

**PLANNING AND BUDGETING PRACTICES AMONG
HEALTH WORKERS IN NAIROBI COUNTY, KENYA**

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**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE AWARD OF
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Declaration of Originality

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DEDICATION

The dissertation is dedicated to my late Dad Mr. Wilson Ngewa Kyalo (Kiteng'e) who died in October 2010, when I had just started the programme and had to differ one year, and my lovely late Grandma, Priscilla Ngii who passed on in 2015. I would also like to dedicate this work to my children Julieanne, Sandra and Nelson for their love, prayers and encouragement.

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Abbreviations and acronyms

ANC	Ante Natal care
DHIS	District (County) Health Information System
FP	Family Planning
FY	Fiscal Year
GDP	Gross Domestic Product
GOK	Government of Kenya
HRH	Human Resources for Health
IMR	Infant Mortality Rate
KHHEUS	Kenya Household Expenditure and Utilization Survey
KIHBS	Kenya Integrated Household and Budget Survey
KNBS	Kenya National Bureau of Statistics
MCAs	Members of County Assembly
MDAs	Ministries, Departments and Agencies
MOH	Ministry of Health
MTEF	Medium Term Expenditure Framework
NHA	National Health Accounts
PBB	Programme Based Budgeting
OOP	Out-of-pocket
PFM	Public Financial Management
PFMA	Public Financial Management Act
RH	Reproductive Health

SEC	Socio-economic Characteristics
SNG	Sub-National Government
SPSS	Statistical Package for Social Sciences
UHC	Universal Health Coverage
WB	World Bank
WHO	World Health Organization
WRA	Women of Reproductive Age

Definition of Terms

Health financing

Health financing is a function within the health system that is concerned with raising revenue efficiently and equitably, pooling risk to protect individuals from financial risk associated with seeking health care and purchasing the health services on behalf of the population.

Public Financial Management

Public financial management (PFM) system is the set of rules and institutions, policies and processes that govern the use of public funds. The functions under PFM process are structured around the annual budget cycle

Budget

This is an inclusive plan that any institution bases to obtain and consume financial as well as non-financial resources during a period of time. It encourages managers to think about the future and communicate future action plans to organization members. Effective budgeting motivates staff to work towards organizations goals, and serves as a control criterion for performance.

Budgeting Process

Budgeting process is converting an operational plan into financial terms that can be achieved in a defined period of time

Health Manager/Workers

This refers to health workers or staff working in the health sector but not limited to clinical staff only but include administrators; health records information officers, health economists among others.

Need-based factors

Need-based factors in the health sector are factors such as the epidemiological profile, that determine the level of health service to be provided to meet the health needs of the population. Effective planning and budgeting must address the need factors such as demographics, health status of affected populations, prevailing health problems, environmental risk factors which present in the total population of the catchment area.

Supply-side factors

The healthcare system requires inputs to produce goods/or outputs in form of health services or products. These inputs are referred to as the supply-side inputs or factors and comprise of health facilities, health workers, consumption data of pharmaceutical drugs needed, and non-pharmaceutical drugs among others.

Knowledge in planning and budgeting

Health care workers require to have knowledge through trainings provided to them on the process of planning and budgeting that is relevant to the country context. This knowledge enables them estimate the health needs of a specific geographic area or population, as well as determine the resources that are needed to address these needs and produce the best optimal mix of outputs and health outcomes. Knowledge in resource allocation includes understanding country guiding principles of the budgeting process and the political dynamics that enable effective budget elaboration process.

Application of knowledge in planning and budgeting

Application of the knowledge acquired during the trainings takes place during the planning and budgeting processes as outlined in planning and budgeting cycles of the country context. Health workers and managers are expected to engage in the medium-term planning process

to understand the vision, goals and strategic objectives of the health sector. These strategic objectives are in turn prioritised and outlined in the annual work plans based on the need and supply side factors and used to inform resource allocation decisions during the budgeting process.

Resource Allocation (RA)

It is the analysis of how scarce resources (factors of production) are distributed across the key inputs required in delivering health services. These inputs include human resources for health, health facilities, pharmaceutical drugs, medical equipment and maintenance etc. Resource allocation is a central part of the decision-making process in any health care system. These processes in healthcare have to be just and equitable.

Devolution

This is decentralization of sectoral functions and resources to autonomous local governments, which in some measure take responsibility of service delivery, administration and financing of services.

Inequality in health

These are the differences that exist in health status or in the distribution of health determinants between different population groups. Inequalities also lead to inequities in health.

Inequities in health

Health inequities are avoidable inequalities in health between groups of people within countries and between countries. These inequities arise from inequalities within and between societies. Social and economic conditions and their effects on people's lives determine their

risk of illness and the actions taken to prevent them becoming ill or treat illness when it occurs.

Universal Health Coverage

Ensuring that all people can use promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality, to be effective, while also ensuring that the use of these services does not expose them to financial hardship.

Medium Term Expenditure Framework (MTEF)

A three-year rolling budgeting framework referred to as N, N+1, N+2 where N is the current year of budget execution e.g., for FY 2020/21, N+1 is 2021/22 and N+2 is 2022/23. For the current year it rolls over to 2021/22 as N, N+1 is 2022/23 and N+2 is 2023/24.

Critical health interventions

This will include critical programmes, sub programmes, economic categories and activities that are identified and resources are allocated to finance these activities in the budget estimates. Within the health sector these include curative, preventive and promotive and general administration services. Further disaggregation of the above health interventions areas will vary based on the health needs of the local population.

Fiscal Space

Fiscal space is defined as the budgetary room that permits a government to provide resources for public purposes without undermining the country fiscal sustainability. It exists when governments are able to raise or lower taxes without compromising access to basic services such as health, education among others, and putting debt sustainability at risk.

Political Economy

There are other factors beyond need and supply side factors that affect health planning and budget decisions. These factors relate to both macro and micro economic and political context at the national and county levels.

Commission on Revenue Allocation (CRA) Formular Used to allocate resources to subnational governments (Counties)

The CRA is mandated to make recommendations regarding equitable sharing of revenue raised by the national government between the national and county government. The CRA uses a formula that incorporates population, poverty, land area, fiscal effort, development and equal share factors to derive allocations to counties or subnational governments.

ABSTRACT

Health workers and managers planning and budgeting practices are unknown, yet they are key influencers of the processes. However, they rarely have the knowledge or participate in the process. This study investigated the relationship between health worker and managers knowledge on planning and budgeting, and participation in the county health planning and budgeting processes. Few studies have focused on assessing health worker knowledge and application in the planning and budgeting processes. This was a descriptive cross-sectional study that employed mixed-method approach using both quantitative and qualitative data. The sampling frame from which the study participants were drawn was N=2,229 as at June 2016. Semi-structured questionnaires were administered to the health workers and purposively selected health managers. The study sample comprised of n=257 health care workers in Nairobi County, while the health managers were 25. Data was coded and analysed using SPSS. Descriptive statistics were used to describe the relationships between knowledge and participation in health planning and budgeting. Logistics regression analysis was used to determine the relationship between knowledge and participation in health planning and budgeting. The findings of the study established that 47.5% of the health workers were not trained on planning, and slightly over a half 51.8% had not been trained on health budgeting. Among those trained on health budgeting only 23% (29) had been trained with the relevant budget training in relation to the PFM system, which is important for county health planning and budgeting. The study findings also established that 69.6% of the health workers were participating in the planning and budgeting higher than those that had actually been trained. Among the purposively selected health managers, 32% had been trained on budgeting. The health workers and managers shared “low satisfaction” with the

plans and budgets at the county level. Logistic regression was used to establish whether there is a relationship between knowledge and participation. The model was statistically significant $\chi^2 (1) = 120.8, p < .0005$.

The study therefore concluded that health care workers and managers are not adequately equipped with the right knowledge to provide timely inputs in the planning and budgeting process; there is no standardized training content or curriculum on planning and budgeting; majority of the HCWs did not have a clear understanding of the need-based and supply-side factors: there is lack of transparency in the process, the process is not inclusive; delays in disbursement of resources to the county health departments further complicates issues leading to mistrust and lack of motivation among the health workers and managers to engage particularly in the processes.

Health workers and managers who have knowledge are likely to be able to engage and provide timely inputs into the budgeting process; the training content should be reviewed to ensure there is standardization; medical training institutions need to incorporate planning and budgeting, particularly public financial management systems and how they work in tandem with health financing; HCWs should be provided with skills to understand the political economy and how this impacts the planning and budgeting plans and funding decisions; county leadership should consider providing budgetary feedback on allocation and expenditure to enhance accountability and transparency in use of the funds, ultimately leading to improved health workers and managers performance and motivation.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The term “budgeting” refers to the “process of defining the allocation of resources to optimize production of the best mix of outputs given the level of revenues (WHO, 2016)”. Health budgeting process in government is not merely an accounting instrument that presents revenues and expenses; however, it is a rigorous process that involves presenting key financial goals and objectives of the government and its commitment towards implementing national health policies and priorities.

Within the health sector, the health care system comprises of six main functions termed as building blocks (WHO, 2007). These building blocks include; service delivery; medical products; health workforce; Financing; information and leadership and governance (stewardship). A good functioning health system delivers services to its population based on the health needs of the population, when they need and wherever they need them. Additionally, health workers capacity and other resources are developed; finances are mobilized and allocated effectively to deliver the services, and health systems leadership and governance provide the much-needed oversight and guidance of the entire health care system in order to ensure improved health goals and outcomes (WHO, 2007) as shown in figure 1. Strengthening the health care systems involves strengthening the six components and managing their interactions in an equitable way that sustains improvement of the health services and outcomes of the populations. This requires not only the technical knowledge but also the political dynamics that come in to play in delivering health services.

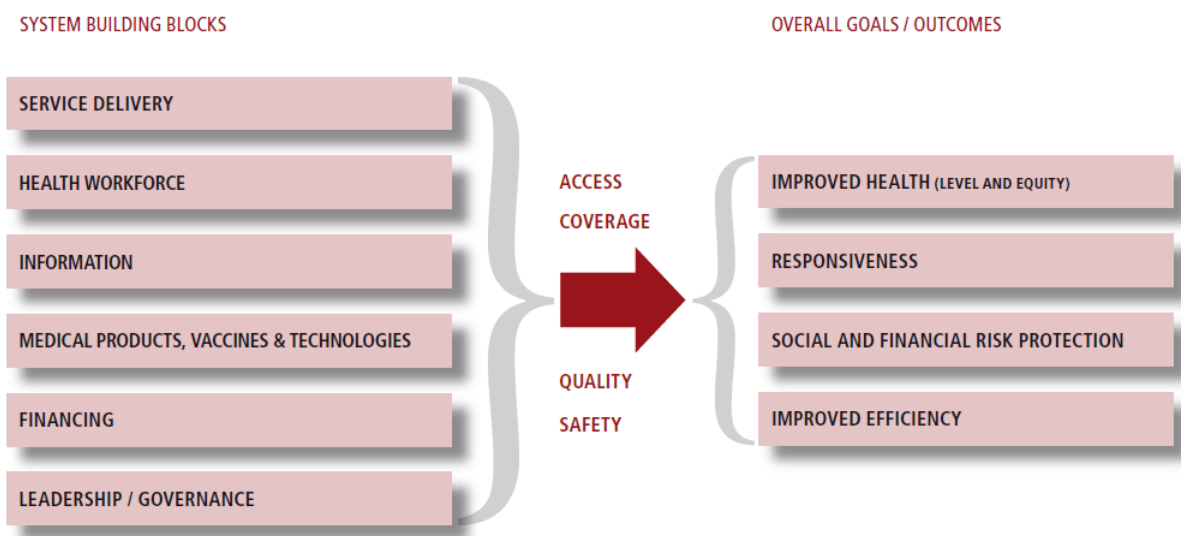


Figure 1: Health Systems Building Blocks Framework (WHO, 2007)

Health financing system is among the six building blocks that seeks to raise adequate resources for health ensuring that the population can use needed services without suffering catastrophic health expenditures, which impoverishes populations that are unable to access services due to financial barriers. Another key aspect of the health financing system includes ensuring that providers are incentivized to enhance efficiencies in delivery of services.

Health financing system constitutes a set of policies and arrangements that provide oversight of the resources and economic incentives in the health care system. The health financing system comprises of the following functions (WHO, 2017); raising revenue in an efficiently way while ensuring equity; pooling risk in a way that protects vulnerable and marginalized individuals in a given population from financial risk, associated with the need for health services hence promoting equity; strategic purchasing of needed health services on behalf of the population to ensure efficiency, quality of care and value for money; governance and stewardship of health financing institutions and markets regulation; and benefit design and rationing policies, which

entail cost sharing measures for instance user fees and copayments. Other measures may include limiting benefits e.g., service exclusions and waiting lists.

The health sector in a country is financed by public and private funds. Private funds include the out-of-pocket expenses on health that households spend in purchasing health products and services and private insurance from individuals or corporates, whereas public funds include the government funds allocated to procure products and services that are needed by its citizens, a critical health financing function.

Public Financial Management (PFM) systems mainly focus on ensuring that government resources are utilized effectively, efficiently and in a transparent manner. Conversely, health financing has a similar mandate, specific to the health sector and in addition further assures that progress is made towards achievement of UHC (WHO, 2017). Despite PFM systems and health financing systems having different roles, there is need for the two systems to work in harmony for more effective and efficient use of public funds, increased predictability of public financing, transparency, accountability and sustainability. Public financing for the health sector is structured around the annual budget cycle in most countries including Kenya which uses the MTEF process. All implementing institutions within government are required to develop budgets guided by the Medium-Term Expenditure Framework (MTEF) annual guidelines. Most countries use this framework, in Kenya the regulations detailed in the MTEF are outlined in the PFMA 2012. These MTEF annual guidelines are usually developed by the national treasury within the Ministry of Finance (MoF,) and they ensure that the process is aligned to the national long-term vision goals and priorities as well as medium-term plans. Within decentralized governance systems and depending on the level of decentralization, particularly fiscal decentralization, these guidelines form the basis for developing subnational level guidelines.

Public resources are important for countries because the level of allocation of health resources determines whether progress towards achieving Universal Health Coverage (UHC) is being made. Heavy reliance on public resources through compulsory prepaid funds is needed (WHO, 2016) for countries to realize the UHC goals. The budget making processes and the decision-making around the budgets formulation and utilization of the public resources within the health sector, at the national and sub national levels are fundamental to the UHC agenda.

There are several factors that affect formulation of plans and budgets in institutions in the public sector, key among them being the capacity to utilise economic approaches to initiate realistic plans and budgets (Deeble John. 2003). In the health sector, health workers are critical players in planning and budgeting for health service provision. Health workers and managers performance is influenced by many factors, key among them being skills and knowledge, however in recent years performance is also influenced by other additional factors related to systems and facility issues. Competency which consists of knowledge and skills; health workers availability, motivation and job satisfaction including availability of critical enablers such as the required infrastructure, equipment, drug supplies, effective functioning management, information systems, financing and accountability systems, significantly contribute to the overall performance of the health sector, which impacts on population health outcomes (Dieleman M. *et al*, 2006).

Participation of Health managers and workers in budget decision making is rare. Health workers leave this responsibility to administrators or health economists. Often other planners and budget decision makers left with responsibility of planning and budgeting rarely utilize approaches that enhance equity in resource allocation decisions, notwithstanding being a major issue in health service provision (Deeble, 2003). Instead, historical incremental approaches continue to be used in funding broad programs, with noted increase targeting new initiatives, which allow for growth

and flexibility in allocating funds to the health sector. Most health managers believe that the focus should be on developing natural measures on healthy gains that cut across programs focusing on reduction of mortality, morbidity and disability, and justifying budget levels with anticipated health outcomes (Deeble, 2003).

Priority setting and resource allocation approaches in the health sector need to be economically sound and ethical – fair and transparent (Smith *et al*, 2013). Decision-makers in the health sector scuffle to assemble, use health data, engage health managers, clinical stakeholders and the public in a meaningful way on the resource allocation decisions that they make. However, the uncertainty brought about by varying population health needs in given regions and over periods of time present a major challenge. Ultimately for the health managers, workers, clinical stakeholders and the public, the goal is to maximise resources for health and promote effective and quality health service provision which translates to better health outcomes for the population. Performance information and targets is therefore critical in the budgeting process as it determines what can be achieved in terms of health status with certain amount of resources.

There have been noted misalignments between the PFM systems and health financing priorities including lack of understanding of the two systems across the health workers and health managers, further aggravating the planning and budgeting processes. The absence of measurable immediate results from public health expenditures creates perceptions among national and subnational treasuries that the health sector is ineffective and inefficient (WHO, 2017). However, health should be viewed as an investment and not a cost. In most of the low- and middle-income countries (LMICs), budgets are faced with poor budgeting and underspending, mismatch between budget allocations and priorities, often brought about by national PFM rules that affect the disbursement and flow of funding to user departments, as well as absence of

flexibility to reallocate the funds to other areas (WHO, 2017). Implementation of PFM policies that do not support health sector priorities, poor communication between health and finance teams during policy review and development, especially where the health sector is required to actively engage in policy dialogue, ensure inclusion of the finance teams and be able to articulate its needs, are some of the challenges that affect these processes.

