. Factors contributing to the retention of clinical laboratory Personnel. Research and Reports, 2005:18(1).

40. David M, Joseph O. Effects of pay and work environment on employees' retention. International Journal of Scientific and Research.2015, 5 (4),1-3.
41. Djellel E D, Michele C, Gianluca D, Philippe CM. Scaling-up the crowd: Micro-task pricing schemes for worker retention and latency improvement, Switzerland.2014:50-56.
42. Haso, T.K, Seid, S.S and Ibro, S. A. (2019). Retention and Factors Affecting Primary Health Care Workers of Public Health Centers in Jimma Zone, Oromia Region, and Southwest of Ethiopia. 2017/18. European Journal of Biomedical and Pharmaceutical Sciences, 6 (1): 137-143.
43. Marinucci F, Majigo M, Wattleworth M et al. Factors affecting job satisfaction and retention of medical laboratory professionals in seven countries of Sub-Saharan Africa. Hum Resour Health. 2013; 11:38. https://doi.org/10.1186/1478-4491-11-38
44. Pallangyo, W. A. and Hanai, E. A. (2020). The Influence of Training and Development on Employee Retention: Empirical Evidence from Banking Industry in Tanzania. International Journal of Political Science (IJPS), 6 (1): 22-32.
45. Hanai, A. E. (2021). The Influence of Work Environment on Employee Retention: Empirical Evidence from Banking Institutions in Dar Es Salaam, Tanzania. International Journal of Managerial Studies and Research (IJMSR), 9 (1):42-54.
46. Mathimaran, K. B. and Kumar, A. A. (2017). Employee retention strategies: Empirical research. Global Journal of Management and Business Research: E Marketing, 17 (1).

10. APPENDIXES

Appendix A: Questionnaire

Information Sheet

Addis Ababa University Medical Faculty, School of Medical Laboratory Sciences. Dear Participant, my name is Andnet Garedew, postgraduate student at Addis Ababa University, School of Medical Laboratory Sciences; I am going to conduct a study on laboratory professionals' Retention and associated factors in selected public health facilities of Addis Ababa. I planned to distribute data collection tools to laboratory professionals working in these public health facilities. The objective of this study is to collect basic information on the level of retention of laboratory professionals working in public health facilities in Addis Ababa. The information you provide will be used as an input for further detailed study in the same or related topics in Addis Ababa University. The study will identify gaps and challenges and will provide recommendations for intervention strategies by facility managers to address the turnover problems. If you decide to participate, I will guarantee that there is no influence related to the study, but you are kindly requested to provide all relevant information based on the checklist. I cannot guarantee, however, that you will receive any benefits from this study. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Your name will not be written on the questionnaire or be kept in any other records. Your participation is voluntary, and you are free to withdraw your consent and to discontinue participation at any time without consequence. Your participation or not, do not have any influence on your position or responsibilities in your health facility. The questionnaire may take about 20-30 minutes. For the successes of my study, you are kindly requested to respond genuinely and voluntarily. Your signature below indicates that you have read the information above and have decided to participate in the study.

Thank you for your participation.

Contact address of the PI

Mobile: 0911115892

Consent form

I_____ here by giving my consent to provide accurate information about the retention level of medical laboratory professionals' status based on the data collection tools provided. I understand there is no problem within my position in the health facility by participating in this study at the beginning as well as at the end of the study. I believe that the result of the study will help to recommend possible retention interventions that contribute retain the laboratory professionals in the health facilities. The improvement recommendation will be based on the findings and recommendations of the study and it can be implemented to the participant laboratories primarily and to the nation in general.

Participants name: _____Signature_____ Date_____

QUESTIONNAIRE

Addis Ababa University
College of Health Sciences
Department of Medical Laboratory Sciences

Questionnaire on Assessment of Retention of Laboratory Professionals and Associated Factors in Public Health Facilities of Addis Ababa, Ethiopia

Instruction

1. The respondents of the questionnaire are all laboratory professionals who are willing to participate in the study during this period.
2. Each study participant should fill the questionnaire separately and discussion is not allowed.
3. "Circle"; the letter of choice you think is correct from the given choices.
4. The purpose of this study is only for academic purposes. Therefore, confidentiality will be given high emphasis.

