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ASSESSMENT OF WORKFORCE COMPOSITION AND JOB SATISFACTION AMONG REGULATORY HEALTH PROFESSIONALS IN ADDIS ABABA

By

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This is to certify that this thesis was prepared by Habtamu Haileyesus Orshiso entitled: Assessment of Workforce Composition and Job Satisfaction among Regulatory Health Professionals in Addis Ababa, and submitted in partial fulfillment of the requirement of the Degree of Masters of Sciences in Regulatory Affairs (Medicine Regulation Track) of Department of Pharmaceutics and Social pharmacy complies with the regulation of the University and meets the accepted standards concerning originality and quality.

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ABSTRACT

Introduction: Health workforce is crucial for a regulatory health system and for optimal performance of the regulatory health system, the health care provider needs to be adequately trained and satisfied. The aim of this study was to assess workforce composition and job satisfaction of regulatory health professionals working in Addis Ababa.

Objectives: To assess workforce composition and job satisfaction among regulatory professionals in Addis Ababa.

Methods: By using cross sectional design, randomly 5 sub cities from Addis Ababa starting from July up to September 2021 was conducted. Respondents were selected by using a simple random sampling technique. Data were collected by self-administered questionnaire. The collected data were entered and analyzed using SPSS version 21. For regression analysis, significant level of $p<0.05$ was used.

Result: Majority of the health regulatory professionals were health officers and environmental health professionals. Only 12.4% of professionals working in the health regulatory field were pharmacy background. Close to 47% of professionals working in health regulatory affairs in Addis Ababa were satisfied and > 50% of participants had a high intention to leave the work area. More than 50% of work experience <5 years were less satisfied [AOR=0.25 (0.09, 0.67)].

Conclusions This study demonstrates the current status of regulatory professionals' variety and their job satisfaction level. Most regulatory health services are provided by public health and environmental health professionals.

Keywords: Health regulatory professionals, health regulatory affairs, Job satisfaction, Professionals variety

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TABLE OF CONTENTS

ABBREVIATIONS

AA……...Addis Ababa

DACA……. Drug Administration and Control Authority

EFDA……Ethiopian Food and Drug Authority

EFMHACA.....Ethiopian Food, Medicine and Health Care Administration and Control Authority.

FDA……Food and Drug Administration

FIP……. International Pharmaceutical Federation

HRH……...Human Resource for Health

HSDP IV……..... Health Service Development Plane Four

NCD……Non-Communicable Disease

NRA……National Regulatory Authority

RAP……Regulatory Affairs Professions

WHO……..World Health Organization

LIST OF FIGURESS

LIST OF TABLES

1. INTRODUCTION

1.1 Background

An inspired and motivated health care workforce is essential to attain an effective health service and the burden of chronic diseases is increasing in Ethiopia, where it constitutes multiple burdens along with communicable diseases, maternal and perinatal conditions, and nutritional problems (WHO, 2015). Hence to attain people's healthcare services at the national and regional level, advance health services capacity, enhancing the availability of a high-performing health workforce is a milestone. The health workforce is considered one of the six essential building blocks of a health system (WHO 2010).For attaining of health system development goals at national levels, efficient and effective strategy in health system is required (Assefa et al. 2017). However, nowadays, non-communicable diseases (NCD), infectious diseases, and injuries together constitute Ethiopia's triple burden of disease. Injury and NCD rates are rising quickly (Ethiopian Ministry of Health 2021).

Health systems can only function with health workers, and improvement of health service coverage and health outcomes is dependent on their availability, accessibility, and capacity to deliver accepted and quality services (Ferrinho *et al*. 2011). The mere availability of health workers is not sufficient: only when they are equitably distributed and accessible by the population, when they possess the required competency, and are motivated and empowered to deliver quality care that is appropriate and acceptable to the sociocultural expectations of the population, can theoretical coverage translate into adequate service coverage (Global Health Workforce Alliance and World Health Organization 2013).

Regulatory Affairs (RA) professionals play a decisive role in food and medicine regulation because it is more concerned about the healthcare product lifecycle; they provide strategic,

tactical, and operational direction and support for working within regulations to expedite the development and delivery of safe and effective healthcare products to individuals around the world (Report 2017; Bonthagarala 2018;). Regulatory science is the science of proactively developing new tools, standards, and approaches to assess the safety, efficacy, quality, and performance of regulated products (Callréus & Schneider 2013). Therefore, to regulate healthcare product life cycle, improve standards and approaches in public health, assigning a well-trained and adequately educated workforce in regulatory affairs will modify the issues in appropriate and expected ways.

Healthcare systems' productivity and efficiency are influenced by a variety of elements, even though human resources for health are an important milestone. From those factors, health professionals' job satisfaction is broadly emphasized by many scholars (Merga & Fufa 2019; Abate & Mekonnen 2021; Alemeshet Yami et al. 2011).

To ensure effective medicine regulation through strengthening regulatory systems, improvement of regulatory performance with sufficient trained human skills is becoming a priority for NRAs and regional regulatory bodies.(Ncube *et al*. 2021) . In order to achieve the goal of the national health policy, assuring the safety, effectiveness, and quality of pharmaceutical products is the foundational element of the health system. According to the WHO report, due to multiple factors, there is a wide distribution of illicit and under-regulated medicinal products in developing countries, especially in sub-Saharan Africa (Glass 2014). Since Ethiopia is one of these countries, there is known and unknown circulation of under-regulated medicinal products.

Therefore, to control and regulate a legal and illegal imported, distributed, or circulated pharmaceutical and medicinal products at the national, regional, and institution levels, in addition to stringent medicine regulatory system and policy; an appropriately trained and skilled

human workforce with proper professionals variety at the desired facility is crucial. Therefore, the primary purpose of this study is to assess the profile of regulatory affairs professionals' working at different levels and assess their levels of job satisfaction in Addis Ababa.

1.2 Statement of Problem

Inspired, effective, efficient, comprehensive, and suffice human resources for health (HRH) regulation ensures public protection and improves the quality of healthcare, but incompetent health profession may harm the public health (McKimm et al. 2012), and this human resources for health are the crucial core for a health system. In regulatory health field, Regulatory professionals uses the principles of science, law, and business to ensure that patients and consumers have quality products that are safe and effective (Drago, McDonald, and Lotrecchiano, 2018). The regulatory inefficiency in developing countries is due to lack of adequate skilled regulatory staff, insufficient budgets, and regulation policy (Nguyen et al. 2009; Ndomondo-Sigonda et al. 2017) . Hence to achieve public health goals and effectively cope with regulatory science in the country, investing in human resources and financial capacity is a prerequisite (Tober 2010).

To regulate safety, efficacy and quality of pharmaceutical products and safety of food at the national and regional levels, Ethiopia has faced a lot of challenges. Because, the country has a multi-border line with a wide range of landscapes, that makes it difficult to control and regulate too low quality products at the market level. However, to solve this problem, one of the best options with a stringent regulatory system and policy is adequately trained professionals at service delivery points. The study done by Suleman *et al.*(2016) reflects that the government of Ethiopia is willing to ensure the community's access to the essential medicines that are safe,

effective, and of assured quality, including rational drug prescription and use, but till today there is a gap on assuring of safety, efficacy, and quality for medicine and food (MOH of Ethiopia 2015).

Even though there is a long desire to improve a health system in regulatory affairs, there is still a gap (MOH Ethiopia report 2019). This may be due to a rapid shift in the competitive workforce, acute and chronic shortage of skilled human resources, job dissatisfaction of skilled workforce, and the labor turnover. Insufficient attractive carrier structure and incentives and insufficient salary may also be another factor. Suleman *et al.*(2016) reported as there is lack of sufficient numbers of qualified and skilled human resources in the nation makes it difficult to implement adequate regulatory measures against illegal institutions, to limit the availability of illegal pharmaceutical products, to improve entry-port security, to improve cooperation between the Federal FMHACA and regional regulatory bodies, and to manage the informal market.

To improve the regulation of food, medicines, and pharmaceutical products at all facility levels, establishing and strengthening national regulatory affairs work capacity in all regions with trained and skilled health professionals should be the focus.

Therefore, the primary purpose of this study is to assess the profiles of professionals working in Regulatory affairs, their job satisfaction and anticipated challenges in Addis Ababa Food, m medicine and health care administration and control authority.

1.3 Scope of the study

The regulatory affairs field is so vast, and in some jurisdictions, it encompasses food, cosmetics, nutrition, veterinary products, tobacco products and pharmaceutical products. However, for this study, the term "healthcare products" only includes products for human being use. This includes pharmaceuticals, biologics, medical devices, in vitro diagnostic products and food. Thus, this study concentrates on assessment of health workforce composition and job satisfaction among health professionals of regulatory profession in Addis Ababa city Administration.

2. LITERATURE REVIEWS

2.1 Human Resource for Health (HRH)

Human resources for health system are the crucial core point, but this central pillar of a health service provider does not get a good emphasis, and they have been a neglected component of a health system (Hongoro & McPake 2004)**.** To meet health care needs, health policy developers thorough human resources for health workers jointly work on strengthening their capacity for education, planning, and managing their health workforce (Dussault & Dubois 2003). Human resource management is a crucial duty and, most of the time, difficult to accomplish effectively in the delivery of health services with expanded access to society for essential medications. (Babapour, Gholipour, and Mehralian, 2018). Developing regulatory councils for new cadres of health professionals and strengthening current councils should be a priority for national policies and practices. The best way to increase regulatory health professional's coverage is to scale up education and training capabilities through a conversation about health workforce partnerships. For the required production and employment of health staff, internally mobilized resources are insufficient. The capacity of developing nations to produce, evaluates, disseminate, and use HRH data for policymaking is currently insufficient (Afriyie, Nyoni, and Ahmat, 2019).

2.1.1 Human resources for health regulatory affairs

In protecting the health impact and benefit of the drug use, the human power of the country are the precious assets and which needs to be educated and nurtured in their capacity (Ethiopia Drug control policy 2017). Regulatory affairs profession is developed from the desire of governments to ensure safety, efficacy and quality of healthcare products for public use. These health care products include pharmaceuticals products, food products, biologics, medical devices and diagnostics).

By developing and enforcing standards and regulations, regulatory bodies should actively engage in policy-setting processes and introduce competency-based national licensing and relicensing assessments for graduates from both public and private institutions (Nighat Razvi, Muneeb Ahmed 2015; Drago *et al*. 2017).

2.2 Role of regulatory Affairs In food and drug regulation

The regulatory affairs field is bivalent and encompasses legal and scientific aspects of drug regulation (Nighat Razvi, Muneeb Ahmed 2015). Universalization, competition, harmonization of product registration, and a rapidly changing business environment have started forcing regulatory professionals to work in companies, governmental agencies, and other organizations to focus on Complex Problem Solving. In another way, current manufacturing processes and supply chains of medicinal products are being scaled up on complex systems. Health care products are often distributed worldwide and used by patients in multiple countries (Drago, McDonald, and Lotrecchiano, 2018).