In the Kenyan context, the national Ministry of health (MoH) is responsible for policy formulation and providing technical oversight on national health programmes such as HIV, malaria, tuberculosis (TB) and immunization, while the county governments (subnational level) are responsible for cascading national health policies to the county level and have autonomy on fiscal responsibility as well as the service provision for the health sector. The national MoH together with other external partners provide technical assistance to counties on how to budget for health, but have no further influence on the budget levels and expenditure except through the PFMA 2012 requirements, which fall under the office of the budget and the auditor general. The counties are autonomous; however, they still have to adhere to the set policies, the national level annual MTEF guidelines and priorities.

Health care workers at the national and county level in Kenya are key in ensuring that the planning and budgeting processes are aligned. A good understanding of the principles that guide public planning and budgeting including the PFM rules that guide the processes, the key institutions and the political economy that enable effective budget formulation and approval processes is important (WHO, 2016). Poor understanding of the budgeting processes among the health workers results in misaligned priorities to the extent that health policy-making, planning, costing and budgeting processes take place independent of each other. This results in misaligned health sector priorities that are not linked to the budgets (Tsofa *et al*, 2015) and resources that are

not used as intended further raises the issue of accountability. It is therefore important for the health care workers skills and knowledge be increased in the planning and budgeting processes, while also being engaged as major stakeholders in ensuring they provide timely budget inputs during the budget cycle processes at the county level. It is hoped that this will increase motivation and final resource allocation will ultimately match with the planned health sector needs and priorities.

Very few studies have explored the role of health workers capacity and participation in the budget process. The nearest study is by Dauw-Song (2002) on “factors affecting the budget-related attitude of hospital departmental managers and the relationship of these attitudes with performance”. The study findings asserted that there is a “strong relationship between budgetary feedback and participation of health managers”, resulting in high performance. Participation of health workers in the budget process is a good practice of resource allocation. Most county health staffs have low capacity in planning and budgeting, and their participation is minimal (Mujasi and Juam, 2015).

1.2. Background of the Study

As country's make progress in achieving the goal of universal health coverage, healthcare financing is a critical component that is of great focus in facilitating realization of this goal (WHO, 2013). The process and level of financing from domestic public resources determines whether a country would progress towards universal health coverage (UHC). UHC is realized when health services that exist, are available to the people when needed and at an affordable cost to the population. Figure 1 (Maeda A. 2014) shows what the progress towards UHC would look like. Countries are required to ensure that; vulnerable and marginalized populations are protected from high costs associated with high out-of-pockets, that impoverish households. Public

resources are expected to cushion poor households from these costs by pooling risks and designing health service benefit packages in a way that promotes equity. The UHC cube in figure 2 defines this progress from a three-dimensional perspective across the three axes; population: who is covered? Increasing the population covered by health insurance mechanisms that exist; services: Which services are covered? Benefit packages include the extent of services that are covered by the insurance mechanisms whether private, public or community-based insurances, ensuring basic health care services such as primary health care is available to populations that are most in need. Financial Protection: What do people have to pay out-of-pocket? Population covered means reduced costs sharing and user fees including OOP expenditures to the population. This provides financial protection for households from catastrophic health costs. Availability of sufficient funds from domestic public sources for health service provision, especially in meeting the health needs of women, children and adolescents, provides a benchmark for availability of other critical essential health services (WHO, 2013).

In most developing countries, resources are scarce and therefore there is need to ensure that funds are available for health, so as to provide and make accessible the much-needed package of health services. These needed services include; curative, preventive, promotive rehabilitative and mental health services of sufficient quality. Health managers and workers require adequate knowledge and skills to enable them assess need and demand for health services;

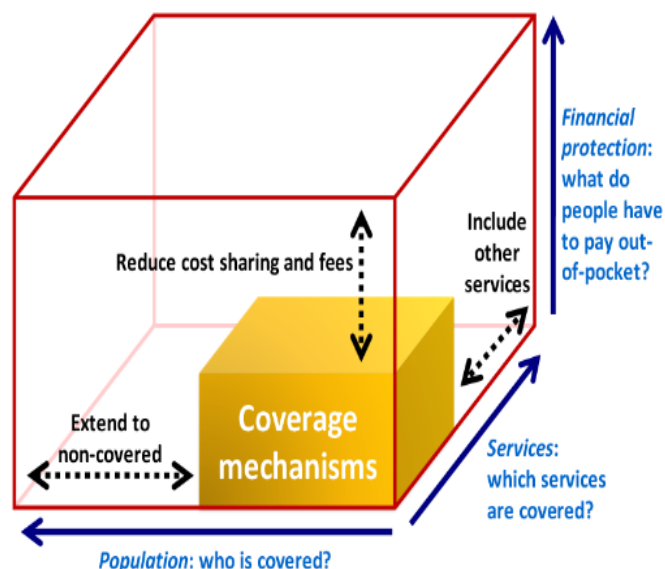


Figure 2: Universal Health Coverage (UHC) cube

determine the quantity of inputs; provide costing estimates of the inputs through the budget process and utilize the funds to purchase these health inputs (WHO, 2013). However, the health sector unlike the education sector, the health sector faces high degree of uncertainty making it essential to pool risk across the populations and protect those that are at high risk and may require some of the expensive health care. (WHO, 2017). Unpredictability of the inputs in the health sector and the weak evidence-base creates challenges in the budgeting processes. Further health crises such as epidemics, like Ebola and most recently and Covid-19 worsen certainty in health planning and budgeting. Additionally, fragile countries affected by conflict situations are unable to plan and budget for health requiring global response towards supporting vulnerable populations in these fragile countries.

Competing for the scarce resources demand for efficient allocation of funds for health in a manner that promotes efficiency and equity. Governments have the responsibility of providing the best quality health services to pre-defined needs of its population and within a limited resource envelop (Mitton and Donaldson, 2004). Despite countries undertaking numerous health care reforms and health systems' development that focus on ensuring equity and efficiency, inadequate resource discussions continue to dominate debates in health care financing (Mitton *et al*, 2004).

Health managers and workers play a significant role in planning and budgeting for health services and are therefore are key in providing the information required to ensure effective budget decisions are made. Studies have shown that when health workers are engaged in the decision-making (participative bottom-up) and budgeting processes, they tend to gain cooperation across the staff members and improve staff motivation as well as the overall performance (Dauw-Song, Feng-Yu, Chia-Wu, Yung-Hsin, Sheau-Hwa, 2002).

1.2.1 The Budgeting Process

Budgeting is the most important activities undertaken by governments, organisations and institutions. The budget process is a powerful tool that is used by governments to make key resource allocation decisions. Allocation of scarce resources to programmes and services by governments takes place through the budget process. The quality of resource allocation decisions resulting from certain budget processes and the level of acceptance by stakeholders depends on the characteristics of the budget process that is used (NACSLB, 1999).

A budget process that embeds activities such as planning and management functions, provides better financial and program decisions that lead to improved government and organization operations. Additionally, a transparent and inclusive process that effectively involves all the stakeholders; government administrators; employees; elected officials, and their representatives; citizen's groups; civil society and private sector including business leaders; reflects the needs and priorities of populations and communities they serve. The net effect of these good budgeting practices is a positive force in maintaining good public relations, which improves citizen's and other stakeholders' engagement as well as perception of government (NACSLB, 1999) in ensuring accountability for resource use.

Good Budgeting Practices, Process Definition

Good practices in the budgeting process recognizes that managerial, planning, political, communication and financial dimensions have to be considered. It includes activities that encompass the development, implementation, monitoring and review of plans for provision of goods and services (NACSLB, 1999). Good budget processes integrate long-term perspectives; create linkages to broad institutional/organisational goals; emphasizes on results and outcomes

during the budget decision making processes; takes into consideration and encourages effective communication with stakeholders (NACSLB, 1999). The budget process is not merely an exercise of balancing revenues and expenditures on annual basis, but a strategic document that encompasses a multi-year financial and operating plan that apportions funds on the basis of prioritized goals and need. A good budget process provides incentives and flexibility to managers and government employees, increasing motivation, which often leads to improved efficiency and effectiveness, ultimately overall quality and programme outcomes (NACSLB, 1999).

1.2.2 Health Sector Budgeting

The performance of the health sector relies heavily on performance of health workers given that it's generally labour intensive in nature (Dieleman Marjolein and Harnmeijer Willem Jan, 2006). Health needs in a country require constant attention since they do not remain static over time. There are demographic changes in countries, changes in mortality and morbidity patterns resulting in changes in disease burden which affect structure and level of budget allocated for the health. The inputs that may be adequate in treating a certain disease such as HIV or Malaria in 2015 may not be adequate in five years to come due to an increase or decrease in those in need of HIV or Malaria treatment, as well as in the prevention interventions. This therefore requires constant feeding of accurate data into the budgeting process to ensure sufficient resources are allocated to address the country's/regional health needs, priorities and targets (Hassim, Heywood, Berge. 2007)

Some key budgetary indicators that governments need to know include; how much they plan to spend in health; whether the budget levels are enough to pay for the health programmes; if inflation is taken into account when budgeting; how to prioritize between activities A and B,

comparing apportioning funds to A and B; are the health budgets adhering to policy commitments and national goals? Are the funds sufficient? Is the government responding by improving the allocations year to year? Are the resources being allocated fairly and equitably? Are some sectors or areas or regions getting more than others, and is more being spent on a particular population group than others (Hassim *et al*, 2007)? Some of these budgetary indicators and questions are addressed by ensuring health managers and workers participate in the process.

Literature (Fozzard Adrian, 2001) has shown that the basic budgeting problem is resource allocation decision-making. Faced with limited resources, it is challenging to identify a standard criterion of allocating Kshs x to activity A instead of activity B. Attempts to resolve the budgeting problem of resource allocation has identified the following as critical areas that could support organizations in improving budget allocations to the health sector. These include; better understanding of the budgeting process and behavior; institutions dynamics and, how the process by which resource allocation decisions are and should be made (Fozzard, 2001).

When the issues raised above are addressed, they allow for identification of gaps and barriers that could be addressed and improve the process hence increase funding and performance of the sector.

Allocation of resources based on need is a key policy problem in the budgeting process for developing countries' health systems (Brian, Sharma, Saunders, 2010). Most countries have developed proxy measures of need in resource allocation formulas and are applying them. However, attempts to effectively utilize them by health workers and managers at the sub-national level is affected by the lack of reliable information, relative need; whether budgets allocated allow for any relationship to the cost of services (Ensor *et al*, 2012), in addition, whether health

managers and workers understand and have the knowledge and skills to effectively participate and engage in the budgeting process.

In an attempt to use different approaches to make resource allocation decisions during the budgeting process, three approaches are commonly used (Pearson Mark, 2002);

Negotiation and Political ‘Compromise’

Resource allocation and distribution in this approach is significantly influenced by vocal, urban populations and by the political class that have other vested interests. Under this approach, the health system is not aimed towards serving the needs of the population but resources are mainly concentrated in high visible capital projects or hospitals settings rather than on essential health services such as primary health care or promotive health services (Pearson, 2002).

Incremental Budgeting

Also referred to as ‘historical incremental’ approach, under this scenario resources tend to be allocated as they have always been historically or in the past, rather than being driven by the health needs of the population. The health sector at the national, sub-national, health facility receives a certain amount of allocation which is increased or decreased usually by 10 percent each year in line with the overall increase of the health budget (Pearson, 2002), inflation rates, as well as the absorption or expenditure capacity of the resource receiving entity. This approach is widely used due to its logic in the short term, as it makes sense to provide resources for existing services and use the existing infrastructure proficiently, although with infrastructure and services that are poorly distributed this can result in increasing disparities, as well as significant inequities in the funding allocation and compromised access to health services (Pearson, 2002) for certain populations. This approach can lead to sub-optimal use of the limited resources when used alone (Fozzard, 2001).

Allocation according to health need

This approach is also referred to as need-based approach. It is conducted based on individual views of needs which can be subjective or statistically based on more objective indicators of health needs. Usually, most countries use both the statistical methods and judgment to quantify health needs (Pearson, 2002). Other approaches such as measurements of return on investments (ROI), and planning on how resources should be spent, are always not utilized in resource decisions (Fozzard, 2001). An approach such as applying the ROI on the resource allocation process has been found to be challenging for the health sector and health workers in general, since decision-makers lack the confidence and capacity in setting priorities, or are not aware of tools such as these that can build their capacity in understanding the health sector and effectively explaining resource allocation decisions in the budgeting process (Mitton and Donaldson, 2004). However, in some cases, rational decision-makers strive to utilize systematic explicit approaches that are fair and where possible evidence-based (Mitton *et al*, 2004).

WHO report (2003) discussion paper on “how much a country should spend on health”, identifies four approaches used to determine health care spending (Savedoff William, WHO 2003). These approaches that are used to determine the level of health care spending, ultimately vary with the budgeting process and range from country comparisons to full budgeting frameworks as well as include approaches that are similar to Pearson’s (2002). The approaches take into perspective national or country to country budgeting frameworks. They can however, be applied at the sub-national level in a decentralized health care system. These approaches include; peer pressure, political economy, production function, the budget approach and the demand function approach (Savedoff, 2003). Each of these approaches focuses on different questions; the peer approach looks at how a country fares relative to similar countries (benchmarking). It’s the easiest to

quantify but the least informative. The political economy approach focuses on the process of political decision-making, but is least likely to produce the quantitative estimates of requirements (Savedoff, 2003). The production function approach asks how much a country should spend to attain a particular level of health status. However, health is quite complex and no ideal health production function can be projected so far with the accuracy required for policy analysis (Savedoff, 2003).

The approach to budgeting is more feasible and readily quantifiable, although it requires addressing directly the current and desired health outcome, costs, effectiveness and trade-offs (Savedoff, 2003). The complexity of the health sector does not allow for a single approach but use of multiple approaches to ensure optimal allocation of resources.

1.2.3 Health Worker Factors

Healthcare workers are key ‘stakeholders’ in the government budgeting process. A stakeholder refers to anyone affected by or has a stake in certain issue. Stakeholders are not limited to: employees, elected officials, citizens, management, governments, clients, elected officials, representatives, business, and media. Health workers in the public sector are categorized as government employees and part of management. It is critical that the budget process includes all stakeholders (NACSLB, 1999). By involving stakeholders in the budgeting process, the budget institutions are able to identify stakeholder problems and concerns, acquire stakeholders support for the entire budgeting process; achieve stakeholder acceptance of decisions related to goals, health services and resource allocation and health service uptake; report to stakeholders on services and resource utilization; and serve to generally improve the stakeholders view of government (NACSLB, 1999).

Health workers better understand the issues and concerns in the health sector and can provide a fair judgment of the needs including evidence-based analysis of the needs to guide the budget decision-making process. Preparation of a budget is both a political and managerial process that has both financial and technical dimensions (Dauw-song *et al*, 2002). The budget itself should be a centerpiece of a thoughtful, ongoing decision-making process that sets priorities and allocates resources to the priorities, while providing direction for the health sector (NACSLB, 1999).

1.2.4 Health Worker Factors and Budget Allocations

Health workers and managers' opinions during the budget making processes and decisions are important and affect the **willingness, practice, perceptions and the overall performance** of health workers (Dauw-song *et al*, 2002). Dauw-song (2002) study shows that when the degree of budgetary participation and feedback are high among the health workers and managers, the budget motivation and attitude will be high. Conversely, the tendency to budgetary slack will be low, improving the overall performance of the health workers (Dauw-song *et al*, 2002) and service delivery.

Health workers capacity to manage health services including planning and budgeting, is important in quality service provision. Highly skilled and experienced health workers understand the population health needs and can input into the budget process to ensure adequate allocation for quality services, patient satisfaction, staff motivation and overall improvement of service delivery (Wanjau, Muiruri, Ayodo, 2000).

Factors such as the availability of health workers and the distance to health facilities determine clients' choice of facilities (Zinsser *et al*, 2014). Distance to the facility is one of the overriding factors, which affects service utilization; others include availability of services and perceived quality of care (Zinsser *et al*, 2014).

1.2.5 Kenya's Health System

Kenya's devolution paradigm has been described as one of the most ambitious fiscal decentralization exercises a country has undertaken (World Bank, 2012). The new constitution of Kenya devolved the health service provision mandate to county governments, whereas the national MOH mandate, changed to essentially provision of policy support and overall technical guidance to priority national programmes (Republic of Kenya, National Treasury, 2014). These changes and reforms in the structures, roles and responsibilities, including fiscal responsibility in delivering health services, were expected to promote equity in resource allocation, therefore, improve health service delivery for the majority of Kenyans, predominantly those residing in rural areas, urban slums and previously marginalized regions. Kenya has continued facing challenges as a result of the misalignment between policy, planning and budgeting. This has contributed to low health worker performance resulting in slow and stagnated progress in the achievement of health sector targets (Tsofa, Molyneux, Goodman, 2015).