Part I: Socio-demographic characteristics of the participants

1. Sex: - ☐ Male ☐ Female
2. Age: - (in years)

A. 20 - 25 Y B. 26 -30 Y C. 31 - 35 Y D. 36 - 40 Y E. 41 - 45 Y F. Above 45 years.

3. Marital status

A. Married B. Single C. Divorced D. Widowed

How long have you been in the laboratory profession (year)? ……..……

Your level of education?

A. Diploma B. BSc C. MSc D. Other (Specify) …….

Your current position?

A. Lab head B. Quality officer C. Safety officer D. Lab personnel

E. other (Specify).....

Part II: Retention Factors

You are kindly requested to choose how you feel about the level of retention factors from the given alternates. The following questions are developed only for research purposes. The researcher has no intention to represent this information negatively in his research paper. The information will be kept confidential. For the following questions, respondents should be kindly asked to indicate whether they Strongly Agree (SA), Agree (A), Not Sure (NS). Disagree (D), Strongly Disagree (SD).

S.no	Descriptions	Strongly Disagree (SD)	Disagree (D)	Not Sure (NS)	Agree (A)	Strongly Agree (SA)
	Salary and Benefits					
1	I feel that I am fairly paid and compensated in comparison with my experience and qualifications					
2	I am satisfied with the benefits and allowance policies of the health facility					
3	I am satisfied with the compensation I get and I think it matches with my responsibility					

	Job Satisfaction					
4	I am happy with my work responsibilities					
5	I am satisfied with various activities in the laboratory, and I love participating in them					
6	I am satisfied with the leaders in my workplace as positive role models					
7	I am happy with the recognition and rewards for my works and contributions					
8	I am comfortable with the planned competency assessment result carried on a yearly basis					
9	I am satisfied with the given right to put forward my opinions					
	Professional Development					
10	I am comfortable with my actions in the laboratory in a professional manner					
11	I am growing professionally since I started working this facility					
	Trainings					
12	Fairness is practiced all the time in the implementation of training policy for the health workers					
13	I am satisfied with the training by the health facility for my current job					
	Working Environment					

14	I am satisfied with the working environment of the health facility					
15	The workload is manageable					
16	I have the supplies I need to do my job well and safely					
17	I have the equipment I need to do my job well and efficiently					
18	I feel a good interpersonal relationship					
19	I am satisfied with the job location					
20	I am satisfied with work relationships with the people around me.					
21	Overall, do you intend to continue working in this health facility in the future	Yes			No	

Appendix B: Detailed Interview Questions

Part III: Interview Questions

Introduction

Thank you for agreeing to participate in this study. Your comments are important. This interview is informal.

Purpose

I am completing my master's thesis at Addis Ababa University, College of Health Sciences, Department of Medical Laboratory Science. The study seeks information on the retention practices for medical laboratory professionals in public health facilities. This interview is a major part of the data collection for my study, and I am extremely interested in your input and comments.

Procedures

The interview will last about 25-30 minutes. I will be audio taping as well as taking notes. You may stop the interview at any time. I would like to make you aware that by participating in this interview, your informed consent is confidential.

1. What is your position in the organization?
2. Could you, please tell me briefly your role in the organization?
3. How long have you been in this position?
4. How long have you been at this facility?
5. What are the causes of laboratory professionals' turnover? Do you think that such causes are avoidable?
6. How has laboratory professionals' turnover affected service delivery at the health facility?
7. How do you ensure a clean and safe working environment for medical laboratory professionals?
8. Are you experiencing difficulties in hiring and retaining medical laboratory professionals?
9. Briefly explain the hiring and selection process at your facility.
10. Does the facility practice coach and mentoring with medical laboratory professionals?
11. Explain the importance of training and development for medical laboratory professionals?
12. How does the health facility practice continue professional development for its employees?

13. In your facility, is there a laboratory professional that has been changed his/her profession? If your answer is yes, to what kind of profession does he/she changed?
14. What retention strategies does your facility use to retain medical laboratory professionals?
15. Do salary structures and allowances play a role in retaining medical laboratory professionals?
16. Explain some benefits used by your health facility for the retention of medical laboratory professionals?
17. What challenges you are facing in retaining laboratory professionals?
18. In your view, what will be the possible solutions for those challenges?

Would you like to add anything else to this interview?

Thank you again for your time. My contact information is: Mobile phone 0911115892,

E-mail; gandnet24@gmail.com