Regulatory affairs professionals' primary role has been working to ensure the interface between science, law, and society. The primary role of regulatory science is to protect the community's health through appropriate risk assessment and risk management of novel or emerging population health risks and administration of legislation and regulations set to protect human health and consumer safety. Provide information & advice on the safety and quality of products for the respective classes, formulate policy, regulations, and guidelines (including a sound understanding of legislative processes), and deliver effective communication & relationships with stakeholders. More than ever, regulatory affairs development and application require a well-educated, scientifically engaged, and motivated workforce (Kumar *et al.*, 2013).

2.3 Regulatory framework in Ethiopia

A national drug policy created in accordance with the National Health Policy oversees the Ethiopian pharmaceutical industry (National health policy of 1993). In accordance with the first pharmaceutical regulatory proclamation No. 43/1942, pharmacists and druggists were authorized to practice. The formal modification of Pharmacy Regulation No. 288/ 1964, which took place after two years, provided the legal framework for the creation of drug regulation in Ethiopian history. Then, a newly amended proclamation known as "Drug Administration and Control Proclamation in 1999 that was given a responsibility for both pharmacy and laboratory departments with proclamation No. 176/1999" was issued. Following this, an independent Drug Administration and Control Authority was created in Ethiopia in September 2001 to take over the country's pharmaceutical regulatory role (DACA). By "Proclamation No. 661/2009" in 2010, this modified medicine regulation proclamation was reorganized as the Food, Medicine and Health Care Administration and Control Authority (EFMHACA) of Ethiopia, with additional responsibilities such as the regulation of food, health care personnel, and settings. After proclamation 661/2009, the anticipated outcome in terms of pharmaceutical regulatory power was not realized. Most national health experts agreed that the double responsibility in health care administration, which weakens the pharmaceutical regulatory authority sector is, the primary cause of inefficiency in medicine and food regulatory authority. Currently, this industry is switching to the newly amended new promulgation called Ethiopian Food and Drug regulatory Authority (EFDA) No.1112/2019n (Ethiopian Parliament 2010; FDAEthiopian 2019). For the past 50 years, it has been clear that Ethiopia needs to develop better regulatory frameworks and regulatory processes. The lack of adequate human resources in this particular industry has, so far, been contained, despite political intentions and successful legislative revisions.

To make sure that professionals in the public and private sectors are qualified, well-trained, and adhere to accepted standards regarding the scope of practice and competency in regulation and legislative norms with frameworks, regulatory bodies must be strengthened in both capacity and competence (McKimm *et al.*, 2012; Drago *et al.*, 2017)

DRA bodies include both scientific and legal aspects of drug regulation, and the regulatory affairs professionals involved in ensuring pharmaceutical product safety, efficacy, quality, and performance are dedicated individuals who take pride in their contribution to the improvement of health and quality of life of peoples.

2.3.1 Regulatory framework in Addis Ababa FMHACA

The primary purpose of health workforce regulation is to protect the public by ensuring that only health practitioners who are suitably trained and qualified can practice in this profession. In addition, one of the main tasks of making an effective health system in health regulation is establishing and encouraging a competent, skilled, and motivated health workforce. According to Federal FMHACA proclamation, 661/2002 article 55 sub-articles 2, the delegated authority to encourage the regulation of health care services and products at the regional level was initiated. Depending on this delegated authority, Addis Ababa FMHACA officially launched its proclamation No 30/2004. However, the EFDA has recently given special authority to the regional health bureau to regulate pharmaceutical and health-related products (AA FMHACA BPR plane 2020).

2.4 Challenges in health worker Human resource management practices

To implement health service strategy and improve the health service coverage, working more on the availability, accessibility Dussault and Dubois, (2003), of human resource information, and quality of the health workforce (Spero *et al.,* 2011). Without this adequate health force, there is no health.

2.4.1 Challenges of the regulatory health system

The strengthening of regulatory bodies' capacity plays a central role in ensuring that public and private sector professionals are competent, adequately trained, and adhere to agreed standards relative to the scope of practice and competency in regulation and legislative norms within frameworks (McKimm *et al*. ,2012).

Absolute numbers of human and financial resources are essential for the regulatory system. The small overall economy can negatively impact the human and financial resource requirements to operate systems effectively.

The most common challenges faced in the health regulatory system that may negatively impact regulatory health capacity in the regulation of health care products and health institutions are competent human resources, financial resources, quality assurance system, information system, legal bases, standards, guides, specification and procedure (Preston et al. 2020).

Strengthening health workforce regulation capacity with fundamental requirements is a number one option for better implementation of health policy. However, to implement this task, enough human resource capacity with essential skills is crucial.

The health workforce is central to attaining, sustaining, and accelerating progress on universal health coverage (Global Health Workforce Alliance and World Health Organization 2013), but there is a challenge that faces a health system. This is due to a lack of adequate and skilled

human resource (Dejene *et al.*, 2019), inadequate professional candidates, and training and development challenges; it includes inadequate training of human resource, Inequality of training distribution and Promotion challenges mean lack of attractive carrier structures are some of the difficulties skilled human resources availability (Babapour *et al.* 2018).

2.5. Implication of a good health service practice.

Inadequate human resource management for health can significantly affect health service delivery practice (Ferrinho *et al*. 2011; Mowday 1984). According to Hotchkiss B *et al*. (2015), studies conducted in Ethiopia indicated that many professionals were not satisfied with their job. Insufficient financial reward and salary, limited access to further education and promotion, a not convenient physical condition in the working area, and an imbalanced workload mainly were described as a reason for their dissatisfaction with study participants.

2.6 Factors that determine health professionals' job satisfaction

Variables that determine job satisfaction are profession type (Temesgen et al. 2018; Geleto *et al.* 2015), salary (Getnet Gedif *et al.* 2018; Admasu et al. 2017), educational status (Bekru et al. 2017; Mekuria Mengistu 2015; Dida *et al*. 2020), marital status, sex, working department/unit, comfortable working environment, staff relationship, support from supervisor, the opportunity for professional growth and personal behavior (Girma *et al.* 2021).

Some of the scholars' studies reveal that lower education level employers were less satisfied than higher-level educated employees (Ayamolowo 2013; Deriba *et al*. 2017) and professionals who work in a better design working environment will become more satisfied and productive than poor working environment (Geleto *et al*. 2015). In other sense a good leadership style is vital for better health service productivity and can motivate employees toward an expected common goal (Geleto *et al*. 2015).

For optimal performance of a health delivery, a health workers needs to be satisfied in their work (Weldegebriel *et al*., 2016). An inadequate number of workforces, insufficient training opportunity, lack of motivation, inadequate salary are the factors that made the health workers not to be satisfied in their work (Yami A. *et al*., 2011).

A high level of job satisfaction is the implication of a good health service practice, leading to a high level of customer satisfaction. On the contrary, many scholars have agreed that a low level of job satisfaction leads to poor performance of health care professionals with customer dissatisfaction (Hotchkiss *et al.* 2015; Abate & Mekonnen 2021). Compared to their colleague, professionals whose needs and expectations are satisfied, tend to be more productive (Temesgen, Aycheh, and Leshargie, 2018).

Poor satisfied staff has a high intention to leave the previous working area. Negatively, that affected the health system not to be productive. Skilled professionals' burnout from work area will negatively compromise the health delivery.

Therefore, encouraging job satisfaction is a primary component of human resources for health service practice.

3. OBJECTIVES

3.1 General Objective

- Assessment of regulatory workforce composition and job satisfaction for health regulatory affairs in Addis Ababa city Administration.

3.2 Specific objectives

- To assess the profile of regulatory health workforces in Addis Ababa
- To determine job satisfaction of professionals working in health regulatory affairs in Addis Ababa
- To determine the major challenges experienced by professionals working in health regulatory affairs in Addis Ababa

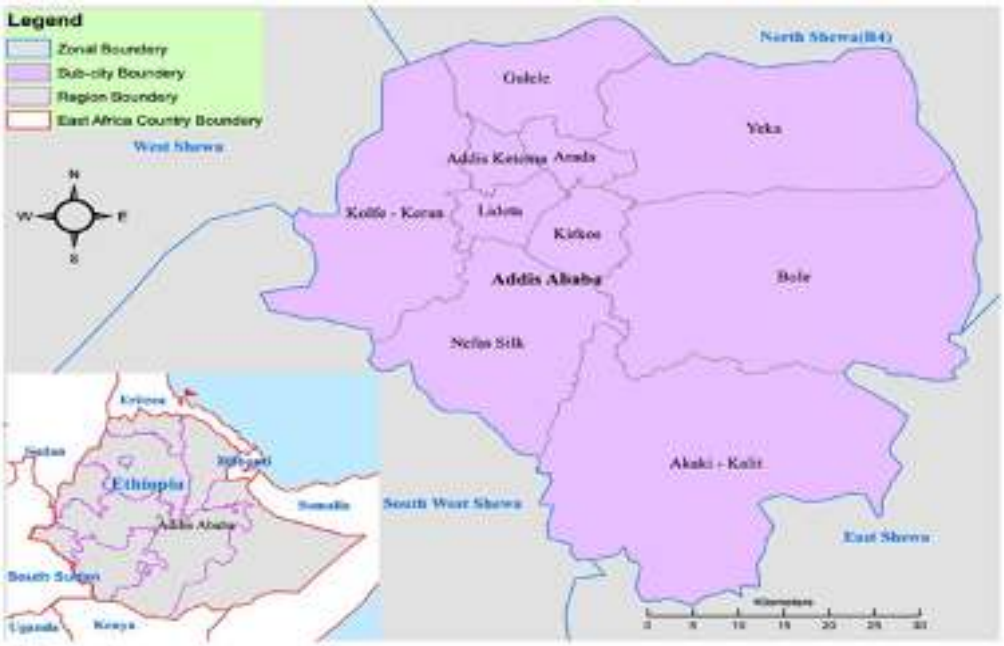
4. METHODS

4.1 Study area and period

The study was conducted in Addis Ababa city administration, the capital city of Ethiopia. Addis Ababa city covers an area of around 540 km2 with a total population of more than 4.5 Million (https://www.statsethiopia.gov.et/). This city is administratively subdivided into ten sub-cities and 121 districts (woreda in Amharic). (City Government of Addis Ababa, 2020).

In Addis Ababa city, during this survey period, there were 1071 health service provided clinic centers, 856 pharmacy and drug vendors, 13 Laboratory service centers, 83 governmental and private Hospitals and 104 health centers. Now days in Addis Ababa FMHACA from center level FMHACA up to district level FMHAC, there are 1078 governmental employed health professionals and support staff. From those employees, 301 health professionals are working in the medicine and health institution inspection and control directorate, and around 420 professionals are working in Food and Food institution inspection and control directorate (AAFMHACA report 2020).

Addis Ababa FMHACA bureau is structurally divided into two directorates. In medicine and medicine circulated institution control directorate, Health institution qualification and inspection directorate under this directorate are two teams. These are the Health institution qualification team and the Health institution and health professionals' inspection team. The food institutions' inspection and quality control directorate have two teams; the quality control team and the Food and Food institution inspection.



Source *https://www.google.com/searchmapof Addis Ababa sub-cities*

Figure 1. Map of Addis Ababa sub-city

4.2 Study Design

To assess the workforce composition and job satisfaction among regulatory health professionals in Addis Ababa city administration, a descriptive cross-sectional study was used. By using a self-administered structured questionnaire, a data was collected from July 2021 to September 2021 in Addis Ababa.