Kenya's health system is highly inequitable (Chuma &, Okungu. 2011). Health policies aimed at addressing the health needs of the poor, vulnerable and marginalized populations in certain regions in Kenya have made slow progress in realizing goals and objectives that are outlined. Whereas, Governments are expected to deliver equitable health services to ensure that people benefit from the services according to need for care, very few actually incorporate need-based factors and other pro-poor elements in resource allocation criteria or budget decisions (Diderchsen Finn, 2004). As a result, health outcomes of the population continue to worsen, since the resources that are made available are often inadequate and the burden is shifted to poor households through out-of-pocket expenditures.

In early 2000, Kenya adopted the Medium-Term Expenditure Framework (MTEF) budgeting process, so as to align planning and long-term development with budgeting. The need to address management of the public expenditures, fiscal discipline in the health sector, strategic resource allocation and operational efficiency called for a clear alignment between policy, planning and budgeting processes, while taking into consideration a budgeting perspective that is beyond the short-term (Tsofa *et al*, 2015). Despite the use of MTEF for several years, the desired linkage between policy, planning and budgeting has not been realised (Tsofa *et al*, 2015). Several factors have attributed to this delink, mainly weak stewardship in coordinating planning and budgeting processes across the institutions arrangements that guide the process at the subnational level, lack of awareness and capacity among the health workers and managers, rapidly changing institutional and planning environment, lack of reliable data to inform priority setting and budget decisions as well as poor stakeholder participation (Tsofa *et al*, 2015).

Despite the challenges noted in the planning and budgeting processes, increases in health funding have been noted, however significant declines have been noted from government sources. According to the 2013 Kenya National Health Accounts, Kenya's per capita health expenditure increased from USD 44.6 in 2001/2 to USD 66.6 in 2012/13 above the WHO recommendation of USD 60 per capita. Notwithstanding, household spending (includes out-of-pocket plus households' premiums to insurance) on health increased from 29 % of the Current Health Expenditure (CHE) to 32 %, and household OOP increased from 25% to 29% of the CHE. The net effect of this increase is the out-of-pocket (OOP) expenditure on household that is catastrophic, resulting in impoverishment of households. Government is expected to reduce household burden on health by allocating significant funding to health to reduce OOP (Kenya National Health Accounts, 2013) and promote equity.

Figure 3, shows the source of current health expenditure;

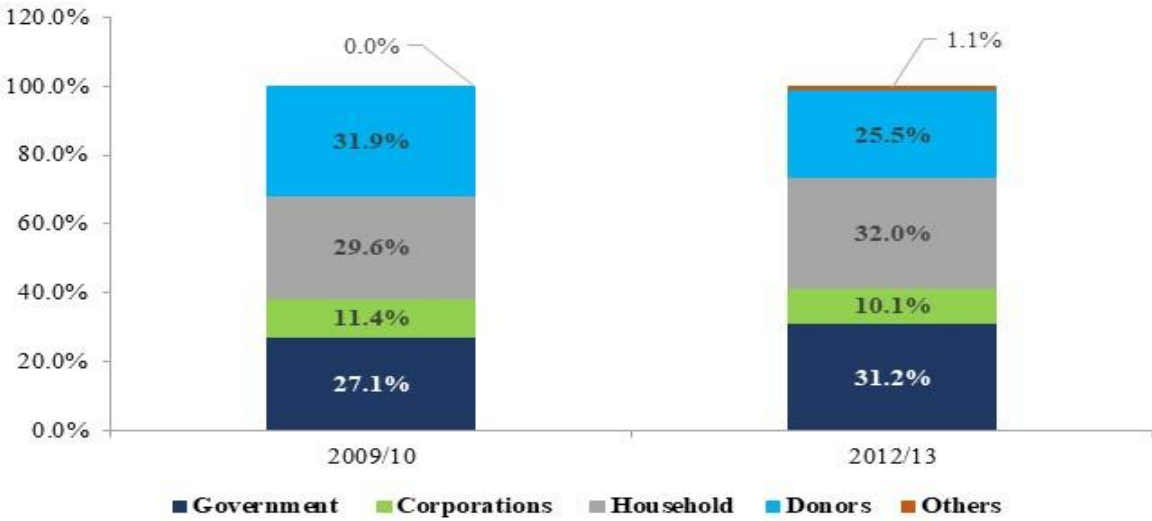


Figure 3: Source of Current Health Expenditure (CHE)

Household’s contribution to health expenditure is higher than government. Donors’ contribution is declining necessitating for more government investments in health as a public good to cushion poor and vulnerable populations.

1.3 Statement of the Research Problem

Provision of quality services such as Antenatal care (ANC), immunization, outpatient and inpatient services, require the use of certain knowledge skills and training on use of the need-based factors, within the population, and to a larger extent supply-side factor in planning and budgeting, in order to estimate and measure the health needs of the populations and ensure that adequate resources are allocated to the health care system to deliver quality services. Maintaining and operationalizing health facilities requires that resources are adequate enough to cater for human resource for health, drugs, equipment among other needs. Without adequate resources to procure pharmaceutical drugs, non-pharmaceuticals (Mujasi and Juam, 2015), equipments and other inputs at the facility level, the basic need for adequate health service

provision is not met, resulting in low utilisation of services at the facility level that also affects healthworker motivation and performance. Additionally, adequate resources are also required for preventive programmes to avert disease occurrence and provide health education.

Health workers are important in ensuring that critical health needs are identified and inform the budget decisions made to critical health programmes. Studies have shown that their participation in the process motivates performance, hence quality of health service delivery (Dauw-Song, 2002). Other studies (Tsofa *et al*, 2015) have shown weak budgeting processes such as weak institutional arrangements; capacity related gaps; systemic issues such as poor linkage between planning and budgeting; misalignment between health financing systems and PFM systems; knowledge gaps and poor understanding of the PFM rules, budgeting processes among health workers results in poor implementation of plans due to a mismatch between plans, priorities of health activities and budgets.

It is important for this study to establish factors that contribute to suboptimal budgeting in the health sector among health workers particularly, health workers' skills and capacity to incorporate need-based and pro-poor elements in budget decisions. Therefore, this study seeks answers to the following research questions:

1. What is the knowledge level of health workers in Nairobi County on planning and budgeting for health resources?
2. To what extent do health workers apply planning and budgeting knowledge in the budgeting process?
3. Is there a relationship between health workers knowledge on planning and budgeting and application in the budgeting process?

1.4 Justification

The constitution of Kenya 2010 has highlighted the “highest attainable standard of health, which includes the right to health care services, including reproductive health for every Kenyan”. This means that health services of sufficient quantity and quality should be available to all the citizens when needed.

Public health facilities are an important resource for the poor who comprise 52% of the total population. Health conditions in Kenya have over the years’ demonstrated high correlation between high levels of poverty and poor health outcomes (Briscombe, Sharma & Saunders, 2010). Employment of equitable approaches to the planning and budgeting process in the public sector is therefore critical in targeting marginalized and vulnerable populations.

The process of allocating resources at the county level is new and little is known about the knowledge of HCWs and managers skills as well as their motivation to engage in the county budget process. HCWs and managers understanding of the process; their active engagement; the approaches they use in developing their plans and budgets; and whether these approaches utilize factors that address social equity and poverty concerns, in making resource allocation decisions are unknown.

The study comes at a time when counties are grappling to provide the much-needed quality health services to the population, however health workers strife, brought about by inadequate remuneration and stock-outs of key essential medicines have become a common issue compromising the delivery of quality health care services and performance of the HCWs and managers (Merab, 2015) in Kenya.

Inadequate funding and inefficient flow of funds from the national to county and subsequently at the county level, across the different sectors continue to adversely affect the health sector, the

most devolved sector of the government functions. Therefore, HCWs and managers are expected to be aware and understand the budgeting process at the sub-national level in order to effectively plan, budget, defend and justify their budget decisions. It is assumed that HCWs and managers better understand the health needs, indicators, targets and overall health goals of the counties, and therefore their inputs are critical in determining resource allocation decisions, budget and spending levels.

This study sought to explore the knowledge of healthcare workers on planning and budget process, whether they are aware of the PFM rules that guide the budgeting process at the county level, whether they understand the government MTEF budgeting process and its link to the planning process. Additionally, whether they apply the knowledge in influencing resource allocation decisions and the relationship of their knowledge levels and application of this knowledge in influencing budget and spending decisions. The study also sought to find out from the HCWs their motivation with the budget decisions in planning and budgeting process.

1.5 Objectives

1.5.1 Broad objective

This study sought to determine the health worker knowledge and its application in the planning and budgeting process for health services in Nairobi County Department of Health services in Kenya.

1.5.2 Specific Objectives

1. To determine the knowledge level of health workers on planning and budgeting for health services?
2. To assess the extent to which healthcare workers apply their knowledge in the planning and budgeting process?
3. To establish the relationship between knowledge and application among health workers in the planning and budgeting process?

1.5.3 Null Hypotheses

H₀: (Null hypothesis) There is no difference in the application (participation) in the health planning and budgeting process between the trained who have the knowledge and the untrained

H_A: (Alternative hypothesis) There is a difference in the application (participation) in the health planning and budgeting process between the trained who have the knowledge and the untrained

CHAPTER TWO: LITERATURE REVIEW

This chapter is divided into two components. The first component looks into the budget approaches that are used in the budgeting process, highlighting key indicators within the health sector that guide the budgeting process. The study uses the supply side and need indicators to assess the knowledge level of the health workers in utilizing these indicators in developing budgets, triangulating with the findings on knowledge and participation of the health workers on health-related planning and budgeting process. The second component explores studies that have focused on assessing the knowledge and participation of health workers in the planning and budgeting process within both the private and the public sector.

2.1. Budget Approaches in the Health Sector

There are several approaches used in the budget process. These processes guide the budget allocation levels and outcomes. Practically none of these approaches are applied by themselves and therefore require a combination of selected approaches for a budget to be successfully developed and approved by all decision-makers. There are four approaches used to determine health care budgets or spending across countries and sub-regional levels (Savedoff William, WHO Discussion report, 2003):

2.1.1 Peer Pressure Approach

This approach uses a comparative method with countries with similar characteristics such as levels of income, epidemiological profile and culture which affects uptake of services. This approach views that the cause-effect relationship between healthcare spending and health outcomes cannot be clearly articulated and therefore aims at observing and learning from similar comparable experiences. This approach can be also referred to as a process of “benchmarking” in which organisations or firms set targets comparative to what similar

entities are achieving. The disadvantages of this approach is that it focuses only on inputs and fails to consider the main objective of spending which is for better health outcomes or based on the health needs of the population (Svedoff William, WHO Discussion report, 2003).

2.1.2 Political Economy Approach

This approach uses political and economic forces in determining health budget priorities. For countries that have health spending or budgets that are abnormally high or low because of actions of civil society groups or interested parties such as pharmaceutical companies, medical associations among others, this approach tries to determine the extent of the distortion. From a social scientist perspective, this approach is considered as one of the best, as it addresses the real political instruments that are used to determine spending and the behavior of the social actors who influence decisions on public spending. The major challenge of this approach is on how to estimate the impact of political factors in budget decisions in a quantitative way (Svedoff William, WHO Discussion report, 2003).

2.1.3 The Production Function Approach

This approach uses the aggregate data on health expenditures, demographics, socioeconomic characteristics and other factors that affect a population's health status. The resulting model equation is used to calculate how much more (or less) expenditures on health services would affect the health outcomes after controlling for other factors. The resulting model equation can therefore be used to incorporate three key major factors that affect health status of a given population; the current status of the epidemiological profile, inputs prices, and effectiveness of how the inputs are transformed into improved health outcomes in a given population (Svedoff William, WHO Discussion report, 2003).

The limitation of this approach is that it only generates a single target amount of expenditure for a specified health condition level or desired change in health status. The production function approach that is used in determining the level of resource investment in health is grounded than the peer pressure approach since it highlights the relationship between expenditures and the anticipated goals and targets. It is also more viable than the political-economy approach. Compared to the budgeting approach (discussed below), the production approach is less demanding since it mainly uses relatively small set of aggregate variables unlike the budgeting approach which requires defining all the inputs or activities of the health sector and attaching prices to the inputs (Svedoff William, WHO Discussion report, 2003).

The production function approach has several drawbacks key among them being that it is conceptually complex, the assumption that high level of expenditures in health have a constant impact on health status of the populations, does not necessarily translate to the equivalent estimated marginal effect at the current level of expenditures. The outputs of the function can appear to be implausibly large or small (Svedoff William, WHO Discussion report, 2003).

2.1.4 The Budget Approach

This approach incorporates five issues identified in the other approaches that include; identifying the anticipated health status changes and determine what needs to be purchased in terms of health services or health service inputs to achieve the anticipated goals. Usually, these input items are priced and added up using “adding it up methodology” to generate an estimate of the resource required to purchase that level of service. This approach is commonly used at programme level and is regularly conducted by most governments during their budget making processes.

The World Bank's World Development Report 1993 as well as the Commission on Macroeconomics and Health, identified packages of health services and estimated the cost of providing the package of health service to a given population. Although this approach is conceptually accessible to most people, it does not provide sufficient evidence to inform public budget debates, and the final estimate solely depends on services that are to be provided, the inputs required to provide those services and the associated input prices. The budget approach is able to respond to questions around the level of expenditures required but also adds by providing questions on whether the right amount of health services is provided and their resources. The budget approach when used jointly with public budget review, focuses the attention to the various elements of the process. It is most likely that a full budget review will include the setting of goals within the population's epidemiological context, estimate inputs requirements to achieving the set goals, survey prices of inputs and wages, and use this to make arguments for health expenditures compared to other demands on the public resource pocket (Savedoff William, WHO Discussion report, 2003).

2.1.5 Demand for Health Care

Most of the studies related to determinants of health expenditures use demand function approach to specify the models since health care is described as “notorious” and lacks a specific theoretical model in analyzing it (Macguire *et al*, 1993). Grossman (1972) attempted to provide a theoretical model for health, however due to imperfect health markets the model that was developed still requires adoption for better specifications of health care models. The demand function approach analyses health expenditures as a function of the GDP and, economic and non-economic variables (Savedoff William, WHO Discussion report, 2003).

In Kenya, the budget and political economy approaches are commonly applied and once budgets are formulated, they are incrementally increased each year taking in to consideration the need to improve health status and meet the health targets outlined as national priorities. These include immunization, maternal mortality, ANC targets and many others. The cost of inputs is applied using the Activity Based Costing (ABC) methodology. Understanding the epidemiological context by identifying the need-based factors and supply-side inputs at the national and sub-national level by health workers is therefore critical in ensuring adequate budget levels, required to purchase health inputs and meet the health needs of the population leading to desired health outcomes.

Need-Based and Supply-side Variables

According to studies (Pearson Mark, 2002), socio- economic measured through poverty levels or index are examples of need-based variables that can be used in resource allocation decisions. Preventable infectious diseases are predominant among the poor compared to the wealthy, and there is an obvious mismatch between the distribution of the avoidable burden of disease and the distribution of highly effective preventive services between the rich and poor (Pearson Mark, 2002).

Pearson (2002) also describes different approaches that are used in resource allocation. He proposes, negotiation and political compromise approach, incremental budgeting based on historical costs and allocation according to health care needs. According to Pearson, all the approaches are utilized concurrently, despite there being a move towards a pro-poor approach by most of the low-income countries such as South Africa, Cambodia and Uganda. Allocation of health resources to the supply-side inputs also requires the inclusion of need-based factors to determine the level of investment for health. Need-based formulas alone do

not guarantee equal access, and therefore, other factors such as differing costs in delivering similar services in different locations, should be considered in addition to other funding sources (Pearson Mark, 2002). Existing challenges such as access to reliable and timely data; potential to create perverse incentives - for instance the danger of worsening indicators used in resource allocation so as to get more funding; exclusion of certain services - where certain regional hospitals serve more than one region and therefore become a national level responsibility; the issue of earmarking funds to particular uses that are viewed as public good; the need to review and update formulas over time; how far to decentralize budgets; possible conflicts between health policy goals; broader issues that influence the impact of need-based approaches; the need to manage uncertainty and dealing with risk among others are some of the issues highlighted that may affect budget decisions.

The study on the relationship between public health unit budgets in Ontario, Canada and indicators of potential need for public health services such as health status measures, vital statistics, socio-economic and demographic characteristics of the population, identified limited data, measurement problems and the nature of the underlying processes that generate many of the need-based factors, as major challenges to inferring the relationship between specific need-based factors and public health units funding levels. The findings showed that there were important unmeasured characteristics influencing funding levels. The study also noted that need-based indicators only explain about 50 -70% of variation in the funding levels across the units (Hurley J. *et al*, 2006).

Indonesia study on budgeting based on need at the sub-national level, examined variables of need such as health status, measures of morbidity expressed through utilization adjusted for the availability of services, socio-economic status such as unemployment, total population of

elderly people and population of children (Ensor *et al*, 2012). The study utilized a bottom-up allocation approach that focused on the cost of providing a package of essential health services in a typical sub-regional level. The results highlighted the gap that exists between current demand and need. Demand side costs were seen to be very strong and possibly the major deterrent to health seeking behavior. Funding for strategies to reduce the demand side barriers were recommended to be included into resource allocation formulas at the sub-regional level. The bottom-up epidemiological approach to costing used in the study, describes how a budget for a limited package of priority services could be allocated across a region. The approach requires area specific epidemiology and demography, proportion requiring treatment and expert assessment of resources required to treat diseases. Proxy data are replaced by information on actual prevalence of a specific region which can be complex to health managers engaged in the budgeting process.