4.3 Population

4.3.1 Source population

All regulatory health professionals with a diploma and above qualification working in Addis Ababa food medicine and health care administration and control authority and those with six months and above work experience in the study institutions were considered as a source population.

4.3.2 Study population

All regulatory professionals working full time in randomly selected Sub-city of AA and districts in those sub-cities with 6-month and greater work experience participated in the study. All health workers with less than six months of work experience and those on sick leave, annual leave, and maternity leave at the study's time were excluded.

4.4. Sample size determination technique

The total number of regulatory health professionals included in the survey for the assessment of human resource for health regulatory affairs were determined based on the following way.

In this study Yamane (1967) formula was used to decide the number of sample size. According to his formula, the total number of study population leads for different correction approaches.

In this study the source population was 721, which is less than 10,000. So, to calculate the required minimum sample size for a small population, a (Yamane 1967) correction formula was applied. Yamane formula of finite population sample correction is

$$n = \frac{N}{1+Ne^2}$$

Where,

n = the required sample size

N = the source population (in AA FMHACA) presented total number of regulatory health professions which was equal to 721

e = Margin of error in 95% CI = 0.05

According to this, the sample size was: $\frac{721}{1+(721)(0.05)^2} = 257$

Then, to compensate the non-response rate error 10% of the sample was added.

Finally, two hundred seventy-five regulatory health professionals were participated in the self-administered questionnaires.

4.4.1. Sampling procedure

In this study, for assessing of human resource for health regulatory affairs in Addis Ababa FMHACA, the required number of data from regularly employed health professionals in each selected health institution was decided based on the following procedure.

Five of a total of 10 Sub cities were selected as a study population. The selections of Sub-cities were more based on their number of district health offices. Sub-cities were grouped in to two categories. Sub cities with ≥11 district health offices were categorized in to one group and Sub cities with less than or equal to 10 district health offices were assigned into one group. Among Sub-cities with greater than or equal to 11 district health offices, randomly three district health offices were selected. From Sub-city less than or equal to 10 district health offices, randomly two district health offices were recruited.

Based on this selection, Bole, Yeka, and Nifas Silk Lafto Sub-cities were selected from Sub cities with greater than or equal to 11 district health offices, and Kirkos and Gulale sub-cities were selected among Sub-city less than or equal to 10 district health offices. The sample size was proportionally allocated to each selected sub cities based on the number of district health offices. From selected Sub cities, proportionally 33 woredas or district offices were identified. In average, five regulatory health professionals from each selected woreda health office were proposed to include in the study. At the end, randomly 165 regulatory professionals from selected district health offices were recruited. The selection of professional staff for the serving

was using random sampling techniques. Regarding Sub cities level and central FMHACA level, all available regulatory health professionals were included into the study. Finally,

The randomization approach is displayed in (Annex III)

From randomly selected Sub-city level of Addis Ababa FMHACA and central AAFMHACA, all regulatory professionals' staffs were included.

The total sample size of the study was 275. This included those selected at woreda level 165 participants and the remain participants were all regulatory health professionals staffs existing at sub-city and central FMHACA levels. .

As shown in Annex III, the professionals selected from the woreda level were 165. The remaining 110 were professionals from sub-city and central FMHACA levels. The participants of sub-city and central FMHACA levels were all health professionals who were actively working at each selected sub city and central FMHACA. Based on this, the study was carried out by using 275 respondents.

4.6. Data collection methods and instrument

Before beginning of the data collection, the objective of the study was simply described for participants in clearly written form, and orally was presented in simple understandable way of the local language.

Three health professionals who were worked in Addis Ababa health bureau with bachelor degree in nursing; pharmacy and Health officer were recruited as data collectors. Data collectors were selected based on their academic qualification and experience in health system regulation sectors. Since the self-administered questionnaire were prepared in English, for three recruited data collectors, a three consecutive half day orientation on general and specific aim of the study,

on the detailed presentation of the data collection instruments and on the way of handling filled questioner for respondents were discussed.

The data collection tools were adapted from review of other studies on similar context for health professionals job satisfaction and challenges that interfaced during the professionals service providing (Beedemariam 2013; Khamlub et al. 2013; Anon 2016). For regulatory health professionals' job satisfaction assessment, a 5-point Likert scale was used. In research questions the numbers indicates (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). In similar manner the existing challengers and professionals quality issues were included in the questioners.

This study questioner consisted of four sections. The first part of the questioner stated about the profile of health professionals, the next section about health professionals job satisfaction, the third section for turn over intention of health professionals and health professionals recommendation to motivate professionals in their current place and the last part of the questioner devoted about challenges that encountered in regulatory service area.

4.7. Data management and analysis

Data quality was assured through training of data collectors and close supervision of data collectors at the time of data collection. For data collectors, three consecutive half day training on the objective of the study, data collection method, and the tools used for data collection were given. A pre-test was done in a population in a similar context but not included in the actual study. The collected data were checked for completeness and consistency daily. After checking the completeness of data, SPSS version 21.1 was used for data entry and statistical analysis. Further data cleaning was performed by reviewing the results of frequencies and percentages to examine data inconsistencies, missing cases, and outliers.

The reliability and inter-correlation of each item were checked using Cronbach's alpha coefficients. The coefficients have an acceptable value of 0 to 1;0.7 or higher is a benchmark for items' internal consistency, but in empirical studies, a value of 0.6 or above is acceptable (Oliver 2013). Thus, in this study, Cronbach's Alpha coefficient value was 0.81, which provided evidence that the scale component is sufficiently inter-correlated.

Both descriptive and inferential statics were done. To examine the relationship between predictor and outcome variable, the Chi-square test for each job satisfaction item by regulatory health professionals' socio-demographic characteristics was performed. The variables with statistically significant associations were selected and analyzed. For further analysis logistic regression analysis were used. After binary logistic regression analysis, the p value less than 0.25 were segregated and inserted in to SPSS software for multivariable logistic regression computation.

For this study the prevalence of job satisfaction was measured by using percent mean formula. First, we computed the score of each variable for each respondent. Then, the average scores of each variable for each respondent were calculated. At the end, the mean of means was performed (Kirigia & Kirigia 2011; Dagget *et al*. 2016; Deriba et al. 2017; Merga & Fufa 2019)**.** For this survey, sixteen item with5-point Likert scale items was performed. The minimum and maximum expected potential response for sixteen items of 5-point Liker scale items was 16 and 80 respectively. When we combined the scores of the 5-point Liker scale items, the actual computed value was 45.9891 (SD$\pm$ 8.56043)

This formula look likes in this way. That is actual computed mean value minus potential minimum divided by potential maximum minus potential minimum.

Finally, percent

$$\text{Mean formula} = \left\{\frac{\text{Actual computed mean value} - \text{potential minimum score}}{\text{potential maxscore} - \text{potential minimum score}}\right\} \times 100$$

Confidence interval of the sample $= \bar{x} \pm z\alpha/2 \times \frac{\text{standard deviation of sample}}{\sqrt{\text{sample size}}}$

$$CI = 45.9891 \pm 1.96 \times \frac{8.56043}{\sqrt{275}}$$

And also to do further analysis, the general satisfaction level was measured by using average score vale as a cut of point of a respondents. Job satisfaction for regulatory health workers, those with average scores below the mean score were classified as unsatisfied, while those with average scores above the mean score were classified as pleased. (Mekuria Mengistu 2015; Gedif *et al.* 2018).

4.8 Ethical consideration

Ethical clearance was obtained from the Research Ethics Committee of the School of Pharmacy, College of Health Sciences of Addis Ababa University. Official permission and supportive letter was written from the Department of Pharmaceutics and Social Pharmacy to the respective organizations and also data collection permission was secured from Addis Ababa Food, Medicine and Healthcare Administration and Control Authority, Sub-cities' health office, and the district's health offices. Verbal consent from each participant was obtained after explaining the purpose of the study. The right of participants to refuse or not to respond to questions they do not feel comfortable with or discontinue participation at any time was ensured. Confidentiality was maintained by not writing the name or personal identifiers on the questionnaire, and information was recorded anonymously.

4.9. Study variables

4.9.1. Independent variable

Age, sex, marital status, the field of study, level of education, working unit, level of working institution, and length of service in the health regulatory field.

4.9.2. Dependent variable

Level of job satisfaction

4.10. Operational definition of terms

Health care product: Products that delivered for the customers either in clinical oriented way or naturally desired way for the patient that needs to be regulated in scientific way.

Health regulatory professionals means health professional who work in regulatory affairs sector on regulating and controlling of medicine, food safety, health institution and health professionals in their working area.

Health regulatory workforce: human resource for regulatory science or regulatory affairs field.

Health System: Refers to all organizations, human, non-human resources, and actions whose fundamental role is promoting, preventing, and restoring or sustaining health.

Job satisfaction: an individual‘s judgment about the extent to which the job provides a pleasurable level of fulfillment or the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs.

Professional variety: Deploying and distributing of different health profession studied professionals in specific regulating unit.

‘Regulatory affairs’ means the application of already defined regulatory principles and guidelines to drug development or drug life cycle, in controlling of food safety ,in monitoring and controlling of health professionals and health institutions.

5. RESULT

In this study, two hundred eighty three self-administered questioners were distributed to regulatory health professionals who were working in Addis Ababa. Of 283 participants, 275 filled out the questionnaire and made a response rate of 97.2%. Out of the total 275 respondents, 146 (53.1%) were male, 129(46.9%) were female, and the mean age of the participants was 30.88 (±4.33), ranging from 21 to 49.

Majority of the study participants that were worked in the regulatory health field were public health professionals 109(39.6%), and the rest were environmental health 85(30.9%), pharmacy professionals 34(12.4%), nurses 22(8%), laboratory professionals 17(6.2%), and health nutrition professionals 8(2.9%).

In terms of education, 222(80.7%) were with BSc degree holders, followed by MSc degree 47(17.1%), while the rest 6(2.2%) were diploma holders in the health field. In this study, among 17.1% of MSc holders, MSc in public health, environmental health, and pharmacy were 12.36%, 3.6%, and 1.09, respectively. However, during this time masters' degree holders in Health Regulatory Science field was none.

The minimum, maximum, median and mean of professional years of experience in regulatory health field were 1, 16, 5 and 5.51 (SD=2.55) years respectively. Also, around fifty five percent of participants had work experience less than 5 years, 106 (38.5%) of respondents were work experience between 5 -10 years and only 19(7%) of participants had health regulatory job experience >10 years (Table 1).