A study on protecting resources for primary health care under fiscal federalism: options for resource allocation in South Africa showed that decentralization of health functions and fiscal decentralization can have adverse effects on equitable distribution of financial resources at the sub-regional level. The results of the study showed that historical approach was still being used to incremental budgeting, weak managerial capacity at subnational levels of government, inadequate knowledge in accounting of health expenditures and lack of earmarking of funds for health, were viewed as some of the constraints that delay realization of a more equitable distribution of primary health care allocations (Okarafor A. O. *et al*, 2007). The study recommended intervention from the national government on decision-making for resource allocation towards primary health care services in order to enhance equity.

In Uganda, a study on “what variables should be considered in allocating primary health care pharmaceutical budgets to districts” showed significant positive correlation between “per capita district pharmaceutical expenditure and total district population, rural poverty, access to drinking water and outpatient department per capita utilization (Mujasi N. P., *et al*, 2015)”. The study concluded that district outpatient department attendance per capita, total district population, total number of government health facilities in the district and human poverty index are important variables to consider in allocating prospective healthcare pharmaceutical budgets to districts in Uganda.

Effective utilization of the above budget approaches requires a health management team that is knowledgeable and is engaged in the budget making process. The counties have to support health workers in participative budgeting process. Participative budgeting process involves the engagement of lower levels of management in the planning and budget preparation process. This brings about;

- Transfer of information from lower levels to upper level
- Motivates employees
- Encourages overall goal or vision of the county congruency

Engaging health workers in participative planning and budgeting process is also time consuming and enhances budgetary slack.

In Kenya a study (Kamau *et al*, 2017) “to determine the effect of budgeting process on budget performance on state corporations in Kenya, a Case study of Kenyatta National Hospital (KHN), found that budgetary participation has a positive and significant effect on budget performance of state corporations. From the results it was deduced that KNH superiors seek staff requests, opinions, and/or suggestions when the budget is being prepared.

Another finding showed that KNH Staff are involved in budget follow-ups. However, the study concludes that KNH Staff proposals for budget alteration are fairly taken seriously, and therefore the study recommends that staff proposals should be taken into consideration since budget participation is measured from the following factors; ability of the staff to influence design of the budget and extent of consultations of the staff with superiors on budget issues.

From the above studies, it is worth noting the complexity of utilizing the need-based and supply-side variables in budget decisions among health workers and managers. The studies identify issues in the careful selection of need indicators to determine budget allocation and sensitivity in creation of perverse incentives by decision makers' exaggerating the need indicators in order to receive higher budget levels. Additionally, the studies identify high correlation between need-based indicators and budget levels explaining about 50 – 70 percent of the variation. Need-based indicators that are widely applied include; population size, elderly population and under 5 population size, further disaggregating population size by demographic factors, socio-economic factors such as unemployment or poverty level, disease burden (also referred to as level of ill health or epidemiological profile or context) and supply-side indicators such as number of health facilities, number of health workers, utilization of outpatient department services by the target population, among many other need indicators. Finally, the studies show the relationship between participation in the budget process by staff and overall performance of the institution or county. In order to ensure effective participation, budget skills competency to carry out the budgetary processes such as planning, formulation and execution are required among the staff. Health care workers and managers should know how to prepare departmental budgets, quantify resources required to achieve the desired goals and objectives for the next fiscal year.

Reviewing literature on the health worker knowledge and participation in the budgeting process shows very limited studies. Most of the studies focus on private organizations' budget processes. There is limited information on measuring the knowledge, however there are many studies that focus on Linking participatory budgeting process with overall performance. For instance, some of the closest studies include the study conducted by Mwaura N. N, 2010 on relationship between budgetary participation and financial performance of companies quoted at the Nairobi Stock Exchange revealed that establishment of clear budget processes, accounting, Information/communication, enhances employee motivation in the budgetary process. Another study conducted by Van Roestel M. 2016, on collaborative approach to budgeting and the impact on the budgeting process: a case study, showed that even in the cooperate sector the budget making process is not well understood especially by the technical teams. However, it noted the technical or operational teams have insights into running the business, this was identified as a strength, whereas the budget process needed improvement.

The examples shared above mainly focus on the corporate sector and mostly focus on the budgeting processes. There are very limited studies that focus on the knowledge and participation in planning and budgeting process within the public health sector. For purposes of this study, health care workers and managers will be assessed on their knowledge levels on select need and supply-side indicators in quantifying the inputs required for health service provision. Whether they apply these indicators in developing budget formulation process will inform the extent of their knowledge and participation in the planning and budgeting processes. The extent of the relationship between knowledge level and application defined by their participation in the planning budgeting process will be measured. From the above

studies it is clear that health planning and budgeting process requires a combination of different approaches including the capacity to know what indicators to use to develop the budgets, clear understanding of the budget process, effectively participating in the process in order to achieve the desired health goals and outcomes within the population. County performance will be determined by the resource allocation decisions they make towards health service provision, knowledge skills and ability to participate as well as apply the knowledge. The studies have also showed that engagement of the health workers in the budget formulation, approval and implementation increases motivation and better performance.

2.2 Conceptual Framework

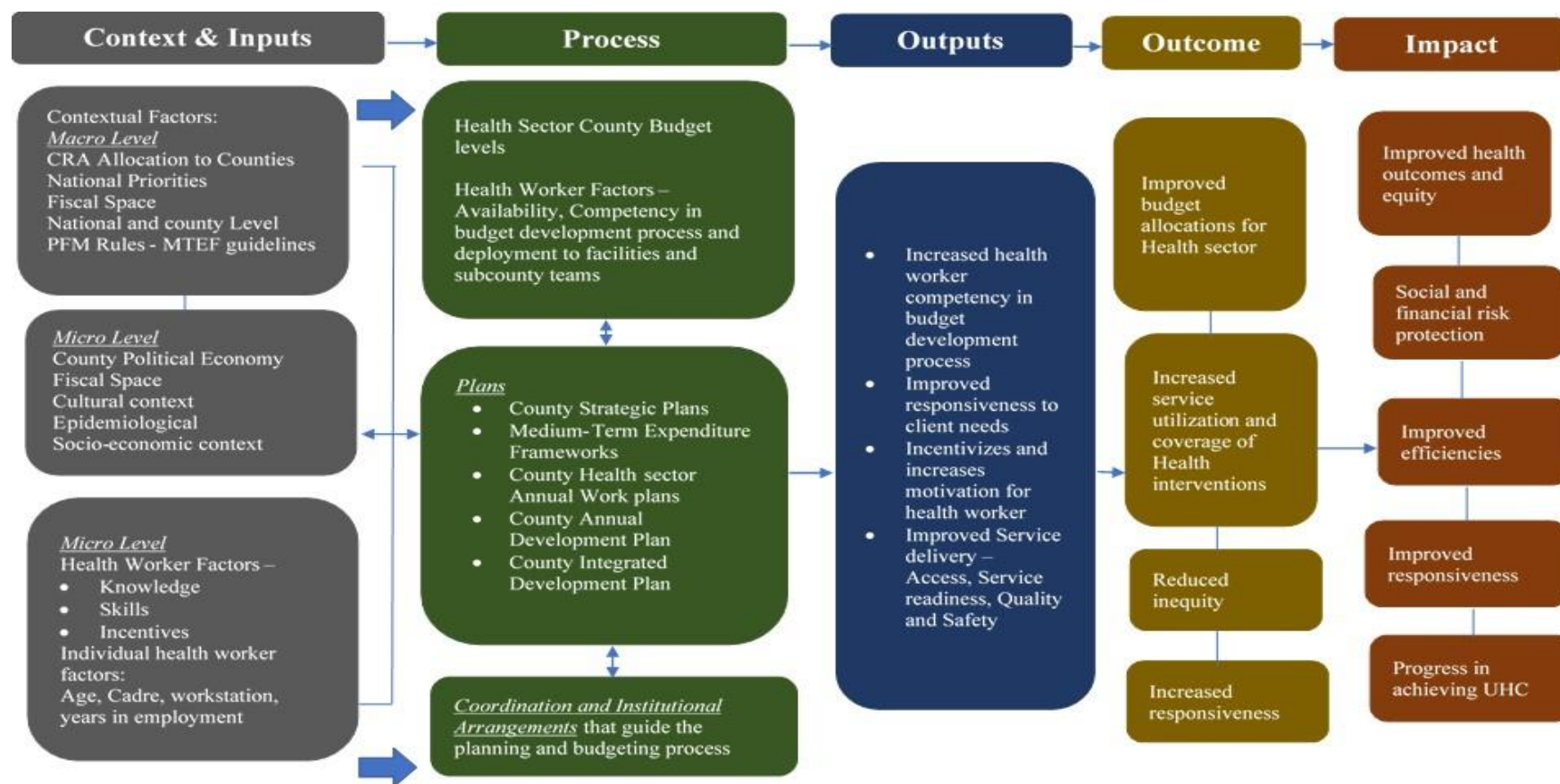


Figure 4: Conceptual Framework

Source: Adapted from WHO report, 2006 on improving health worker performance: in search of

This conceptual framework (Figure 4) is adapted from the WHO Report 2006, that uses a systemic approach to health worker performance in relation to the budget development process. The conceptual framework describes the input/process, outputs, outcome and impact required from a health worker and manager perspective, in relation to the planning and budget formulation processes. Ultimately, the knowledge and skills levels of the health workers and managers in addressing these issues is critical in ensuring that the budgets are responsive to the population needs referred to need-based factors and supply-side factors, meaning providing an enabling environment for the health worker by ensuring supply-side inputs that will enable and support effective delivery of quality health services.

The conceptual framework shows that, there are various factors affecting health budget outcomes, overall access, quality, safety and service readiness in the county. These factors include;

Contextual factors at the Macro level such as the commission of revenue allocation (CRA) to counties, national health sector priorities, fiscal space, national and county medium Term expenditure frameworks (MTEF) and global commitments.

Global commitments, these are the commitment that the national government makes and commits at the global to promote prioritization and focus on that issue at the country level. Global commitments in the health sector include the ‘Abuja declaration’, commitments to matching Global fund support at the country level and other commitments. All these commitments contribute to the health sector budget allocation.

CRA Allocation, to counties apply need-based variables such as size of population, poverty index, and geographical size in disbursing funds to county governments.

National and county MTEF process and guidelines provides national and county priorities for the sectors including health (MTEF, 2014/15). These are developed by the national and county treasuries and this process is what leads to the budget ceilings and financial requirements for the current budget year (N+1). For example, the big four agenda are emphasized in the national and county guidelines. Within the health sector, counties are required to show progress towards Universal Health Coverage (UHC). UHC cannot also be achieved without significant resource allocation from public resources.

National Health Sector priorities, Kenya has previously committed to global commitments such as the Millennium Development Goals (MDGS) and now the Sustainable development Goals (SDGs) among other global and national commitments such as the Vision 2030, the Medium-term plans which define the country's priorities. It is a requirement that the budgeting process aligns to the policy priorities, national plans as well as the county plans. Although these plans are in existence, policy makers, planners and financial experts at the national and county levels can influence and develop county plans and budgets without consultations with health workers, the result would be misaligned plans and budgets whose implementation becomes challenging.

Micro level factors include, political economy of the counties, county fiscal space, cultural context and epidemiological context. In addition, other microlevel and individual factors include Health worker knowledge, skills and incentives as well as individual factors such as age, cadre, workstation and years in employment.

County political economy is concerned with the interaction of political and economic processes and the distribution of power and wealth across the groups and individuals, as well as processes that create, sustain and transform these relationships over time (Whaites A. 2017).

The budget process in Kenya is highly politicized. Understanding the incentives, key institutions, interests of key decision-makers and their ideas and learning how to navigate this over time are some of the approaches that can lead to uncovering the key drivers in the policy, planning and budget decision-making and spending processes. This is a key component that can be included in the training of the health workers. This study will not focus on the political economy but more on the individual capabilities that contribute to the organization capacity bringing about institutional changes/incentives and accountabilities in the planning and budgeting processes.

County fiscal space is the ability of the national and county government to create budgetary room (ability to expend the budget) that allows government to provide resources for public purposes without undermining fiscal sustainability (WHO). Fiscal space exists, when countries are able to raise spending or lower taxes without compromising availability and access to basic services as well as putting debt sustainability at risk. Many countries and counties (subnational governments), are faced with challenges of finding adequate resources to finance their health services and provide a basic package of health services. The ability of the county in this study is to create this budget room by improving the county macroeconomic environment through improving county GDP, increasing taxes, increasing efficiencies, attracting funding from external partners and prioritization of health is major determinant of the budget levels for health. Health worker knowledge, training and application alone cannot improve budget allocations without the consideration of the fiscal space in the county. However, it can increase efficiencies, better prioritizing and planning major health needs and supply inputs required to deliver the services. Health workers would

be the key drivers of these processes and therefore the knowledge and skills level are critical for effective planning, budgeting, monitoring and review processes.

Cultural context refers to the integrated pattern of belief and behavior and varies across groups of populations. According to Geertz, 1973, “culture acts as a template for the organization of social and physiological processes, much as a genetic system provides such as template for the organization of organic processes”. Culture is a key determinant of health, enabling health providers better understand patients, allowing for better communication of health-related conditions and behaviors, increase in uptake of the services leading to better health outcomes for populations. Most of the counties will base the health needs on the uptake of services, as opposed to targeting the population that needs the service, and so these can affect the budget levels. Additionally, policies, plans and budgets decisions relating to health are made within restricted elite spaces that are not within the remit, of certain individuals, families and communities resulting in health inequities (Dutta M J. 2016).

Epidemiology is the study of the distributions and determinants of health-related states or events in specific populations and the application of this study to control of health problems (Williams R., 1998). Epidemiological context entails modelling the health needs in terms of distribution of specific diseases. The burden of disease in a particular population or area is described by incidence and prevalence, however this may not necessarily equate to need. Understanding the epidemiological context in a county can inform the health needs and be used in identifying health priorities, planning and budgeting process. This health information is ideally what should inform the health workers understanding of the health needs in the populations and use it for planning and budgeting processes. This information also informs

the supply-side needs to promote an enabling environment by providing the required health inputs.

Health worker Knowledge, skills competency and incentives are critical in ensuring effective budget engagement in the process. Health workers knowledge and understanding of need-based and supply-side factors that are critical in informing the budget process is important. In an effort to shift focus of decision making in the budgeting process away from inputs towards measurable results, it is important for health workers to understand expenditure reviews and what health outputs are achieved with previous budget levels (Carristine Teresa, Lonti Zsuzsanna and Joumard, 2007). This enhances and improves future budgeting processes, since performance information is used in explaining future budget requests and anticipated health outputs. Budgets are viewed as part of management control designed to promote the efficient use of resources and provide support for critical functions. The extent to which any budget is successful is very much dependent on its acceptance and the attitudes/incentives or motivation of workers towards it. Health workers need to understand the importance of their contribution to a successful budgeting process since budget outcomes have a significant effect on the health worker motivation or dysfunctional behavior (Raghunandan *et al*, 2012). This could result in better performance in the health sector or worse scenario demotivated staff leading to poor performance limiting accessibility to health services and programmes which in turn affect health outcomes.

Health worker Individual Factors includes socio demographic characteristics such as age and sex and others such as cadre, workstation and years of employment. The knowledge and skills of health workers may be influenced by the number of years of employment. It is assumed that health workers with more years may understand the local needs better than new

staff. The workstations may also affect the capacity to participate in the budget process; health workers from the county may be more experienced or aware of the process as opposed to those at the subcounty level. Knowledge and skills may vary across cadres; consequently, motivation may vary across the health worker individual characteristics.

For the health workers planning and budget outcomes to be optimal, the context and inputs required in the process have to be carefully considered. With the required investments in the inputs and processes such as trainings; ensuring health worker participation; health worker competency in the use of the need-based and supply-side data to inform the budget process and make it more responsive to the population health needs, and service provision requirements, could lead to motivated and competent health workers, resulting in improved health budget outcomes, ultimately improved health outcomes which will impact on the overall health status of the population in the county.

While taking into consideration the context and inputs, the planning and budgeting processes are affected by the health workers availability, their skills competency in the understanding the processes, and distribution of these competencies by deployment to health facilities and subcounty teams. Their skills competency in this study is measured by their capabilities to utilize the need-based and supply-side factors in informing the planning and budgeting process as well as training undertaken to improve their skills. This will be measured by the knowledge levels in that skill area and their application during the budgeting processes. Other process related factors include the knowledge of the planning and budgeting cycle, the use of the health policy documents such as the country strategic plans, Medium-term expenditure frameworks guidelines, county health sector annual health plans, county annual development plans and county integrated development plans. All these documents outline

county policy priorities that include the national level priorities and alignment with the sector plans and overall country vision 2030 and the 'Big Four Agenda'. The institutional arrangements that guide these processes have to be formally constituted by the key department at the county level. Mainly, the county, treasury and planning department, working and coordinating with sector or user department which is the county health department. The roles and responsibilities of these institutions have to be clearly outlined and coordinated to ensure that the expected outputs and outcomes are achieved. From the above framework, it is clear that the health worker skills competency in utilization of the need-based and supply-side factors in the planning and budgeting process is critical. However, for optimal health outcomes to be realized, a number of factors effected in the processes. All these processes when integrated and improved will ultimately lead to the following outputs;

- Increased health worker skills competency in the planning and budget formulation process
- Improved responsiveness of the client need.
- Engagement in the planning and budgeting process and seeing to it that the budget outcomes relate to what a health workers or managers proposed, increases health worker motivation as seen in previous studies and serves as an incentive for the health worker to engage in the process.
- Overall, access service readiness, quality and safety of services provided will improve.

The theory of change outlines that the outputs will lead to the outcomes of improved budget allocations, increased utilization and coverage of health services, reduced inequities and

increased responsiveness. The impact will be felt across over time, key among them be progress towards achievement of UHC, since more public resources are being utilized for provision of health services ensuring sustainability, improved efficiencies will increase the fiscal space for health services, better health outcomes and equity, social and financial risk protection as well as improved responsiveness and resilience of the health system.

CHAPTER THREE: METHODOLOGY

3.1 Study Design

The study was a cross-sectional study survey design that applied a mixed-method approach.

This study design was selected because it took place at a single point in time and did not involve manipulating variables.

The study sought to determine the level of health worker and managers' knowledge on planning and budgeting and application of the need-based and supply-side inputs through their participation in the planning and budgeting process. Data was collected from health workers in facilities across the counties applying simple random sampling to the health workers that are not engaged in overall county management of health services and purposive sampling to the county and sub county health management team members.

3.2 Study Area

The study was conducted in Nairobi County, the county that hosts the capital city in Kenya comprising of the city and other surrounding areas, which also form part of the city. Nairobi City County is charged with the responsibility of providing a variety of services to its residents which include; physical planning, public health, social services and housing, primary education infrastructure, inspectorate services, public works, environmental management, agriculture, livestock development and fisheries, trade and industrialization, corporate development, tourism and wildlife, and public service management.

The county has a total of 9 sub-counties comprising of Starehe, Kamukunji, Kasarani, Makadara, Embakasi, Njiru, Dagoretti, Langata and Westlands (Appendix 2: Map of Nairobi County). The choice of the 8 sub counties was based on access to human resources for health

data. The county has a human resource information system (HRIS) that updates the human resource data from all the sub-counties on a regular basis. At the time of the study the data had not been disaggregated by administrative sub-counties but by the health data sub-counties which comprise of original 5 sub-counties.

The selection of Nairobi County was based on the complexity and uniqueness of the county in delivering health services to its residents. It is one of the populous counties and as such inherited the defunct City council of Nairobi health facilities to form the new Nairobi City County Health department. Harmonisation of staff capacity in planning and budgeting is important for the county (Nairobi County Intergrated Development Plan, 2014). Nairobi County was also selected to assist in benchmarking the rest of the counties with regard to health worker capacity, since it has critical base of experienced and specialised health workers being the capital city of Kenya.

3.3 Study population

The study population consisted of;

1. Health care workers providing health services at the sub-county hospitals; county hospital medical superintendents and randomised sample of hospital staff
2. Health care workers providing services at the primary health care facilities at the sub-county level
3. Health care managers at the county headquarters comprising of the director of health services, county administrator, head of preventive and promotive health services, head of curative services, county nurse, county pharmacist and head of county health planning and financing

4. Health care managers at the sub-county headquarters including the subcounty medical officers of health, and health facility nurse-in-charges

3.4 Sampling Frame

3.4.1 Sampling Frame

The study had two samples

- County health care workers and
- County health managers

3.4.2 Units of study

The study consisted of a randomised sample of county health care workers' and a purposively selected sample of county health managers. The findings obtained from the managers perspectives were used to validate and strengthen the findings obtained from the randomised sample.

1. The health care workers working in the county and those that are older than one fiscal year of planning and budgeting cycle formed the sampling frame.
2. Health care managers at the county hospitals, primary health care facility and county and sub county headquarters that have been in that position for more than one fiscal year of planning and budgeting

3.4.3 Unit of Analysis

A list of county health care workers within Nairobi County was obtained from the human resources offices. This was accessed through the human resource information system (HRIS). The list comprised of 2,391 health care workers. For the purposes of the study, supportive staff and health care workers who had been recently recruited and had not completed a fiscal

year of planning and budgeting cycle were excluded, therefore reducing the sampling frame to 2,229. The reason for excluding these health workers is because they had not been engaged in the planning and budgeting cycle process which happens once every year from August through June of every calendar year

3.4.4 Sampling size determination for randomised health worker sample

Estimating the simple random sample for health care workers:

The sample size was determined by using the formula for calculating the sample size estimates of a single proportion (Taro Yamane, 1967)

$$N = \frac{n}{1+N(e)^2}$$

Where, N is the total population size, and e is the error or confidence level. The conventional confidence level of 95% was used to ensure a more accurate result from the sample. Based on this, the error term would equal to 0.05. Using the total population of 2,229 and error margin of 0.05, the sample size was calculated as follows.

$$N = 2,229$$

$$1 + 2,229 (0.05)^2$$

$$n = 2,229 / 6.9975 = 339$$

$$n = 339$$

A 10% increase was added to cater for the non-responses, $n = 372$

Sampling with and without replacement.

Finite Population Correction factor (FPC) was used to address the issue of sampling with replacement and without replacement. When a given population, sample is more than 5% of

the finite population, FPC is applied. FPC captures the difference between sampling with replacement and without replacement.

$$FPC = ((N-n)/(N-1))^{1/2}$$

n= Population Size

N=Sample size

FPC factor is 0.91797485

The FPC factor was applied on the sample to cater for sampling with and without replacement for health care workers, $0.91797485 * 372$

This gives a sample population of 342

3.4.5 Sampling Procedure

Randomised sampling and purposive procedures were employed in this study. The approach was as follows;

Stage 1: Purposive Sampling

The list of purposively selected health managers at the county headquarters, hospitals and sub-counties was generated. The names of the county health managers were removed from the sampling frame and consisted of 25 health managers. The health managers were drawn from county health headquarters, Mbagathi hospital, Pumwani hospital, Mama Lucy Kibaki hospital and sub-county headquarters.

Stage 2: The randomised calculated sample 342 consisted of health care workers of various cadres. An additional 10% was added to take care of non-responses. The interviewed health care work consisted of 257 health care workers comprising of a response rate of 75%.

The process of shortlisting the health care workers involved running the names of the health care workers through an excel simple randomised sample and listing the names selected, then

removing them from the sampling frame list and running again until the total of 342 was achieved. The list was then aggregated by sub-county regions for ease of managing the data collection process among the research assistants who supported the data collection efforts.

The cadres were aggregated as follows;

1. Medical doctor/ MBCHB/ B pharm/ medicine/ pharmacy
2. Laboratory technologist/ Biomedical engineering/ Pharmaceutical technologist/ Medical laboratory/ Occupational therapist/ Orthopaedic technologist/ Enrolled community nurse/ Radiography
3. Nursing/ BSN/ KRCHN/ Community health nurse
4. Information technologist/ Health records information/ Researcher/ Public health/ Environmental health/ ICT
5. Clinical Medicine/ Clinical officer/ Medical officer/ Nutritionist
6. Health administrator/ Economist planning
7. Others

Finite Population Correction Factor (FPC) - Applying the randomised sampling methodology required using the finite population correction factor to capture the difference between sampling with replacement and without replacement. This is applied where the sample is more than 5% of the finite population. During the data collection process, some of the health care workers names in the list were not being found because they were on annual leave, others had retired and the HRIS records had not been updated. To address the issue the FPC was applied and the sample reduced to 342.

The above composite sample was used since the planning process includes a team of different cadres leading different units within the county health department. The aggregation

of the above was based on the WHO definition of the core healthcare providers which comprise of generalist medical doctors, specialist medical doctors, non-physician clinicians, nursing professional and midwifery professionals. These comprise of the health workforce indicator density calculated as the number of core health personnel per 10,000 population (KHFA, 2018/2019). Additionally, the study included other health care professionals that are not core healthcare workers such as the record information officers, health administrators, laboratory technologists and others as defined above but are crucial in the planning and budgeting processes. This were included in order to assess the wider departmental perspective of the planning and budgeting process. The planning and budgeting process requires a combination of all the health care professionals engaged in health service delivery.

Sampling Frame Distribution

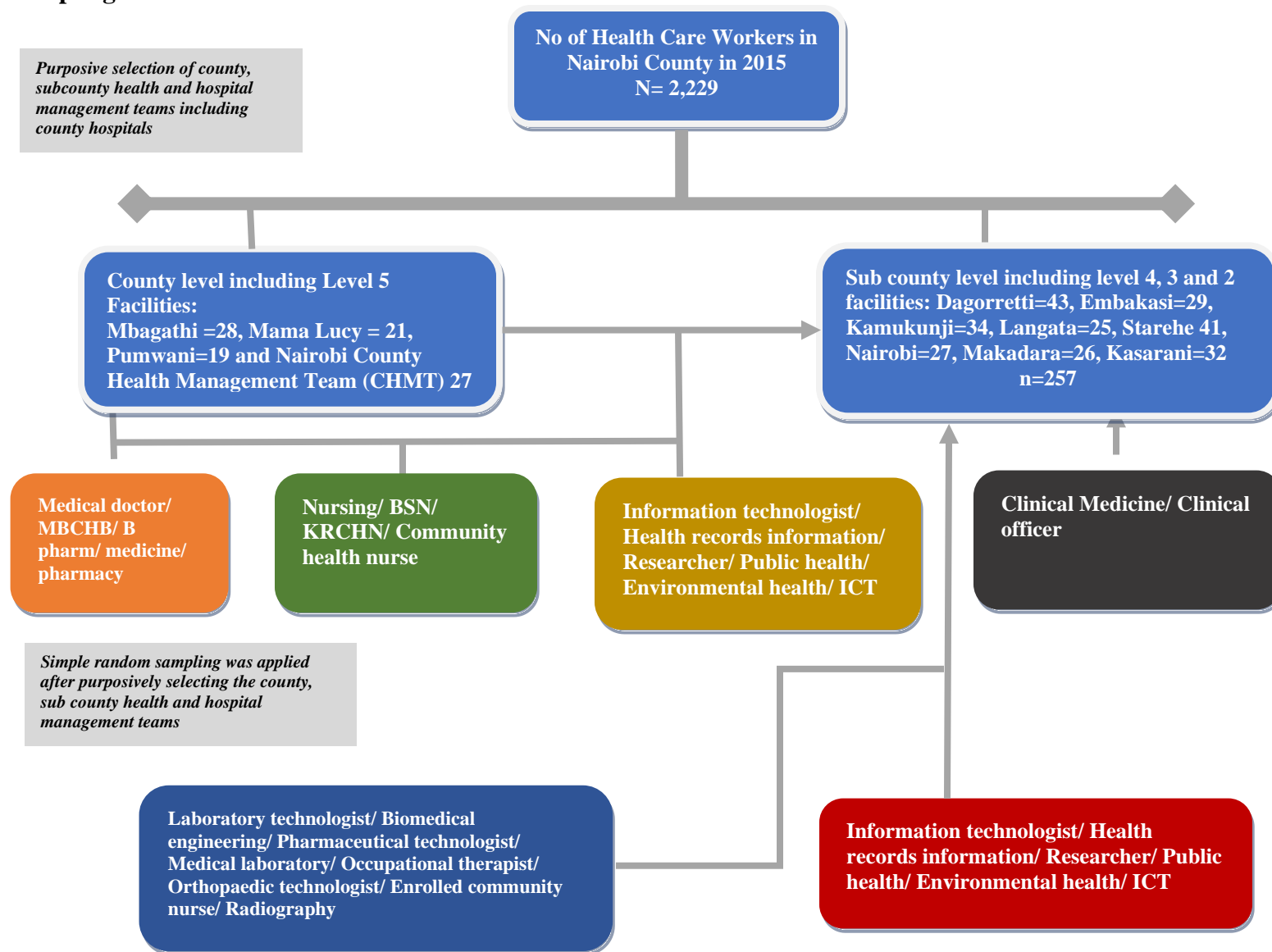


Figure 5: Distribution of health workers by cadres

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criteria

1. Health worker defined by core health professional and other health workers that are engaged in provision of health services.
2. All the county and sub-county health workers that have engaged in planning for one complete fiscal year of planning
3. All the county and sub-county health workers that have engaged in a one complete fiscal year of budgeting process.

These were 2,229 health care workers see Appendix 4.

3.5.2 Exclusion criteria

1. Support staff engaged in no health service delivery e.g., cleaners and cooks
2. Casual staff who are not included in the Human Resources Information System (HRIS) data base.
3. Refusal to give informed consent

Total of 162 of the total number of health care workers of 2,229

3.6 Study Variables

Independent Variable

Health worker Knowledge level

score: defined by;

Those trained on knowledge on the need-based indicators

Supply-side indicators,

Individual health worker factors:

Age, cadre, work station and years of experience

Dependent Variable

Participation in the planning and budgeting process cycle



Figure 6: Study Variables

3.6.1 Independent Variable

Health worker Knowledge level score defined by training received, knowledge on the need-based and supply-side indicators, individual health worker factors such as age, cadre, work station and years of experience.

3.6.2 Dependent Variable

Participation in the planning and budgeting process cycle

3.7 Data Collection Techniques

Quantitative and qualitative (mixed methods approach) data was collected from primary sources.

The data was collected by the principal researcher and a team of 4 research assistants.

3.7.1 Recruitment, Training and pre-testing

Four (4) research assistants were identified and recruited from University of Nairobi 4th and 5th year medical students. These were people with the familiarity with Nairobi County and have attained tertiary level of education. They were trained by the principal investigator for a period of two (2) days – one day was to take them through the study and questionnaire and for the 2nd day to gain hands-on experience on administering the tool. Training included discussion of the questionnaire tool as well as the aims and objectives of the study.

3.7.2 County health care managers sample – qualitative questions

The principal investigator identified the county, sub-county and hospital management team from the list of the human resources information services and identified managers that are critical to the study. The interviews were administered personally to the county health and hospital managers that were available. The others were conducted by the research assistants after calls made by the Principal Investigator (PI) to the sub-county management teams. The same semi-structured questionnaire tool was applied to this sample and descriptive statistics used to analyse the results. The qualitative data was used to triangulate findings from the analysis conducted from the simple randomised sample.

3.7.3 Randomised County health care workers sample – quantitative questions

Simple random sampling was used for the other health care workers. After obtaining the sampling frame from the county human resource information system (HRIS) with the listing of the names of all the health workers for the eight sub-counties and removing the shortlisted purposive sample. Simple random sampling was applied to the remaining list of health

workers. After randomising the sample, the list of health workers was categorised into sub-counties and research assistants shared the semi-structured questionnaires to be applied across the sub counties.

Confidentiality was assured by use of non-identifiers, the researcher requested for a room or appropriate space where health workers could be interviewed, similarly the research assistants were trained to use the same diplomacy and technique. The research assistants introduced themselves and the study to the participant and used the informed consent form to ensure that the participants, signed and immediately conducted the interview. The interviewer (research assistant) asked the questions as they filled the questionnaire.

3.8 Instruments

One set of semi-structured questionnaires was used to collect the data from the health managers and the health care workers. The questionnaire included qualitative questions which were applied to the purposive sample to give insights of the health care worker factors affecting budget levels and the overall health planning and budgeting processes. The questionnaire had been constructed from several sources that include the following studies;

1. Kimanzi Catherine Munanye, (2014). Factors Influencing Provision of Quality Health Service in the Public Health Sector; A case of Mwingi sub-county hospital, Kitui County, Kenya. University of Nairobi
2. Deeble John. 2003. Resource Allocation in Public Health: An Economic Approach. National centre for Epidemiology and Population Health. The Australian National University. National Public Health Partnership, GPO Box 1670N, Melbourne 300, Victoria, Australia

3. Lemedeket Bernice Sialaal, (2014), Factors Influencing the Effectiveness of Health Management Committees: A case of Machakos County, Kenya. University of Nairobi

3.9 Data Management

The quality of the data collected from the administered semi-structured questionnaires was reviewed to ensure completeness and consistency. All the filled questionnaires were reviewed by the PI and data analyst to ensure completeness and accuracy.

3.9.1 Quantitative Data

The questionnaires were reviewed and administered to health workers and managers through simple random sampling and purposive selection respectively.

Data entry was conducted using Statistical Package for Social Sciences (SPSS) version 21.0 software for sorting cleaning and analysis. Cleaning was done for every entry, reviewing any missing data or wrongly entered data. Corrections of wrongly entered data was done using the original questionnaires to verify that the information provided was tallying with the information provided in respondents questionnaire.

The Data was coded to allow for easier analysis.

The knowledge score variable was analysed using question 11 and 12 in the semi-structured questionnaire for planning and budgeting respectively. The application questions were question 9 and 10.