Table 1: Socio-demographic characteristics of study participants, human resource health regulatory Affairs in Addis Ababa, Ethiopia, 2021 (N = 275)

Socio Demographic Characteristics	Frequency (percentage)
Age in years	
20 -29	118 (42.9%)
30 - 39	146 (53.1%)
>40	11 (4%)
Total	275 (100%)
Gender	
Male	146(53.1%)
Female	129 (46.9%)
Respondents regulatory work experience in years	
<5 years	150 (54.5%)
5 - 10 years	106 (38.5%)
>10 years	19 (7%)
Current profession	
Pharmacy	34(12.4%)
Nurse	22 (8%)
Public Health	109 (39.6%)
Medical laboratory	17 (6.2%)
Environmental Health	85 (30.9%)
Health nutrition	8 (2.9%)
Educational level	
Diploma	6(2.2%)
Bachelor Degree	222(80.7%)
Master's Degree	47(17.1%)
Marital status	
Single	116 (42.2%)
Married	151 (54.9%)
Divorced	1518 (2.9%)
Type of health facility	
AA central FMHACA	30 (11%)
AA sub-city level FMHACA	84 (30.5%)
AA woreda level FMHACA	161 (58.5%)
Current working facility/unit	
Health facility license issue and qualification	53 (19.3%)
Health Institution and professional inspection and qualification	93 (33.8%)
Health professionals' license issue team	27 (9.8%)
Food institution inspection and qualification team	102 (37.1%)

5.2: Regulatory health professionals variety

When we see the professionals' variety in three level of Addis Ababa FMHACA, a majority number of public health officers were assigned for regulatory functions at the woreda level. In similar way a majority number of environmental health professionals were deployed at word level of Addis Ababa food medicine and health care administration and control office. At Sub city level of Addis Ababa FMHACA, a higher number of environmental health professionals were assigned.

The number of current employed pharmacy professionals in three levels of Addis Ababa food, medicine and health care administration and control authority was very few compared with environmental health professionals or public health officers. This finding depicted that the total number of pharmacy professional allocated in regulatory health field was suboptimal.

In general when comparing the total number of regulatory health professionals variety in three level of health service and health product regulating center, there are a few number of pharmacy professionals, medical laboratory professionals and nurse.

Overall finding, indicated that the regulatory health professionals' variety in randomly selected five sub cities of Addis Ababa revealed that there were unequal distribution of educated health professionals from all respective health fields (see figure 2) .For further information look at annex III

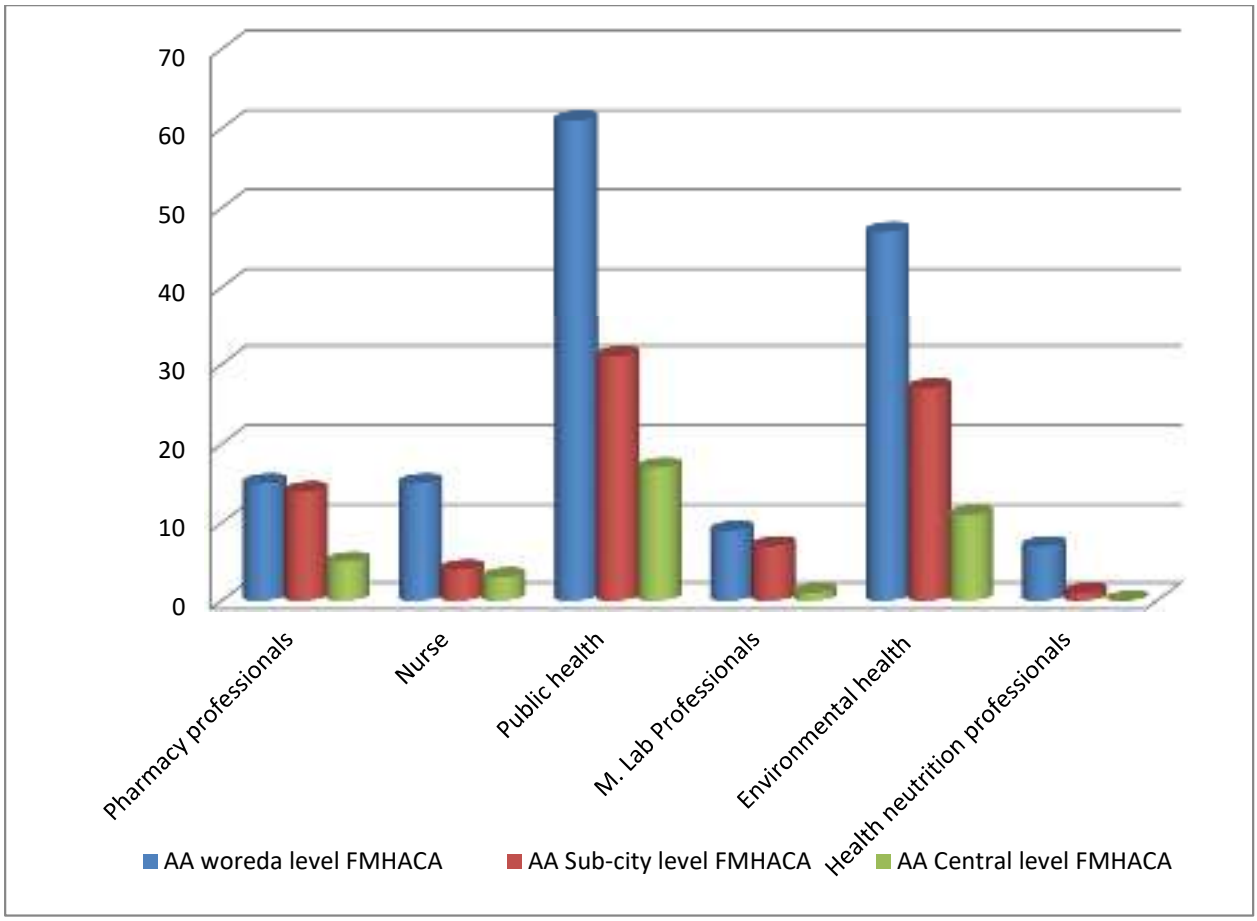


Figure 2: Health profession variety in randomly selected sub-cities and woreda level of Addis Ababa, FMHACA 2021

5.3: Job satisfaction of regulatory health professionals, Addis Ababa FMHACA, 2021

In this study for the analysis of job satisfaction of regulatory health professionals, there were sixteen items were used. From sixteen job satisfaction items, relation with colleague indicated high proportion of job satisfaction .That was 48 % of job satisfaction and 24% of very high job satisfaction followed by amount of a given responsibility with 45.9% of job satisfaction and 8.9% of very satisfied job record. In similar way, the chance to tell people what to do has 111(40.4%) were satisfied while 66(24%) were dissatisfied and 17(6.2%) were very dissatisfied. In contrast, the way institutional policy were put into practice had 50.9% of job dissatisfaction

score with 16.4% of very dissatisfied job score was recorded followed by 50.2% of dissatisfied score of advancement chance in this field with 13.8% very high dissatisfied score was responded. Level of satisfaction to work payment and staff work load indicates that, 45(16.4%) and 61(22.2%) of respondents were satisfied respectively while, in similar result 113(41.1%) of respondents were dissatisfied. Only 10(3.6%) of participants responded that they were very satisfied with their co-worker competence in making scientific decision whereas 37(13.5%) and 103(37.5%) were very dissatisfied and dissatisfied respectively.

On the other hand, 41.1% of respondents were dissatisfied with their work payment and around fifty percent of the participants were dissatisfied with the current way of institutional policies that were put in to practice and the chance on advancement on this job. Satisfied and very satisfied level of participants response for a physical work place condition implies 86(31.3%) and 24(8.7%) respectively while, 54(19.6%) of respondents dissatisfied and 24(8.7%) very dissatisfied) level of job satisfaction was reported. For further information look at (Table 2)

Table 2: Frequency and percentage of each item of Job satisfaction among Regulatory Affairs health professionals working in Addis Ababa, Ethiopia, (N=275)

VD=very dissatisfied, D=dissatisfied, N=neutral, S=satisfied, VS=very satisfied

	VD (%)	D (%)	N (%)	S (%)	VS (%)
Physical working conditions	24(8.7)	54(19.6)	87(31.6)	86(31.3)	24(8.7)
Freedom to choose your own method of working	27(9.8)	76(27.6)	60(21.8)	94(34.2)	18(6.8)
colleague relationship	11(4)	28(10.2)	38(13.8)	132(48)	66(24)
Recognition you get for good work	29(10.5)	76(27.6)	67(24.4)	80(29.1)	23(8.4)
Amount of responsibility you are given	17(6.3)	43(15.9)	62(23)	124(45.9)	24(8.9)
Your payment for your work (remuneration)	57(20.7)	113(41.1)	53(19.3)	45(16.4)	7(2.54)
Your work load and staffing	40(14.5)	113(41.1)	51(18.5)	61(22.2)	10(3.6)
Amount of variety in your job (scope of practice	21(7.6)	72(26.2	84(30.5)	88(32)	10(3.6)
The competence of your colleague in making decisions	37(13.5)	103(37.5)	44(16)	81(29.5)	10(3.6)
Convincing of scientific reality of the issue	19(6.9)	112(40.7)	51(18.5)	87(31.6)	6(2.2)
The chance to tell people what to do	17(6.2)	66(24)	61(22.2)	111(40.4)	20(7.3)
Being able to do things that don‘t go against my conscience	16(5.8)	85(30.9)	63(33.8)	64(23.3)	17(6.2)
The feeling of accomplishment I get from the job	22(8)	93(33.8	67(24.4)	83(30.2)	10(3.6
The way institutional policies are put in to practice	45(16.4)	140(50.9)	39(14.2)	40(14.5)	11(4)
The chance on advancement on this field	38(13.8)	138(50.2)	52(18.9)	39(14.2)	8(2.9)
Over all current satisfaction	49(17.8)	127(46.2)	15(5.5)	79(28.7)	5(1.8)

To measure the result of job satisfaction items, the five point likert measuring scales were used. Based on this finding, the result of this study indicated that the majority of job satisfaction scales were below the average measuring score. Items that scored below the average value were way of institutional policy in practice, work payment, chance on advancement on this job, work load and staff adequacy, co-worker competence,

convincing of scientific reality of the issue, job accomplishment felling, respecting job ethics and recognition. Items that scored highest job satisfaction were co-worker relation, amount of a given responsibility and chance to tell people what to do. Look at (figure 3).

When we look at the work payment and workload concerning staff adequacy, each result implies 61.8% and 55.6% of job dissatisfaction respectively, but the mean score was 2.4145±1.20331, 2.6±1.09475 respectively.