Pearson's chi-square test of association was used to measure the relationship between knowledge and application need-based and supply-side factors through their participation among health care workers in the budgeting process.

Binomial logistic regression/logistic regression analysis was used to determine the strength and character of the relationship between knowledge level and application of need-based and supply-side factors among health care workers in the planning and budgeting process. Before using logistic regression, the dependent variable (application) and independent variable (knowledge) had to pass the assumption of;

1. Dependent variable was measured on a dichotomous scale i.e. 'Yes' and 'No'
2. Independence of observations and the dependent variable had mutually exclusive and exhaustive categories

3.9.2 Qualitative Data

The semi-structured questionnaire comprised of both quantitative and qualitative questions. The qualitative questions were applied to the purposive sample and content analysis applied to generate themes, patterns and relationships. Data was analyzed and presented thematically. A summary report identifying major themes and associations between them is included in the findings.

3.10 Presentation

3.10.1 Quantitative Data

Data was presented in tables, charts, graphs and regression equations

3.10.2 Qualitative Data

Data was analyzed and presented thematically. A summary report identifying major themes and associations between them was included in the findings.

3.11 Minimization of errors and biases.

- Training was conducted for the research assistants on data collection to minimize information bias.
- Proper selection of study participants based on the inclusion and exclusion criteria taking into consideration the purposive and simple random approach was used.
- Use of a semi-structured questionnaire for data collection
- Pre- testing of the questionnaire to ensure questions are well understood and that correct and intended information is collected was conducted at Kenyatta National Hospital.

3.12 Ethical Considerations

In order, to ensure adherence to ethical principles to help safeguard the dignity, rights, safety and well-being of all actual or potential research participants, ethical approval was obtained from Kenyatta National Hospital and University of Nairobi Ethics Research and Standards Committee.

This study ensured Informed consent, that research participants make a free choice and encourage professional responsibility during interaction with the principal investigator and the study participants with legally valid authorizations to proceed with the research. In this study, informed consent was obtained from all the study participants. Before an interview, a written consent was administered and only those who consent were interviewed.

Clearance was also obtained from the county executives for health office to conduct the study in Nairobi County and the county hospitals research departments. The following were the clearances and ethical processes undertaken to conduct the study

1. The County Chief Officer of health services

2. The County Director of Health – to be allowed to access primary health care health facilities
3. Mama Lucy Kibaki hospital research clearance
4. Mbagathi Hospital research approval
5. Pumwani hospital research approval
6. No incentives were given to the study objects

3.13 Study Limitations

- The study focused on Nairobi County, which is one of the 47 counties in Kenya. Nairobi County is the capital of Kenya and perceived as having wealth of expertise. Although generalization of findings of this study may have no validity since the study is focused on one county, however they may shed some light on critical budgeting issues at the sub-national level, which may be worse than what is found in Nairobi. The county may also serve as a benchmark for other counties which may not have similar characteristics of health care workers establishment.
- The input factors (need-based and supply-side factors) that affect the budget levels may not explicitly capture all the factors, since there are other known unmeasured factors that affect budget and resource allocation processes such as political interests, the cost of providing services in a particular geographic region, other sources of funding from donors crowding out government and private for-profit investment. However, they will explain the knowledge and application-level factors from a health worker and manager perspective.
- Simple random sampling with replacement and without replacement differences were taken care of by applying the finite population correction factor.

CHAPTER FOUR: RESULTS

4.1 Social demographic characteristics of health care workers

4.1.1a Health care workers respondents' distribution

Two hundred and fifty-seven health care workers met the inclusion criteria and participated by responding to the interview questions resulting in a response rate of 75.1 percent. FPC factor was included to adjust the sample size and cater for the difference between sampling with replacement and without replacement. The distribution of health workers by gender who participated in the study, 63.1 percent of them were female and 36.9 percent were male. Nairobi county health management team comprised of 10.5 percent of the respondents with the rest about 90 percent from the sub-counties, hospitals and primary health care facilities,

The distribution of the health care workers by longevity or years of experience is shown in Table 1.

Table 1: Distribution of health workers by longevity (n=257)

Health care worker years of experience	
No of Years worked	Percent (%)
1 to 5 years	20.2
6 to 10 years	28.0
11 to 20 years	30.0
21 to 30 years	19.1
More than 30 years	2.7
Total	257

Further disaggregation of the data by sub-county, the list of the county and sub-counties included had updated data on human resources and therefore were purposively selected. The data of the respondents by sub-counties was as follows;

Table 2: Distribution of health workers by county and sub county (n=257)

County and sub-county distribution of health care workers

County/subcounty	Percentage
Dagoretti	16.7
Embakasi	11.3
Kamukunji	13.2
Langata	9.7
Starehe	16.0
Nairobi county health office	10.5
Makadara	10.1
Kasarani	12.5
Total	n=257

The largest number of the respondents were from Dagoretti sub-county 16.7% (43) percent, Starehe sub-county had 16% of the respondents (41) attributing to this is the Pumwani hospital which has about 254 staff comprising of 11% (N=2229) of all the total health care workers in the county. Langata sub-county had lowest at 9.7% (25) percent, Kasarani 12.5% (32), Nairobi County Health Management team, county health office, 10.5% (27), Makadara 10.1% (26), Kamukunji 13.2% (34) and Embakasi 11.3% (39)

In terms of the distribution of the health workers by various cadres, the table 3 provides the distribution by cadres.

Table 3: Distribution of health workers by cadres/designation

Designation	Percentage
Medical doctor/ MBCHB/ B pharm/ medicine/ pharmacy	8.6
Laboratory technologist/ Biomedical engineering/ Pharmaceutical technologist/ Medical laboratory/ Occupational therapist/ Orthopaedic technologist/ Enrolled community nurse/ Radiography	12.5
Nursing/ BSN/ KRCHN/ Community health nurse	44.4
Information technologist/ Health records information/ Researcher/ Public health/ Environmental health/ ICT	4.3
Clinical Medicine/ Clinical officer/ Nutritionist	24.5
Health administrator/ Economist planning	5.8
Total	n=257

4.1.1b Health care managers respondents' distribution (Purposive sample)

From the purposive sample, a total of 25 Health care managers in the county were purposively selected to participate in the study. In terms of gender distribution, 32% of the managers were male and 68% were female.

A majority (mode) of those interviewed had between 6- 10 years' experience in the sector.

Table 4: Health Managers Years of Experience

Health Managers years of experience	
No of Years worked	Percent (%)
1 to 5 years	24.0
6 to 10 years	36.0
11 to 20 years	28.0
21 to 30 years	12.0
More than 30 years	0.0
Total	25

Distribution of the health managers across the county was as shown in Table 5.

Table 5: Distribution of the health managers by county and sub-counties

County and sub-county distribution of health mangers (Percentage)	
Dagoretti	8.0
Embakasi	16.0
Kamukunji	20.0
Langata	16.0
Starehe	20.0
Nairobi	8.0
Makadara	8.0
Kasarani	4.0
Total	n=25

4.1.2a Health care worker knowledge on planning and budgeting

The study sought to determine the knowledge of the health care workers on planning and budgeting using measurement of whether they had trained or not trained on planning and budgeting.

Planning and budgeting are necessary requirements for health services management. Knowledge of the HCWs on planning was assessed from whether the HCW

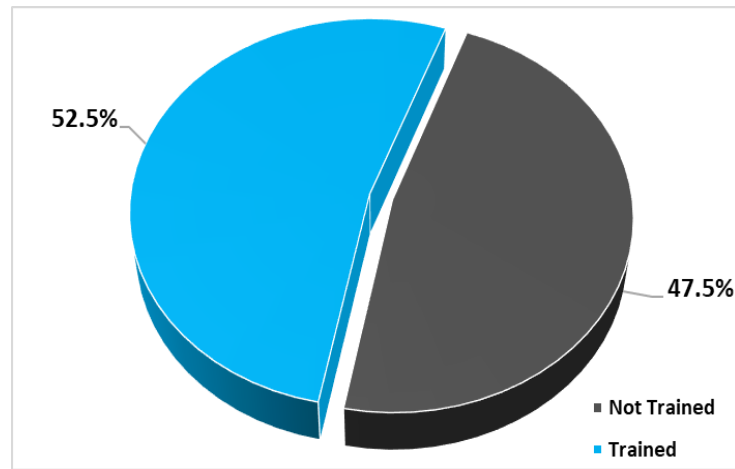


Figure 7: % of HCWs Trained/Not Trained

received training on planning. From the respondents 52.5% (135) of the HCW received training on planning.

Types of training that the respondents shared they attended from Figure 8 include the following; AWP 66.1% (37), programme-based budgeting 3.6% (2) and other types of training attended included about 30.4% (17)

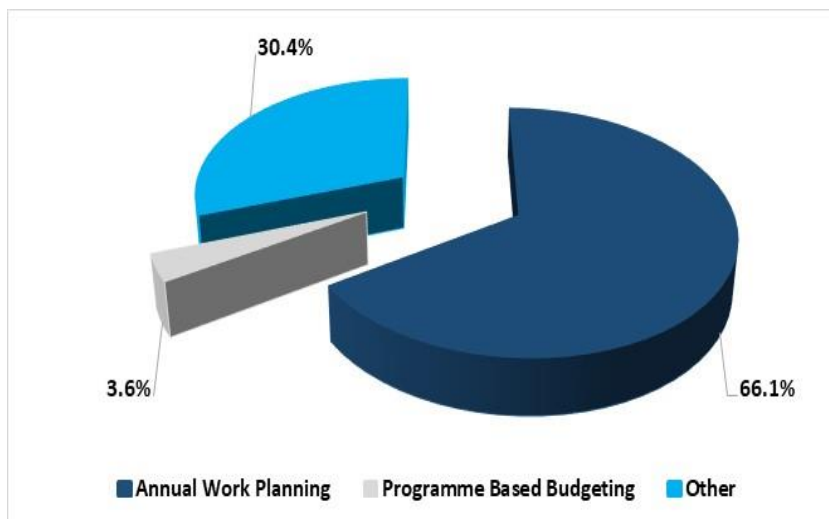


Figure 8: Types of training received

From the findings, 65 % (167) of the HCWs are engaged in planning and 35 % (90) are not engaged in the planning process. However, only 35% (56) of the HCWs participating in planning have received some form of training.

Disaggregating the knowledge in planning by sub-counties and the county health office.

Table 6: Trained on health planning by sub-county

County/Sub-County	Knowledge: Trained on Health	
	Services Planning	
	(n=122)	(n=135)
	No	Yes
Dagoretti	30.2	69.8
Embakasi	55.2	44.8
Kamukunji	32.4	67.6
Langata	16.0	84.0
Starehe	68.3	31.7
Nairobi	33.3	66.7
Makadara	76.9	23.1
Kasarani	65.6	34.4
Total	47.5	52.5

For future targeted trainings in planning, the county health office should ensure training is targeted to Starehe (68.3%), Makadara (76.0%) and Kasarani (65.6%) sub-counties. These three sub-counties had the least number of trained HCWs.

Further analysis of Knowledge in planning and budgeting by the county health management team and the level 4 and level 5 hospitals in the county. Figure 9 shows the findings;

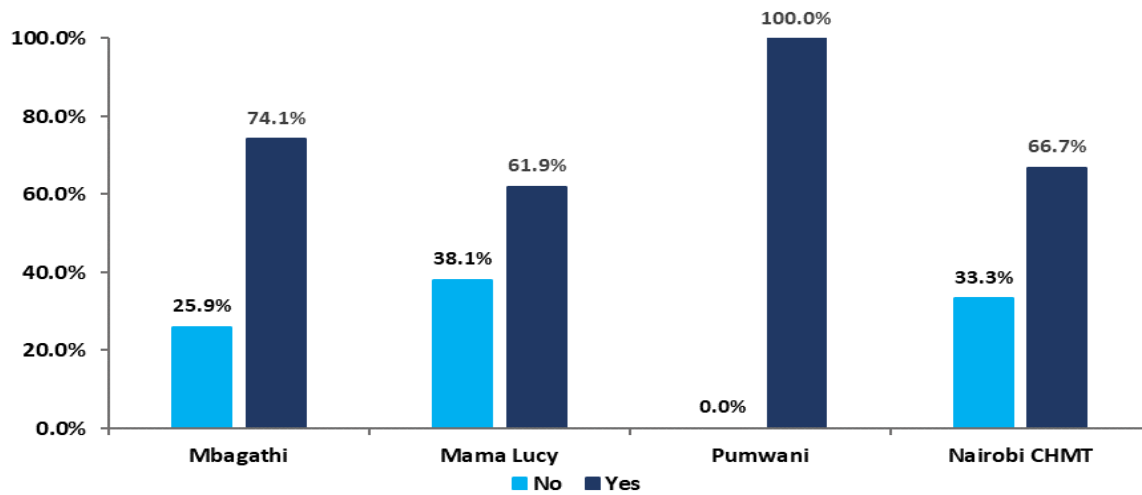


Figure 9: Training by County, sub-county Hospitals and CHMT

Further analysis of the trainings by cadre, the following were the findings;

Table 7: Knowledge on planning disaggregated by cadres (%)

			Designation						
			Overall	Medical doctors	Laboratory technologist	Nursing	Information technologist	Clinical Medicine	Health administrator, economist
Overall	Count		257	22	32	114	11	63	15
Knowledge:	No	Count							
Trained on		Percent	47.5	50.0	50.0	45.6	45.5	49.2	46.7
Health	Yes	Count							
Services		Percent							
Planning			52.5	50.0	50.0	54.4	54.5	50.8	53.3

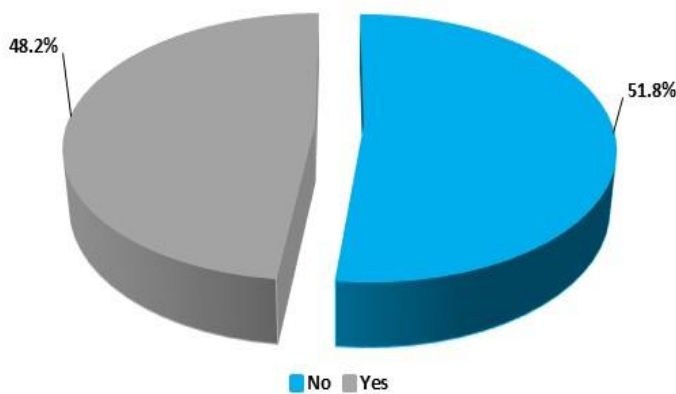
Among the cadres, medical doctors had the lowest percentage of those trained on planning (50%). All the cadres had over 50% of them trained.

Pumwani hospital had all the health care workers sampled trained in planning 100% (21), Nairobi CHMT had 66.7% (27), Mama Lucy hospital had 61.9% (21), Mbagathi Hospital had 74.1% (27).

For those who trained and applied the training during the planning and budgeting processes were as follows;

Table 8: Health care workers who were participating in planning disaggregated by cadres

		Designation						
		Overall	Medical doctor	Laboratory technologist	Nursing	Information technologist	Clinical Medicine	Health administrator, economist
Overall	Count	257	22	32	114	11	63	15
Application:	No	Count						
Participated	Percent	35.0	45.5	31.3	42.1	18.2	28.6	13.3
Health	Yes	Count						
Planning	Percent	65.0	54.5	68.8	57.9	81.8	71.4	86.7



A majority of the health care workers across the cadres are engaged in planning, however there are a few gaps of those trained and those not

Figure 10: HCWs trained on the budget process

trained in terms of numbers. In addition to planning, specific budget trainings were conducted and knowledge was assessed based on the budget trainings. The following were the findings for the budget specific trainings. For the health care workers who were asked whether they received health budget trainings 48.2 % (124) have been trained while the rest have not been trained Figure 10.

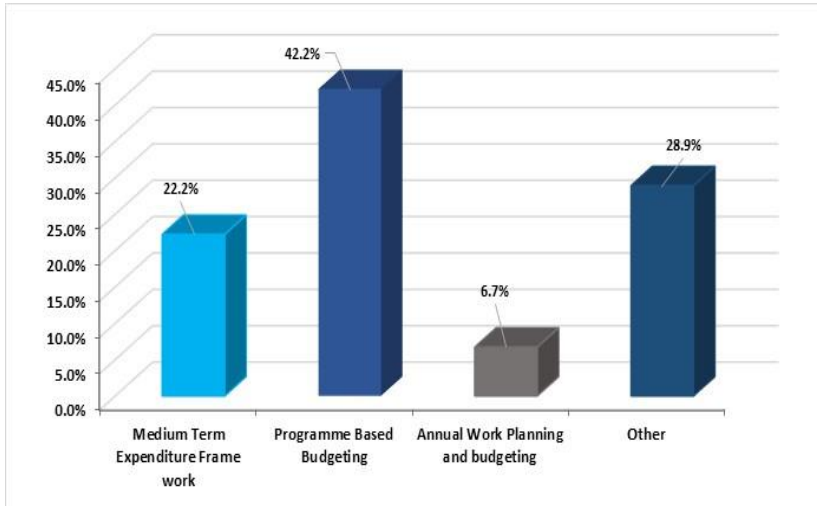


Figure 11: Type of health budget training

Among those who were trained only 36 % (45) responded to the type of formal training provided in budgets formulation. For those who responded only 23% (29) trained in the right budget formulation training either the Medium-term expenditure framework budget training or the Programme based budget (PBB) training relevant to the county planning and budgeting process (Figure 11).

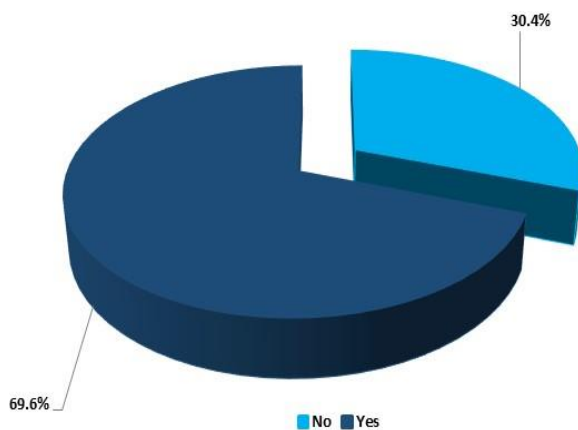


Figure 12: HCWs % of those applying

The findings also indicated that the number of those who trained (48.2%) on the budget formulation were less than those that were actually engaged (69.6%) in the budget formulation process (Figure 12).

A significant gap of 20 percentage point is noted between those trained and participating in the budget process. Those who are trained in the budgeting process are 48.2 % (124).

However, those applying the knowledge or participating are 69.6% (179). This shows there is a capacity gap for those participating in the planning and budget processes at the county.

Analysis of those trained on budgeting and applying, disaggregated by cadres, the findings are shown in Table 9 and Table 10;

Table 9: Health workers trained on planning and budgeting disaggregated by Cadres

		Designation						
		Overall	Medical doctor	Laboratory technologist	Nursing	Information technologist	Clinical Medicine	Health administrator, economist
Overall	Count	257	22	32	114	11	63	15
Knowledge:	No	Count						
Trained on	Percent	51.8%	63.6%	56.3%	51.8%	36.4%	46.0%	60.0%
Health	Yes	Count						
Services	Percent							
Budgeting		48.2%	36.4%	43.8%	48.2%	63.6%	54.0%	40.0%

Table 10: Health care workers participating in the health planning and budgeting processes disaggregated by cadres

		Designation						
		Overall	Medical doctor	Laboratory technologist	Nursing	Information technologist	Clinical Medicine	Health administrator, economist
Overall	Count	257	22	32	114	11	63	15
Application:	No	Count						
Participated	Percent	30.4%	31.8%	21.9%	41.2%	18.2%	19.0%	20.0%
Health	Yes	Count						
Budgeting	Percent	69.6%	68.2%	78.1%	58.8%	81.8%	81.0%	80.0%

Sub-county analysis of HCWs trained on health services findings indicated that Langata and Kamukunji had the highest percentage 80.0% (25) and 73.5 % (34) of the HCW trained on budgeting for the health services respectively (Figure 13).

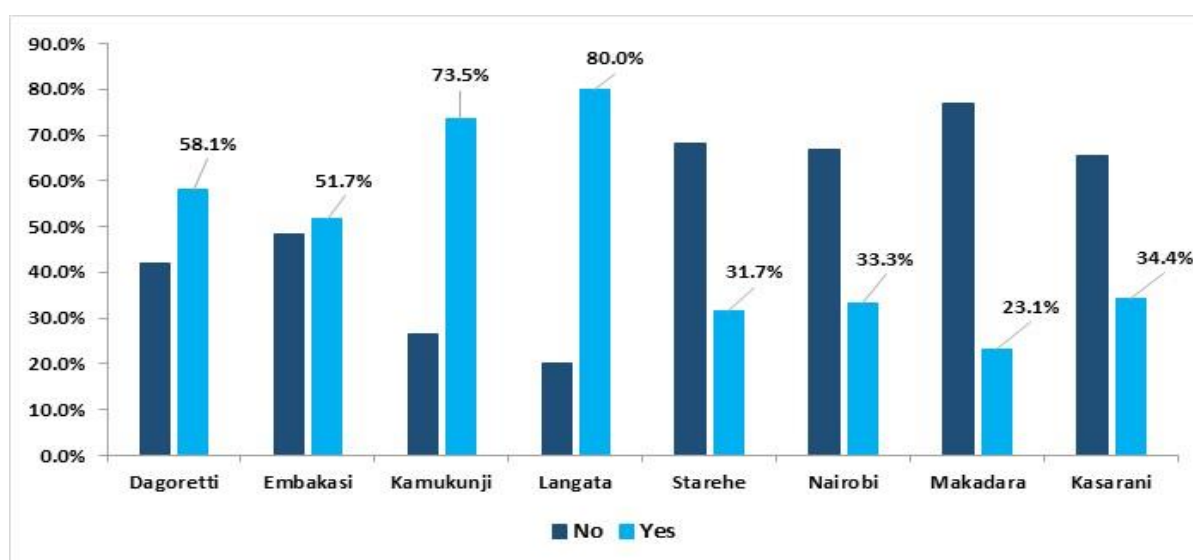


Figure 13: HCWs % applying the knowledge by sub counties

Data was also disaggregated by the County and sub-county hospitals (figure 14). Pumwani hospital had the largest 100% (20) HCWs trained (Figure 14), all the HCWs interviewed had been trained on planning and budgeting of health services, whereas Mama Lucy Kibaki hospital and Nairobi CHMT had the least 57% (21) and 33% (27) number of the HCWs trained respectively.

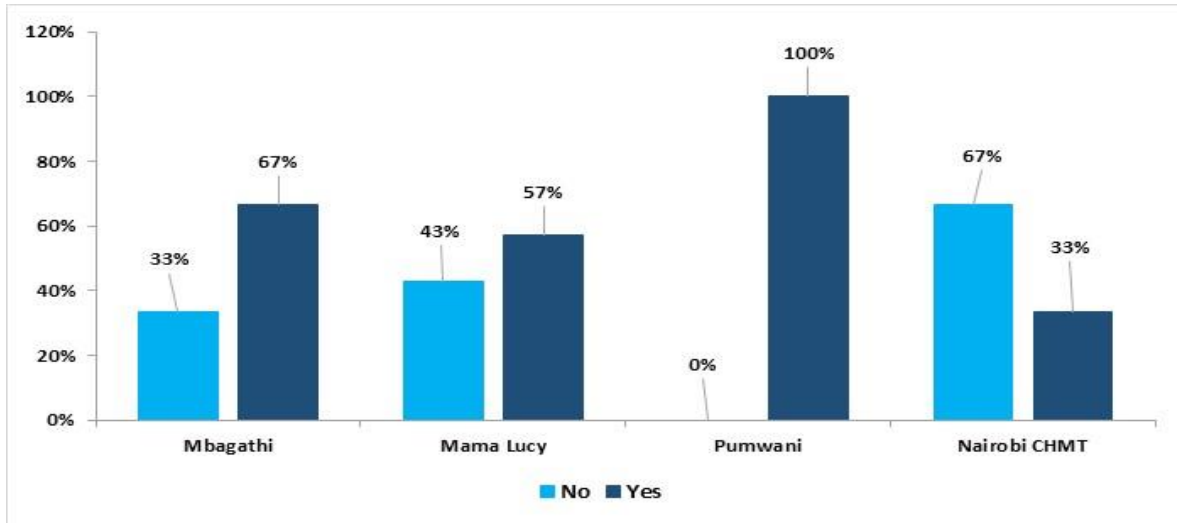


Figure 14: HCWs applying by county, sub-county hospitals and CHMT

Having all the HCWs trained in Pumwani Hospital, it will be assumed that the hospital should therefore have quality hospital plans and the budget implementation performance should be high.

4.1.2b Health care managers knowledge on planning and budgeting

Most (68%) of the health managers had no formal training on planning and budgeting (Figure 15), conversely a significant number were involved in planning and budgeting without the relevant knowledge to guide them in the tasks (Figure 16).



Figure 15: Number of health managers with formal knowledge of planning and budgeting

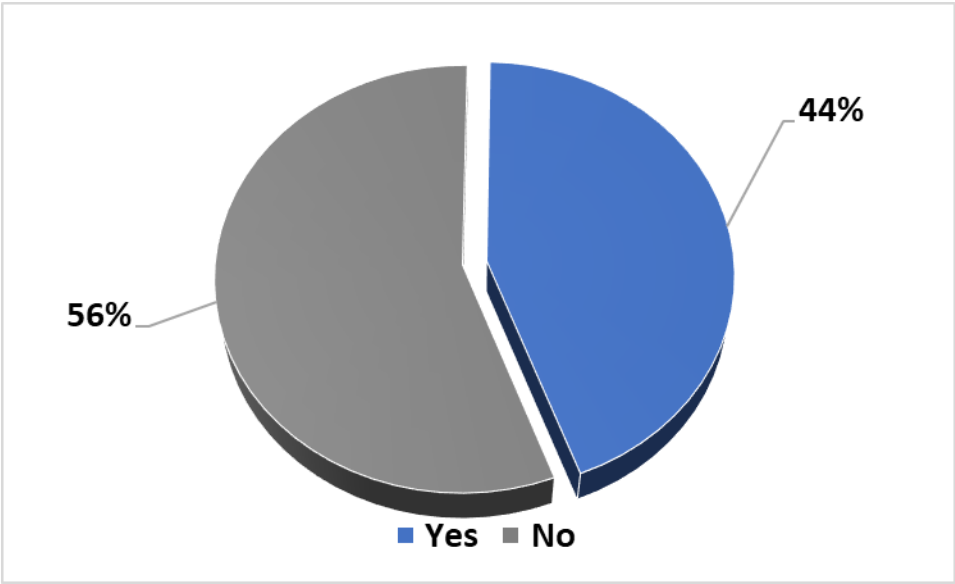
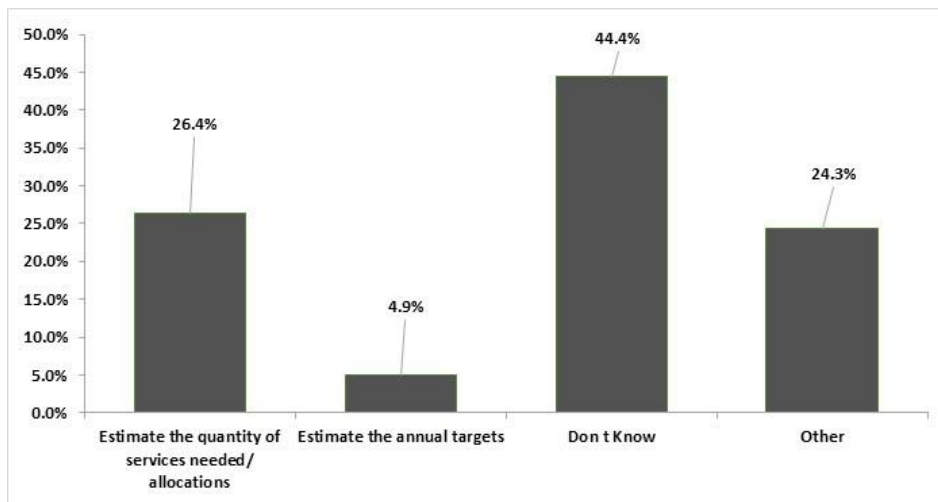


Figure 16: Health managers involved in planning and budgeting

4.1.3a Extent to which the Health Care workers apply input (Need and Supply-side) factors in the budgeting process

Health workers capability in utilising the input factors such as population health service coverage e.g., immunization coverage, Antenatal care coverage and the related targets are critical in ensuring that the budgeting process takes into consideration the priorities and the health needs of the county.

To find out whether the HCWs use population as a key input factor when planning and budget for the health services in the county, the following were the findings;



Majority 44.4% (64) health care workers responded 'Don't Know', only about 31.3% (45) responded adequately from

Figure 17: HCWs use of need-based indicators

the 144 respondents on how the population parameters are used to estimate quantity of services needed and annual targets (Figure 17).

Poverty is a major cause of ill health and a barrier to accessing health care services. Majority of the population in the lowest wealth quantile rely on the public health systems to access health services. When services are provided at a cost, the poor are unable to access these health services and also lack sufficient quantities of food to guarantee them nutrition and good health. Conversely, ill health is also a major cause of poverty due to the costs

associated with seeking the services especially the out-of-pocket expenditures. Additionally, indirect costs such as transport costs and other informal payment made to service providers

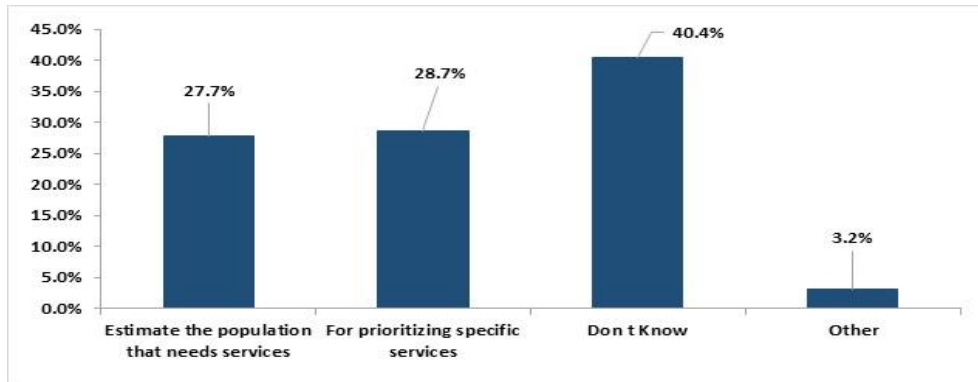


Figure 18: HCWs use of need-based indicators

impede timely access to health services. Findings on how the health care workers

ensure equity in the planning and budgeting process showed that 56.4 % (64) health care workers agreed that measuring poverty level by estimating the populations that needs and prioritising the services that target the most vulnerable in terms of poverty level in the county is a critical need-based indicator given that majority of the poor, vulnerable and marginalised populations access health services from the public health facilities.

The level of education particularly basic primary education can lead to better health behaviors, it can also lead to better household incomes allowing household to make better informed choices on matters relating to health and nutrition. Reviewing the level of education in the county on a regular basis by the county can provide a basis for the HCWs to know whether to budget for increased resources targeting certain health areas or to maintain the

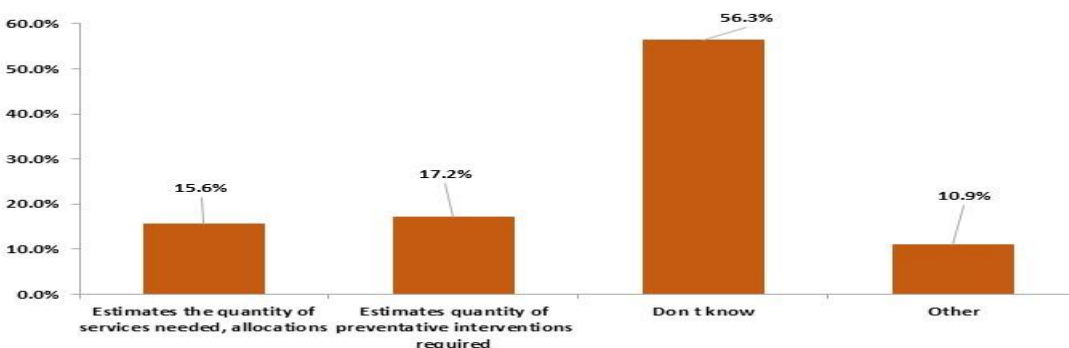


Figure 19: HCWs use of need-based indicators

level of resources. Poor health not only results from lower educational attainment, it can also cause education setbacks and interfere with schooling. The level of education was not viewed as a major need-based factor in determining the quantity of health services and budgets in the county. A majority 56.3 % (36) of the HCWs (Figure 19) shared that they did not know whether it is important to consider education level as an important factor in planning and budgeting for the health services in the county.

From the HCWs perspectives, a review of health services coverage of some of the critical health areas relating to primary health such as Immunization coverage, ANC coverage among others, as critical inputs into the planning and budgeting process resulted in the following findings;

MCH services were the most important 86.8% (222) followed by Immunization services at 82.3% (209) and TB services 77.3% (198) by disease specific area. NCDs scored the lowest in terms of important services at 51.6% (131), yet there is an increasing burden of NCDs in the country. NCDs are the second leading in mortality accounting for 50% of the total hospital admissions and over 55 % of hospital deaths (NCPD, 2017), over burdening the national referral hospitals as a result of the low capacity at the county and sub-county hospitals (Figure 20).