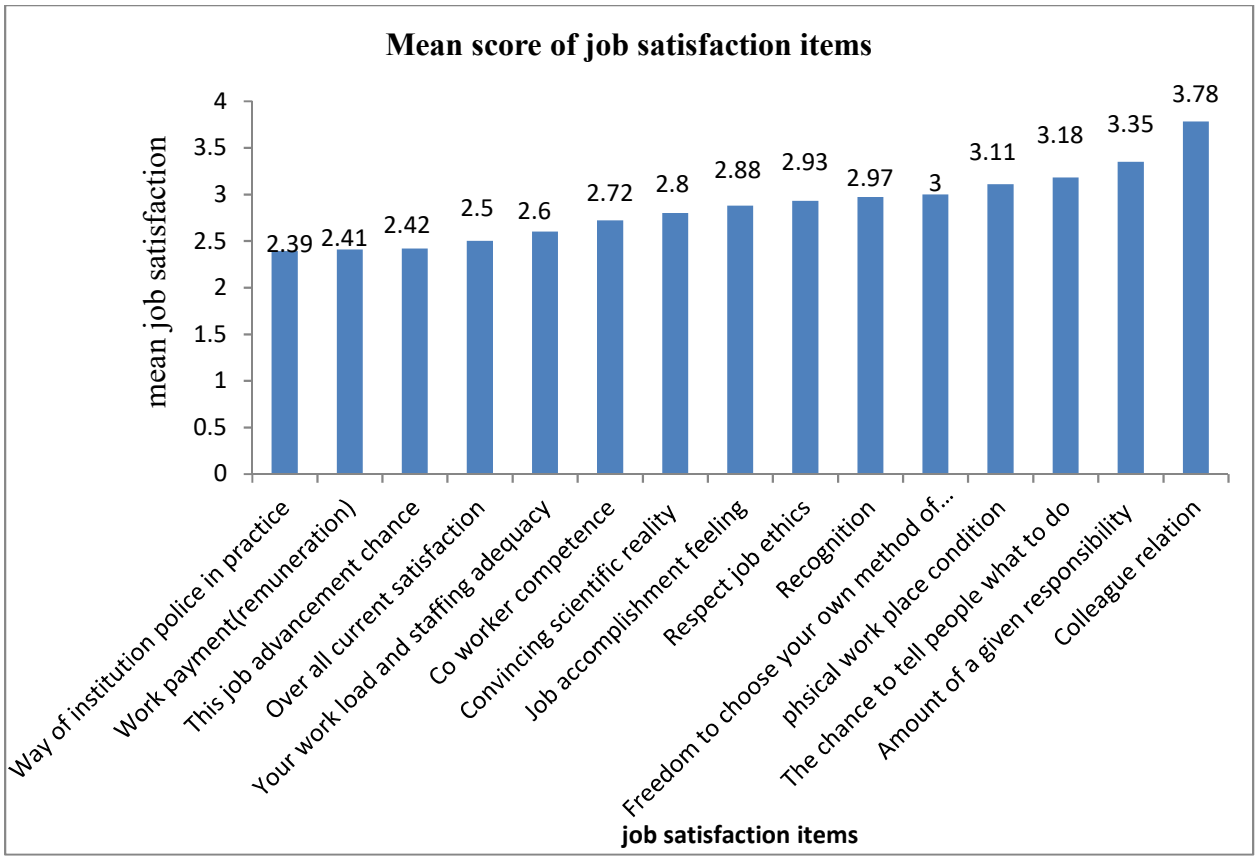


Figure 3: Diagrammatic representation of each job satisfaction mean score

Satisfaction according to profession field of the study indicated that, nearly two third of pharmacy professionals reported that they were dissatisfied to their job. While, only 32.4% of pharmacy professionals who were worked in Addis Ababa FMHACH were satisfied. In case of public health professionals and environmental health staffs, around fifty percent of the respondents were satisfied to their job. More than half percent of nursing professionals were reported that they were dissatisfied with their job. However, the highest dissatisfaction was among medical laboratory staffs (82.4%). (Look at Table 3)

Table 3: job satisfaction of regulatory health professionals

Profession	Satisfied	Dissatisfied
Pharmacy	11(32.4%)	23(67.6%)
Nursing	9(41%)	13(59%)
Public health	53(48.6%)	56(%51.4)
Medical laboratory	3(17.6%)	14(82.4%)
Environmental health	48(56.5%)	37(43.5%)
Health nutrition	5(62.5%)	3(37.5%)
Total	146(53.1%)	129(46.9%)

5.4: Computed proportion ratio of regulatory health professional job satisfaction.

By using the percent mean formula, 46.86% (95% CI :(44.97 ------47.01) of the regulatory health professionals were satisfied in their job.

Regulatory professionals work experience <5 years, thirty seven percent of respondents were satisfied with their job respectively. Nearly equal percent of job satisfaction from regulatory professionals work experience five years up to ten years and more than 10 years were reported. Majority of participants work experience <5 years were dissatisfied in their job. Among professionals work experience <5 years, 5-10 years and >10 years respectively 63%, 42%, 37% were dissatisfied in their job. See figure 4

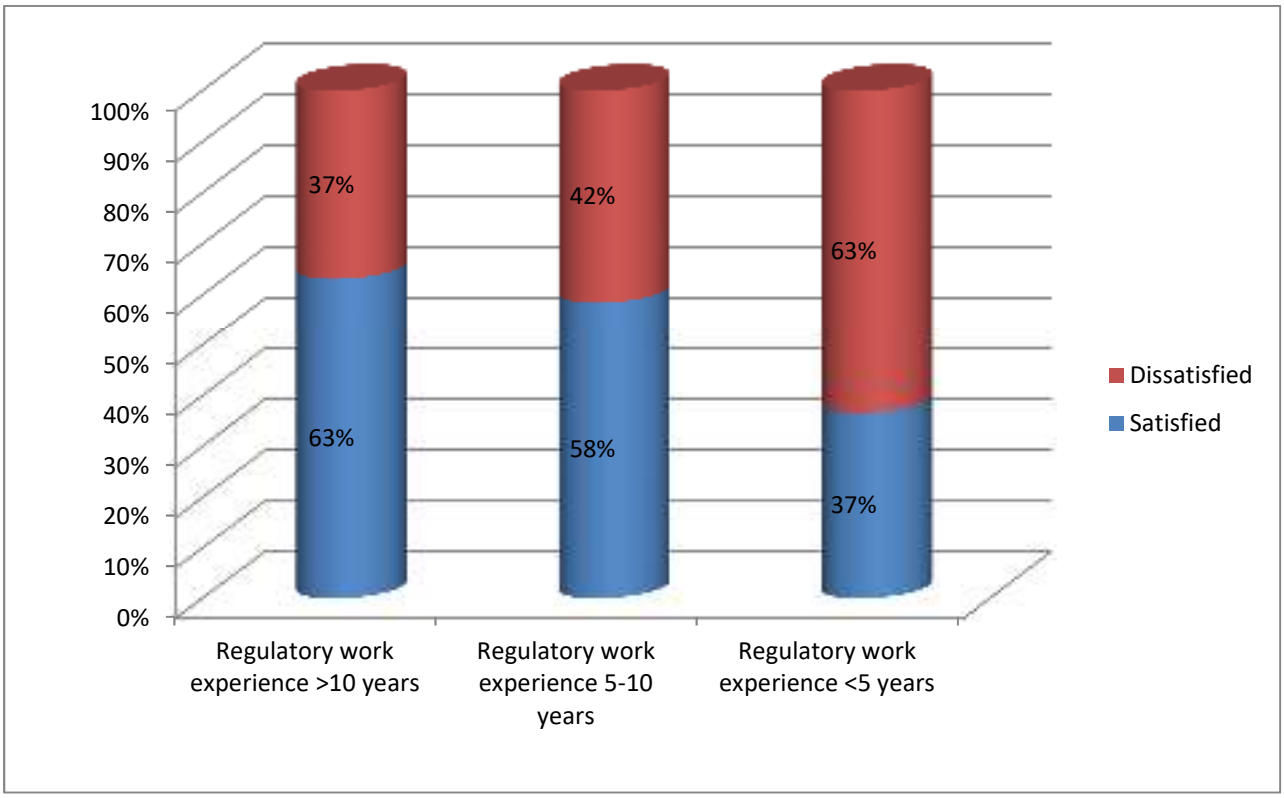


Figure 4: diagrammatic representation of work experience vs. job satisfaction

There is no multicolliniarity problem between the predictor variables because the Variance influencing factor (VIF) was less than 5 and the Tolerance of independent correlation was above 10 percent.

Eigen values provide an indication of how many distinct dimensions there are among the independent variables. When several Eigen values are close to zero then the variables are highly Interco related and small change in the value may lead to large change in the estimation of the coefficients. Hence, the Eigen value of this analysis was not close to zero values and this indicates that there was no significant multicolliniarity issue. And also in this analysis, the Condition index value was less than 15 and this implies that there was no multicolliniarity problem between the independent variables (Table 4).

Table 4: Collinearity Diagnostics[a] and Coefficients[a]

Model	Eigen value	Condition index	Collinearity Statistics	
			Tolerance	VIF
Regulatory professionals work experience	8.899	1.000	0.779	1.283
Work institution/facility	3.048	5.059	0.840	1.190
Current work department/unit	2.029	6.230	0.817	1.224
Studied field	1.163	7.381	0.791	1.316
Marital status	0.99	9.490	0.854	1.172
Gender	0.76	10.833	0.911	1.098
Age of respondents in years	0.68	11.444	0.725	1.379
Participated in CPD training in last 12 month	0.64	11.773	0.961	1.04
Level of education completed	0.45	14.043	0.908	1.101

a. Dependent Variable: Job satisfaction score

5.5 Logistic regression analysis of job satisfaction with candidate multivariable analysis

A logistic regression was performed to assess the factors that likelihood influenced the respondents' job satisfaction. The candidate multivariable that likelihood affect job satisfaction were gender, regulatory work experience, qualification/field of study, education level, level of FMHACA in Addis Ababa, work facility unit/department, participation in continuous professional development activity in last 12 month.

Being male had a higher odds of satisfaction 2.86 as compared to female participants [(AOR=2.86, CI (1.76, 4.64)]. In terms of work experience, those who stayed in health regulatory field less than 5 years were odds ratio of 0.25 times less satisfied than professionals work experience >10 years [(AOR =0.25 (0.09, 0.67)].

Environmental health professionals who worked in regulatory health sector in Addis Ababa were more likely satisfied than pharmacy professionals [AOR=2.86 (1.24, 6.60)]. However, there was no statistical significant difference between in level of education in regulatory health field (Table 5).

Regulatory health professionals who were worked in different work facility had statistically significant association with their job satisfaction.

Adjusted odds ratio result of regulatory health professionals who were worked in different work department indicated less likely satisfied in their job than the professionals who were worked in food institution inspection and qualification unit. However, there was no statistical significant difference between in different level of FMHACA in Addis Ababa.

Professionals participated in continuous professional development activity in last 12 months were odds ratio of 2.75 times more likely satisfied than regulatory professional who were not participated CPD activity in last 12 months [AOR=2.75 (1.690,4.473)].

Table 5: Bivariate and multivariate analysis to identify factors associated with job satisfaction in health regulatory field Addis Ababa, Ethiopia 2021 (n=275)

Variables	Categories	Job satisfaction		COR (95% CI)	AOR(95% CI)
		Satisfied	Dissatisfied		
Gender	Male	82	64	2.23 (1.37, 3.63)*	2.86 (1.76,4.64)
	Female	47	82		**1a**
Work experience	<5 years	55	95	0.34 (0.13,0.87) *	0.25 (0.09,0.67) *
	5- 10 years	62	44	0.82 (0.29,2.25)	
	>10 years	12	7		**1a**
Field of study	Pharmacy	11	23	**1a**	
	Nurse	9	13	1.447 (0.475,1.509)	
	Health officer	53	56	1.98 (0.88,4.45)	
	Laboratory	3	14	0.45 (0.106,1.89)	
	Environmental health	48	37	2.71 (1.17,6.26) *	2.86 (1.24,6.606*
	Health nutrition	5	3	3.48 (0.701,17.29)	
Level of education	Diploma	2	4	**1a**	
	Degree	100	122	1.64 (0.29,9.14)	
	MSc/Mph	27	20	2.7 (0.45,16.22)	
FMHACA Work level	Level i	19	12	**1a**	
	Level ii (Sub-city)	50	42	0.75 (0.34,1.73)	
	Level iii (woreda)	60	92	0.41(0.18,0.91) *	0.363 (0.16,0.80) *
Work department/ Unit	Work facility i	12	41	0.17(0.078,0.356) *	0.17(0.078,0.356) *
	Work facility ii	42	51	0.47 (0.26,0.83) *	0.47 (0.26,0.83)
	Work facility iii	10	17	0.34 (0.14,0.81) *	0.34(0.14,0.81) *
	Work facility iv	65	37		**1a**
Professional training	Participated CPD training in last 12 month	79	56	2.54 (1.56, 4.13)*	2.75 (1.69,4.47)
	Not participated in CPD in last 12 month	50	90		**1a**

1a=indicate for reference category, *******significant association at p value of <0.05*

Work facility i *indicates health facility license issue and qualification*

Work facility ii *indicates health Institution and professional's inspection and qualification*

Work facility iii *indicates health professionals license issue*

Work facility IV *Food institution inspection and qualification*

Level i *indicate Addis Ababa central level FMHACHA*

5.6 Participated in continue professional development training

Nearly five out of ten regulatory professionals (49%) reported that they were engaged in continuous professional development activity in the past 12 month. Sixty percent of male respondents and 40% of female respondents were participated in professional development training. From work experience <5 years, 86 (50%) of participants were engaged in professional development training.

When interpreting of Odds ratio in logistic regression analysis, male respondents were odds ratio of two times high likely participated in continuous professional development activity in last 12 month than female respondents. Whereas compared with regulatory professionals work experience < 5 years, professionals work experience >10 years were odds ratio of nearly four times high likely participated in continuous professional development training in the last 12 months [AOR=3.68 (1.03,13.17)].

Whereas, compared with environmental health field studied professionals, pharmacy professionals were less likely engaged in continuous professionals activity in last 12 month than environment health professionals [AOR=0.253 (0.024,0.075)]. In case of qualification level, diploma holders were less likely involved in continuous professional development training than second degree holders in health regulatory field Addis Ababa [AOR= 0.09 (0.02,0.59)].However, there was no statistical significant association with Addis Ababa FMHACA level, FMHACA working unity age of respondents and marital status of respondents. (Look at table 6)

Table 6: Bivariate and Multivariate analysis to identify factors affecting participation in CPD activity in health regulatory field Addis Ababa, Ethiopia 2021(n=275)

Variables	Categories	Participate CPD in last 12 month		COR	AOR
		Yes	No		
Gender	Male	90	56	**1.85 (1.14, 2.98)***	**2 (1.24,3.23) ***
	Female	60	69	1a	**1a**
Regulatory work experience	Work experience <5 years	86	64	**1a**	**1a**
	5-10 years	70	36	1.447 (0.863,2.424)	
	>10 years	16	3	**3.97 (1.13,14.42) ***	**3.68 (1.03,13.17)**
Field of study	Pharmacy	9	25	**0.19 (0.08, 0.05) ***	**0.253 (0.024,0.075) ***
	Nurse	11	11	0.65 (0.21, 1.40)	
	Health Officer	70	39	0.98 (0.54,1.78)	
	Laboratory	9	8	0.61 (0.21, 1.78)	
	Health nutrition	5	3	0.909 (0.269, 4.069)	
	Environmental health	55	30		**1a**
Level of education	Diploma	2	4	**0.09 (0.02,0.59) ***	**0.09 (0.02,0.59) ***
	First Degree	141	81	0.31 (0.13,0.73	
	MSc/MPH	39	7	**1a**	
FMHACA work level	Level i	90	62	0.348 (0.135,0.898) *	0.29 (0.113, 0.756) *
	Level ii	71	21	0.405 (0.147,1.12)	
	Level iii	25	6	**1a**	
Work Department/Unit	Work facility i	36	17	1.31 (0.65, 2.68)	
	Work facility ii	59	34	1.074(0.60,1.92)	
	Work facility iii	17	10	1.05 (0.44,2.53)	
	Work facility iv	63	39	**1a**	

1a**=indicate for reference category, ***significant association at p value of <0.05

***Work facility i** indicates health facility license issue and qualification*

***Work facility ii** indicates health Institution and professional's inspection and qualification*

***Work facility iii** indicates health professionals license issue*

***Work facility IV** Food institution inspection and qualification*

***Level i** indicate Addis Ababa central level FMHACHA*

5.7. Intentions to Change Work-life

Table 7 indicates that more than half percent (53.5%) of the participants were reported that they had high likely intention of them to leave the current area of practice within the coming years and around 40.1% and 28.7% of respondents respectively were not likely and less likely that they would reduce work hour, but only 13.6% of participants were high likely to reduce hours of work in next years (look at next table 9).

Table 7: Regulatory health professionals likelihood of work-life change within the coming years (row %), N = 275*, Addis Ababa, Ethiopia, 2021.

Item	Not likely	Less likely	Likely	High likely	Very high likely
Leave your current area of practice	7.3%	8%	31.2%	38.2%	15.3%
Reduce work hour	40.1%	28.7%	17.6%	10.7%	2.9%
Leave the profession altogether	29.8%	22.9%	21.2%	19.6%	6.5%

5.8. Regulatory health professionals Likelihood of work-life change within the coming years by years of work experience and area of practice, Ethiopia, 2021.

Work experience years of regulatory health professionals were analyzed to evaluate if it had an impact on the decision of work-life plan within the next years. The result implied that regulatory health professionals work experience less than 5 years were highly significant that they could leave the current area of practice with in next two years with p value ($x^2 = 18.49, p < 0.008$), but as work experience years increase both the likelihood of leaving current area of

practice with complete left out of the profession was not significant. Regulatory health professionals with work experience 5-10 years' were significantly more likely reported a strong likelihood of leaving the current sector of practice than RHP with more than 10 years of experience with p value (x^2=12.96, p<0.001).work experience greater than 10 years had no intention to altogether leave profession.

In this study, for different level of FMHACA professionals in Addis Ababa, the post hock cross tabulation analysis of regulatory health professionals plan to change work-life within next years indicated that, it were high likely significant to leave the current area of practice. Whereas, with regard to working time, there was no significant intention of reducing work time. According to age of participants, gender, marital status, studied field and level of education, by using a Chi-square tests at 5% level of significance for different level of regulatory health professionals plan to change work-life within the next years indicated that there was no significant difference.

Analysis of plans to change work life from current working unit /department with in the coming years for regulatory health professionals revealed that, regulatory health professional working on health facility license issue and qualification of health profession indicated that they were significantly highly likely to leave the current working unit (x^2= 17.642, P < 0.001) and they were less likely to report a strong likelihood of leaving the profession within the next two years.

5.9: Regulatory health profession main reasons to change work life

During data collection period, presented regulatory health professionals survey indicated that they would leave the profession were asked about their main reasons for such decision. In this survey more than half percent 155 (56.4%) of regulatory health professionals analysis reported job dissatisfaction and next role ambiguity, others reason and to take rest were 56 (20.4%), 37 (13.4%), 27(9.8%) respectively as main driving force for leaving the profession.

Table 8: RHP Main reason to change work area in the next two years

Item	Number of response in %
Job dissatisfaction	155 (56.4%)
To retire	27 (9.8%)
Role ambiguity	56 (20.4%)
Others reason*	37 (13.5%)

Others reason* to change work area, for better work opportunity, to start their own business, uncomfortable work area, unsatisfactory payment

The high number of qualified employment turnover intention from present working area among regulatory health profession at health care facilities could be negatively affect health care system and staff retention. In order to keep these qualified health professionals in their current position, understanding their internal interests and striving toward better options is advised. Hence, in this survey almost 82% of participants recommended increase in salary with benefit package and 177 (64.4%), 173 (62.9%), 148 (53.8%) respectively were recommended improved continuous professional development opportunity, better working condition and better career development opportunities should be improved as a means to motivate regulatory health professionals to retain in their present area of practice and not to leave the profession (Table 9).

Table 9: Recommendation forwarded to retain regulatory health professions within their current working area of practice Addis Ababa, Ethiopia, 2021.

Item	N (%)
Increase in salary and benefits	225 (81.8%)
More variety in job (widening job scope)	58 (21.09%)
Better working conditions	173 (62.90%)
Better career development opportunities	148 (53.81%)
Recognition of achievements and contribution	60 (21.8%)
Improved continuing professional education opportunities	177 (64.4%)
Closer working relationships with other healthcare professionals	48 (17.45%)
Fair and equal treatment among professionals	68 (24.72%)
Others**	72 (26.18%)

*Since a single person can make up to three suggestions, the total percentages are larger than 100%.

Others** renewed and modified legal frame work to be given for institution employer, up dated training opportunity, solving of role ambiguity, providing of motivational benefit package, launching of institution based world wide web site

5.10: Challenges anticipate in full implementation of regulatory activity

For improving of health system, strengthening regulatory health capacity is a mile stone option. Now days this regulatory health system faced multiple challenges. From this challenges scarcity of skilled workforce, insufficiency of finance, lack of infrastructure and professional willingness/resistance are the most common notified challenges. In this survey 182 (66.2%) of

the respondents reported that insufficiency of finance was the most frontline challenges of the health regulatory system in Addis Ababa food, medicine and health care administration and control authority followed by 154 (56%) of responded on lack of trained man power shortage in health regulatory service. In similar way lack of sufficient infrastructure availability, and non-willingness of regulatory health professionals were 87 (31.6%) and 40 (14.5%) respectively the most common challenge reported by survey participants (see table 10).

Table 10: Anticipated challenges in full implementation of regulatory activity

Item	N (%)	
	Yes	No
Lack of trained man power	154(56%)	121 (44%)
Insufficiency of finance	182 (66.2%)	93 (33.8%)
Lack of infrastructure	87 (31.6%)	188 (68.4%)
Professional resistance	40 (14.5%)	235 (85.5%)
Overall capacity of FMHACA	148 (53.8%)	127 (46.2%)
Other challenges	103(37.45%)	

Other challenges are…lack of clear web site address, poor documentation strategy, unfair treatment among professionals and team leaders, lack of satisfactory attention through government, unequal treatment of customer, corruption, some professionals neglecting of rule and procedure and work based on their practice, lack of professionals based assigning of institutional leaders, lack of continue professional development training, lack of professionals commitment.

6. DISCUSSIONS

A health service system to be a productive, it needs a better regulatory service. For better regulatory service, skilled human resource is a vital component. Good regulatory health service dependence on quality, regulatory framework, a needed professional variety, and strength of health system. A health service can also advance by moving one step further with the help of qualified and happy health workers.

This study identified major regulatory health cadres' variety who involved in regulation of health care service in Addis Ababa

This study identified major regulatory health cadres' variety who involved in regulation of health care service in Addis Ababa. Around 40% and 31% of the health regulatory professionals were health officers and environmental health professionals respectively. However, only 12.36% of pharmacy professionals have been deployed into Addis Ababa health regulation sector. Even, most regulatory professionals are graduates in common health science field; it has a variation in course they got from university. That means, rather than public health professionals and environmental health professionals, pharmacy professionals have took almost 100% course related with pharmacy practice and pharmacy system. This result suggests that public health and environmental health professionals might have a gap on ability to tackle data in a wide range of pharmacy unit, and the lack of pharmacists may make the job more difficult. Such like unrelated field professionals going to inspect drug outlets. Some of the respondents said that "because of pharmacy professionals' shortage we shared pharmacists from another institution centers or woredas". Rather deploying of the required professionals, temporary borrowing from another center does not help the regulation system to be productive as expected.

In light of its beneficial effects on employee relations, productivity, physical and mental health, and life happiness, job satisfaction is crucial to an organization. A person's level of productivity is positively correlated with how happy they are at work; on the other hand, unsatisfied people result in lower productivity, lower-quality healthcare, and higher levels of burnout among healthcare professionals. This study attempted to assess job satisfaction of regulatory health professionals working in Addis Ababa. The result of this study job satisfaction analysis value indicated that regulatory health professionals working in Addis Ababa were less satisfied with their present work.

Job satisfaction value for each item in table 2 depicted that the regulatory health cadres in various rates. They revealed that the regulatory health-care workers were reported with the highest level of satisfaction was reported 198(72%) for the relation with colleague and fellow professionals. This finding was consistent with the study done by Geleto *et al*(2015) in Harar region Ethiopia. This was followed by the amount of a given responsibility, the chance to tell people what to do, and the physical working condition, giving mean scores of 3.35 (±1.05), 3.185 (±1.073) and 3.1164 (±1.095), respectively.

This study tried to look at the mean score percent of aggregated job satisfaction of regulatory health workers based on the sixteen sub scales of satisfaction questions using the percent mean formula **Dagget, Molla and Belachew, (2016)**. This revealed that below fifty percent (46.86%) of respondents were satisfied with their job

The present study depicted that the aggregated mean score level of job satisfaction was below fifty percent (46.86%). This finding was slightly comparable with 44.2% of participants were satisfied at study conducted in Harare region (Geleto *et al.* 2015). In similar way below half percent (46.17%) of participants were satisfied at study done in Ethiopia (Girma *et al.* 2021)**.**

Whereas, this finding is inconsistent with similar study done in Jimma zone public Hospitals Semachew *et al.,* (2017), West Amara region Temesgen *et al.,* (2018), Bale Zone Public health facility Merga & Fufa (2019), in three regions located Eastern part of Ethiopia (Ayele *et al*., 2020) respectively of 33.5%, 31.7%, 38.2%, and 32.7%.This discrepancy might be because the previous studies were mainly rural based while the present one more focused in urban area.

But our finding is lower than study reported in India Sharmista *et al.*, (2016) , in France Carrillo-García *et al.*, (2013) respectively of 59.6%, and 72.7% of their job satisfaction value. The possible reason for this difference could be due to the difference in economic status and organizational setup of the health system.

To depict the impact of regulatory professionals work experience on leaving of the professionals from the present working area in the coming period depicted that there was significant association with regulatory professionals work experience less than five years with p value of (**x^2 =18.49,p<0.001);** this finding was similar to study done by scholars (Khamlub *et al.,* 2013; Gesesew *et al*., 2016) .On the contrary, there was no significant difference on the increasing of regulatory work experience with the leaving out from the current work area and complete left out of the profession altogether.

The results obtained from regression analysis confirmed that the regulatory professionals work experience less than five years were less satisfied as compared with professionals work experience greater than 10 years. [(AOR =0.25 (0.09, 0.67)]. Our findings was, in line with the findings of studies conducted in Western Amhara region (Temesgen et al. 2018).

In present survey around 53.5% of participants were reported that they were high likely to leave the current working area in the coming period. Consistently 61.1% of respondents have future plane to leave from current work place (Alemshet Yami et al. 2011). Similarly the studies which

was done by investigator (Bonenberger et al. 2014) reported that high proportion (69%) of health professionals have intention to leave the current work facility.

To retain health workforce in their work area, dig out and solving of their main reason why not be interested to retain in their previous work place is a preferred strategy. In this survey more than fifty percent (56.4%) of respondents were agreed that their main reason of staff burnout was job dissatisfaction. This finding was similar with studies done by different scholars

In the coming period in order to develop a modern, efficient, and effective regulatory system, beside capacity to translate legislative frame work in to practice; working on development of resource and technology capacity, collaboration with stakeholders, ensuring customer transparency and timely response on health system change is expected pillar (Benton 2017). But, the Ethiopian health service regulation system and regulatory health professionals' faced scarcity of well-trained man power, infrastructure, budget, technology and partial implementation of regulatory framework. (FDA Ethiopian 2019; Ethiopia Government 2014).

Even today regulatory health system in Ethiopia particularly in Addis Ababa shows a little bit improved because of delegation of regulatory authority with Federal FMHACA proclamation No 661/2002 article 55 sub articles 2 to regional heath bureau, still the regulatory health system in Addis Ababa faced multifarious and varied challenge.

According to this survey the main front line challenge of regulatory health system in Addis Ababa was scarcity of finance, lack of adequate trained regulatory health workers, adequate health service transportation facility and non-willingness of regulatory health professions to perform their mission, lack of uniform data transmission from district level up to central level in one electronic data site. In similar way regulatory health professionals' access data were not

networked well and their weak capacity was supported in similar studies done in Ethiopia (Dejene *et al.* 2019).

An adequate number of qualified and experienced professionals are a foundation for building and running a robust regulatory health system. However, the majority 184(66.9%) of the participants mentioned that there is a lack of adequate number, appropriately trained and skilled expertise in expected area that may further sophisticated the regulatory health system not to be progressed one step ahead of expected one. To progress the regulatory health activity, working on improvement of the front line challenges that faced in present regulatory authority area is recommended. To get needed data lack of institutional based official web site was one of the reported challenges in Addis Ababa FMHACA. To solve this issue most of the participants recommended establishing of institutional based clear web site address.

6.1 Limitation and strength of the study

6.1.1 Strength

- ✓ The study included adequate number of sample size and use different sampling techniques

Limitation

- ✓ This quantitative survey was not supplemented with semi structured interview
- ✓ This study may have a possibility of under or over reporting of the level of job satisfaction
- ✓ This study was designed as a cross-sectional study of regulatory health worker professionals' variety, job satisfaction and turnover intention, and thus provides only a snapshot of health workers' perspectives at one point in time.
- ✓ Because of cross-sectionals study design nature, establishing of a true causal relationship between job satisfaction and job determinates with turnover intention would be impossible
- ✓ Therefore, cause and effect relationship between job satisfaction and job determinates with turnover intention, may needs a further investigation in other study design method

7. CONCLUSIONS

In general, this study has depicted the present professional variety of regulatory health professionals and determined the job satisfaction level of the health regulatory worker with the major challenges experienced by professionals working in health regulatory field in Addis Ababa. However, unequal variety of regulatory health professionals from each study field in regulatory health facility hindered the health regulatory field service not to go one step ahead. And also deploying of health professionals in unrelated health regulation field challenged the regulatory health system not to be productive.

Major challenges experienced by professionals working in health regulatory affairs in Addis Ababa were scarcity of skilled workforce with expected professionals' variety, such like a few number of pharmacy back ground professionals. Other challenges are lack of standard electronic data based transmission site, poor documentation, insufficiency of budget, some professionals' negligence in implementation of guidelines and procedures.

In Addis Ababa, health service providers were not regulated well because of the limited capacity of regulated health professionals. Health workers with low job satisfaction indicate that they have a high intention to burn out from the preset working area. Nearly 53% of regulatory health workers dissatisfaction in their job indicated that they have a high intention to burnout from preset working facility.

Current study tried to describe the need of the regulatory health professionals in details, by doing so; practical changes to be made have been clearly identified. This is crucial because it will provide policymakers with information they can use to develop measures that will promote the retention of regulatory health employees in various healthcare institutions and improve the satisfaction of healthcare workers.

8. RECOMENDATIONS

Based on the study findings, and the conclusions made, the following recommendations are forwarded to the concerned stakeholders.

8.1 Recommendation to Addis Ababa health bureau

- ✓ Designing sustaining in-service training and refreshment programs for regulatory health employees in cooperation with stakeholders and NGO is essential.
- ✓ The deployment of health regulatory experts should be clearly identified based on the number of health institutions that are currently in existence.
- ✓ It would be better to clearly announce the job description index of regulatory health workers in each working unit.
- ✓ Should strengthen the national regulatory authority by allocating budget, equipped with the necessary health infrastructure, work on knowledge transfer to build local capacity.

8.2 Recommendations to Addis Ababa regulatory health authority

- ✓ To improve the service level, the institution should work on developing specific institutional based tools, how to measure the level of adequate professional variety in service area.
- ✓ Should establish institutional base electronic web site.
- ✓ Should improve uniform documentation practices (recording and retaining) of regulatory health professional profile from district level regulation office up to the main central level of FMHACA in one data center.

9. SUGGESTION FOR FUTURE STUDY

- ✓ The researcher recommended the future investigators to set other design method with a larger sample size that includes multi-stakeholder out of the study area in a different regional health regulatory body.
- ✓ Also future investigators are recommended for assessing baseline competence level of regulatory health workers.

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ANNEX I. INFORMED CONSENT FORM

Hello. My name is Habtamu H/Yesus. I am a student of Regulatory Affairs MSc program in School of Pharmacy, Addis Ababa University. I am here to collect needed data for my thesis titled "Assessment of Human Resource for Health Regulatory Affairs in Addis Ababa, Ethio pia". This survey will do in all randomly selected sub-city level health service regulating centers. Your facility is selected because it is one of them. The research will provide an empirical snapshot of the current health care product regulatory satisfaction and qualification of regulatory professionals in Addis Ababa and provide baseline information to track changes and improvements in health work force regulatory sectors. In this structured interview I would like to ask you few questions about the job satisfaction and qualification of regulatory professionals in Addis Ababa. The data filling will take 10-15 minutes of your time. Your participation is completely voluntary. You can refuse to answer any questions and/or withdraw from the study at any time. All of the information collected is strictly confidential. No one other than the research team will have access to your responses. Your personal identifiers such as your name and that of your health facility will not be used. The principal investigator will not refer to individual respondents or individual facilities in the report, but rather will describe the overall picture of all facilities.

Do you agree? **Yes** ☐ No☐ If **Yes**, Continue.

If you decide to participate in this query and you have additional doubts or questions, you can communicate with the principal investigator of

Habtamu H/yesus. Phone number **0967135502**

ANNEX II: RESEARCH QUESTIONNAIRE

INSTRUCTION: Kindly tick [α] on appropriate response

Part I: Questions on Socio-demographic Characteristic of Respondents.

1. Sex:

1☐ Male

2☐ Female

2. Your age in years: _____

3. What is your Marital Status?

1☐Single 2 ☐Married 3☐Divorced 4☐Widowed

4. What is your field of study?

1☐Pharmacy profession 2☐ Medicine 3☐BSc.Nurse

4☐Public health 5☐Medical laboratory profession 6☐Midwifery

7☐Environmental health 8☐others fields (please specify_____

5. What is your highest level of education completed?

1☐ Diploma 2☐BachelorDegree

3☐Master's degree ☐Others (Please specify): _____

6. How many years of experience do you have in practice as a health care

Provider? _____ Years _____ months

7. How long have you worked in any regulatory field of health care sectors?

_____ Years _____ months

8. In which level of FMHACA are you working?

1☐ AA central level FMHACA 2☐ AA Sub-city level FMHACA

3☐ AA woreda level FMHACA

☐Others (Please specify): _____

9. Under which department/team are you working?

1☐ Health facility license issue and qualification team

2☐ Health institution and professionals' inspection and qualification team

3☐Health professionals' license issue

4☐ Food institution and food institution workers institution and qualification Team

Any other department's (Please specify): _____

10. What is your responsibility in this institution?

_____

11. How long have you worked in any regulatory field of health care sectors?

_____ Years _____ months

12. In the past 12 months, have you been in any health/medical professional

training or continuing education programs (CPD)?

1. Yes 2. No

13. For how many days or months (in the last 12 months) have you been on such

Programs? _____days _____months

Part II. <u>Questions on regulatory health professionals Level of Job Satisfaction</u>

14. Job Satisfaction: Please indicate how satisfied or dissatisfied you are with the various aspects of your job identified below;

Please circle one appropriate number for each item: 1= very dissatisfied(VD); 2= dissatisfied(D); 3=neutral (N); 4= satisfied(S); 5= very satisfied(VS)					
1. The physical working conditions	**1**	**2**	**3**	**4**	**5**
2. Freedom to choose your own method of working	**1**	**2**	**3**	**4**	**5**
3. Your relation with colleague and fellow professionals	**1**	**2**	**3**	**4**	**5**
4. Recognition you get for good work	**1**	**2**	**3**	**4**	**5**
5. Amount of responsibility you are given	**1**	**2**	**3**	**4**	**5**
6. Payment for your work (remuneration)	**1**	**2**	**3**	**4**	**5**
7. Your work load and staffing adequacy	**1**	**2**	**3**	**4**	**5**
8. Amount of variety in your job (scope of practice)	**1**	**2**	**3**	**4**	**5**
9. The competence of your co-worker in making decisions	**1**	**2**	**3**	**4**	**5**
10. Convincing of scientific reality of the issue	**1**	**2**	**3**	**4**	**5**
11. The chance to tell people what to do	**1**	**2**	**3**	**4**	**5**
12. Being able to do things that don‘t go against my conscience	**1**	**2**	**3**	**4**	**5**
13. The feeling of accomplishment I get from the job	**1**	**2**	**3**	**4**	**5**
14. The chances on advancement on this job	**1**	**2**	**3**	**4**	**5**
15. The way institutional policies are put in to practice	**1**	**2**	**3**	**4**	**5**
16. Taking everything in to consideration, how satisfied are you with your current main job?	**1**	**2**	**3**	**4**	**5**

Part III: Turn over intention and Recommendation to motivate Health professionals

15**.** Knowing what you know now, if you had to decide all over again, would you still choose to be continuing in regulatory field? Please circle one appropriate number.

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

16. About possible changes in your work-life: over the next two years what is the likelihood that you will?

Please circle one appropriate number for each item: 1= Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree					
Item	**Not likely**	**Less likely**	**Likely**	**More likely**	**Highly likely**
15a. Leave your current area of practice	**1**	**2**	**3**	**4**	**5**
15b. Reduce work hour	**1**	**2**	**3**	**4**	**5**
15c. Leave the profession altogether	**1**	**2**	**3**	**4**	**5**

If your answer to question **#16a** shows you have an intention to leave your work area please answer question #17 and if your answer to question **#16a** shows you don‘t have an intention to change your work area please go to question **#18**.

17. What is the main reason for your decision to change your work-life?

1□ Job dissatisfaction

2□To retire

3□ Role ambiguity

4□ Others (Please Specify): _____

18. What recommendations do you forward to motivate regulatory health professionals to remain in current area of practice? (If you have more answers please select the three most important).

1☐ Increase in salary and benefits

2☐ More variety in job (widening job scope)

3☐ Better working conditions

4☐ Better career development opportunities

5☐ Recognition of achievements and contribution

6☐ Improved continuing professional education opportunities

7☐ Closer working relationships with other healthcare professionals

8☐ Fair and equal treatment among professionals

9☐Others (Please Specify):_____

Part IV: Encountered challenges in regulatory facility

19. Challenges anticipated in full implementation of regulatory activity

Items	Yes	No
Lack of trained manpower		
Lack of finance		
Lack of infrastructure		
Over all capacity of FMHACA		

If any please specify: _____

Thank you very much for your time and help!!!

Annex III Sampling architecture

The overall selection approach is shown as follows figure.

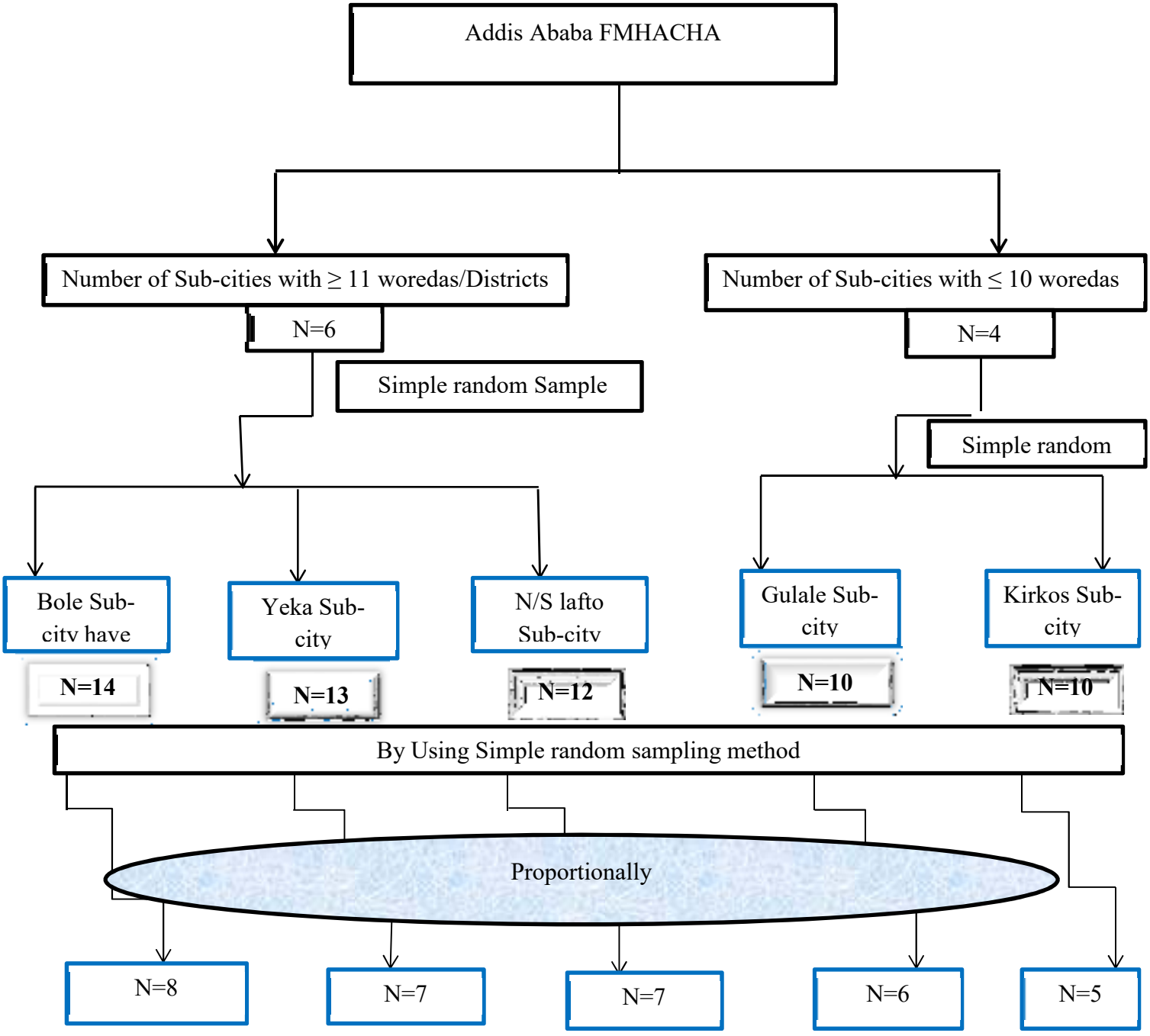

Figure 2: Study approach

Where N= number of existed woredas/district health offices

Annex IV: Document review number of professional variety in randomly selected regulatory work facility in Addis Ababa.

Field of study	Yeka sub city level	Nifas Silk Lafto sub city level	Gulale Sub city level	Kirkos Sub city level	Bole Sub city level
Pharmacy profession	3	3	2	3	3
HO	3	5	4	3	6
Environmental health	13	15	14	11	17
Laboratory profession	2	2	1	2	2
Nurse	1	1	1	0	3
Health nutrition	1	1	0	1	2
	Woreda 1	Woreda 1	Woreda 1	Woreda 2	Woreda 3
Pharmacy profession	1	0	0	0	1
HO	1	3	3	2	3
Environmental health	3	1	1	2	2
Laboratory profession	0	0	0	0	1
Nurse	0	0	1	1	0
	Woreda 2	Woreda 2	Woreda 2	Woreda 4	Woreda 5
Pharmacy profession	0	1	1	1	1
HO	4	3	2	1	2

Environmental health	3	4	3	2	3
Laboratory profession	1	0	0	0	1
Nurse	0	0	0	1	2
	Woreda 4	Woreda 3	Woreda 3	Woreda 5	Woreda 6
Pharmacy profession	1	0	1	0	0
HO	3	3	1	2	4
Environmental health	3	2	2	2	1
Laboratory profession	1	0	0	1	0
Nurse	0	1	1	1	1
	Woreda 5	Woreda 5	Woreda 6	Woreda 7	Woreda 7
Pharmacy profession	0	1	0	0	1
HO	2	2	2	2	3
Environmental health	3	4	3	2	2
Laboratory profession	0	0	1	1	0
Nurse	1	0	0	0	2
	Woreda 7	Woreda 7	Woreda 8	Woreda 8	Woreda 9
Pharmacy profession	1	1	0	0	1
HO	3	3	2	3	3
Environmental	3	2	3	2	2

health					
Laboratory profession	0	0	0	0	1
Nurse	1	1	1	1	1
	Woreda 9	Woreda 9	Woreda 9	Woreda 10	Woreda 10
Pharmacy profession	0	1	1	0	1
HO	4	4	2	2	2
Environmental health	1	1	3	3	2
Laboratory profession	1	1	1	1	1
Nurse	0	0	0	0	1
	Woreda 11	Woreda 10			Woreda 12
Pharmacy profession	0	0		0	1
HO	4	4			3
Environmental health	2	2			2
Laboratory profession	0	0		0	0
Nurse	0	0	0		1

Last 12 month CPD participants

Experience regarding continuous professional development activity in the last 12 month (n=275)	
• Yes	• 135 (49%)
• No	• 140 (51%)