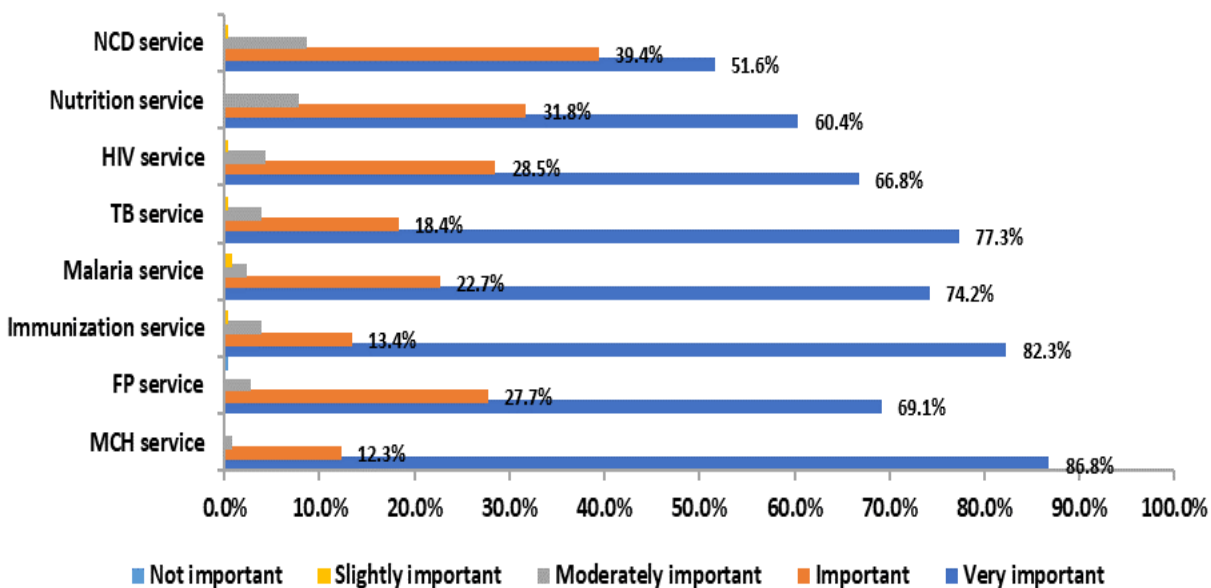


Figure 20: HCWS health service indicators used in planning and budgeting

HCWs at the county level mostly use the immunization coverage 50.0% (127) indicators in the planning and budgeting process. About 35.4 % (90) of the HCWs shared that they did not know which indicators to use in planning and budgeting to determine annual priorities and resource needs (Figure 21).

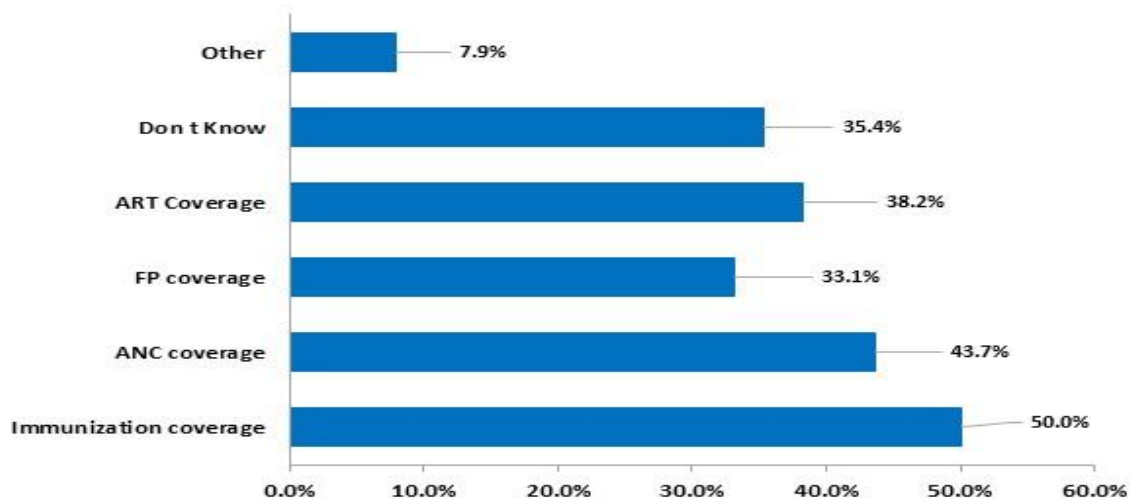


Figure 21: HCWs Health service indicators used in planning and budgeting

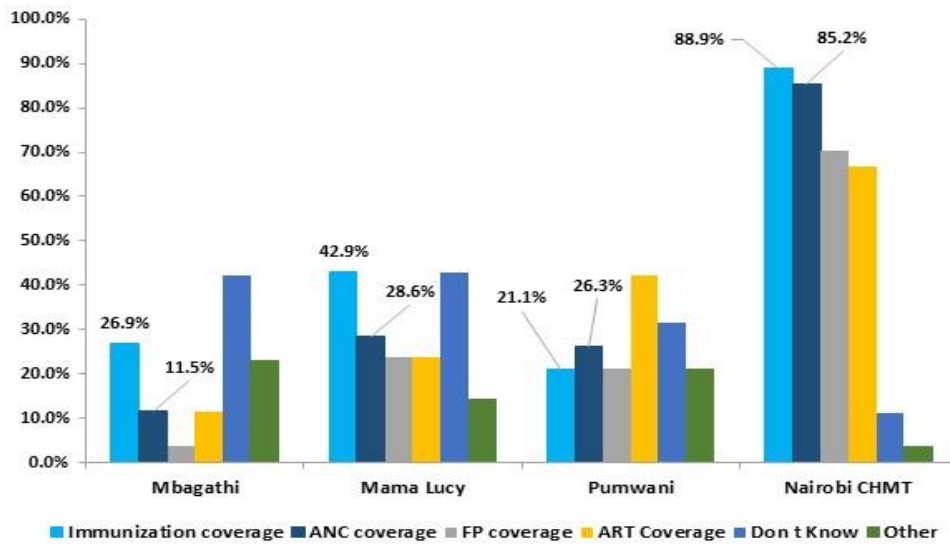


Figure 22: HCWs use of indicators disaggregated by county, sub-county and CHMT

County Health Management Teams, (CHMT) mainly involved in the planning for health services in the county and the Hospital team involved in the clinical activities, considered immunization coverage as the most important in their planning and budgeting 88.9% (24) (Figure 22).

However, for the hospital management teams the findings significantly varied and were quite different from the randomized sample from the county management indicating different needs for hospitals that mainly focus on curative care provided at the county and sub-county referral hospitals. Important need-based indicators that are used in the budgeting process

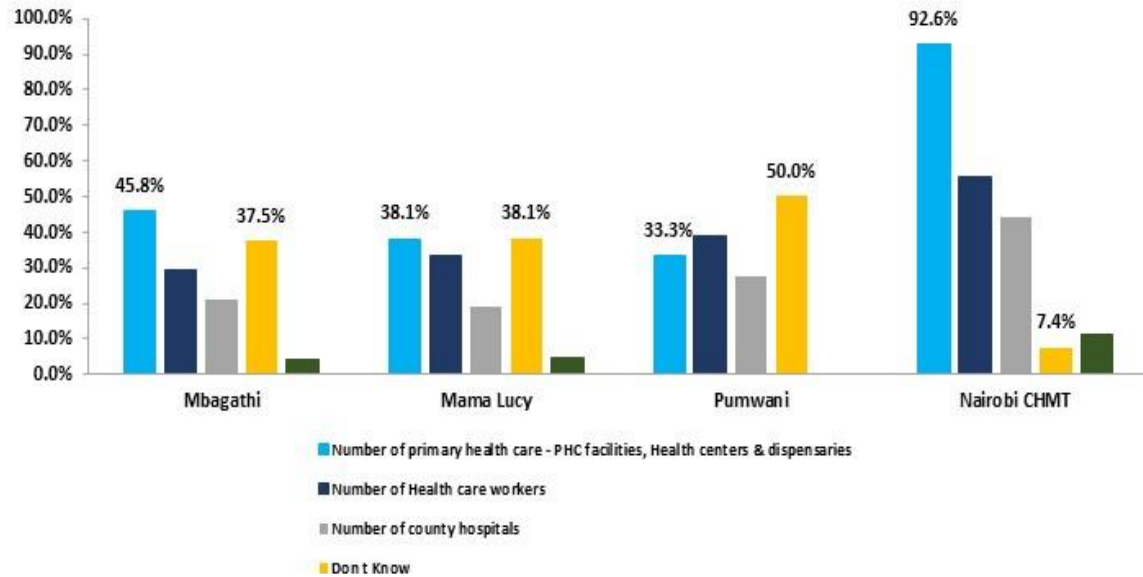


Figure 23: HCWs use of need indicators disaggregated by county, sub-county and CHMT

From figure 23 findings, it is clear that the HCWs vary in terms of their understanding of how some of these indicators are used in planning and budgeting process. This provides concise evidence that there are capacity related challenges in planning and budgeting processes at the county level.

Findings on the budgeting processes, were also explored, mainly to determine whether the HCWs understand the institutional arrangements that guide the budget process. Simple questions to find out where or to whom the departmental budgets are submitted found the following;

The majority 33.9% (93) of the healthcare workers did not know once they complete

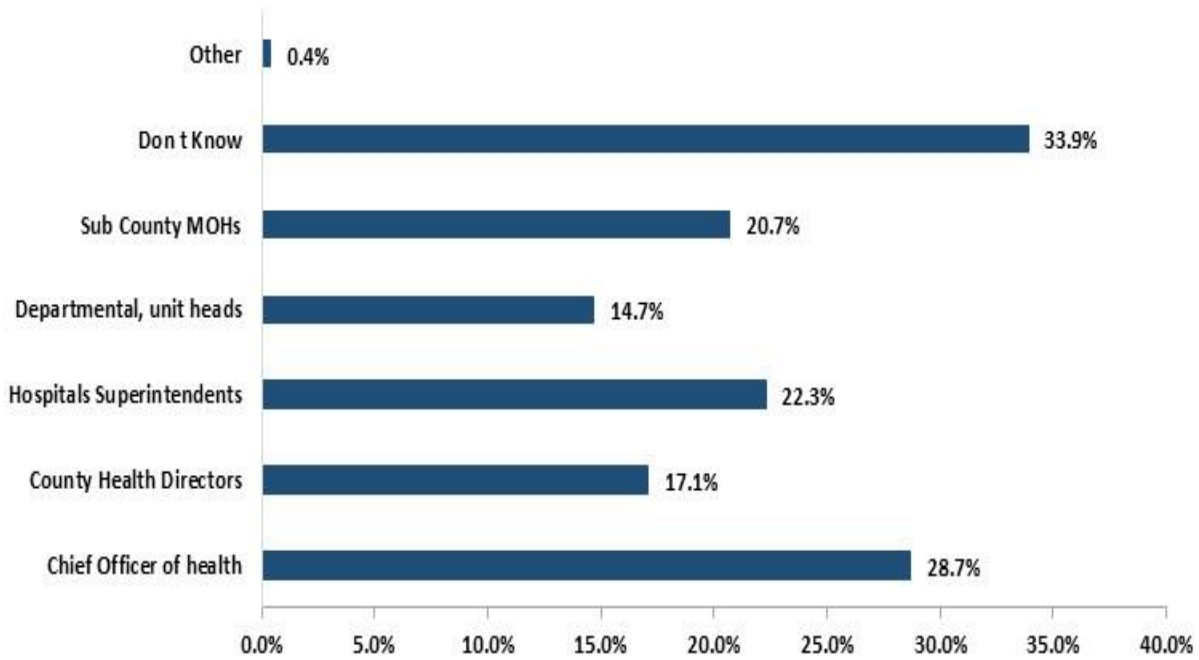


Figure 24: HCWs understanding of the budget process

developing the plans and budgets, to whom they are submitted. Depending on the designation of the HCW and workstation, responses varied (Figure 24).

Disaggregating by CHMT and county hospitals. The process of submission is different across. Key finding is that the majority of the HCW in the county hospitals do not know the process of finalization and submission (Figure 25).

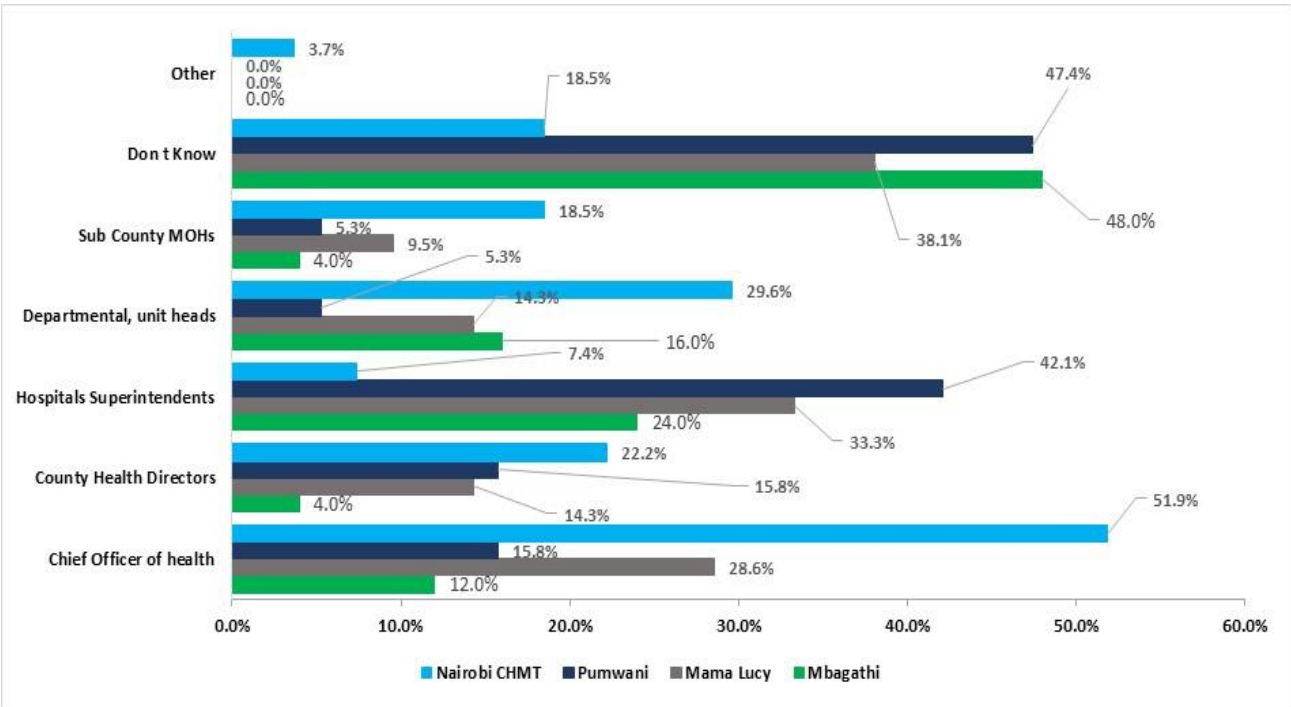


Figure 25: HCWs understanding of planning process by county, sub-county and CHMT

Sub-county teams aggregated responses by sub-counties showed that the responses vary, because of the bottom up and top-down approach that is used in planning and budgeting. Senior level management may understand the budget formulation and approval process but do not communicate to the lower levels to foster information sharing and understanding of the entire process (Figure 26).

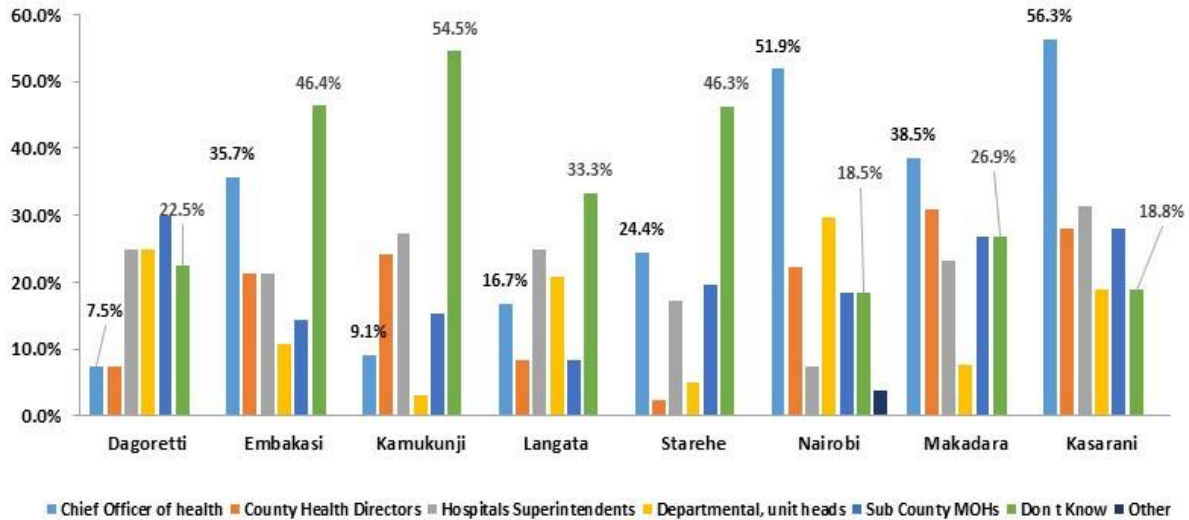


Figure 26: HCWs understanding of process by sub-counties

Analyzing the responses to determine whether there is a difference in understanding the process across those who have received training and those who have not.

Those trained compared to those who have not trained (Figure 27).

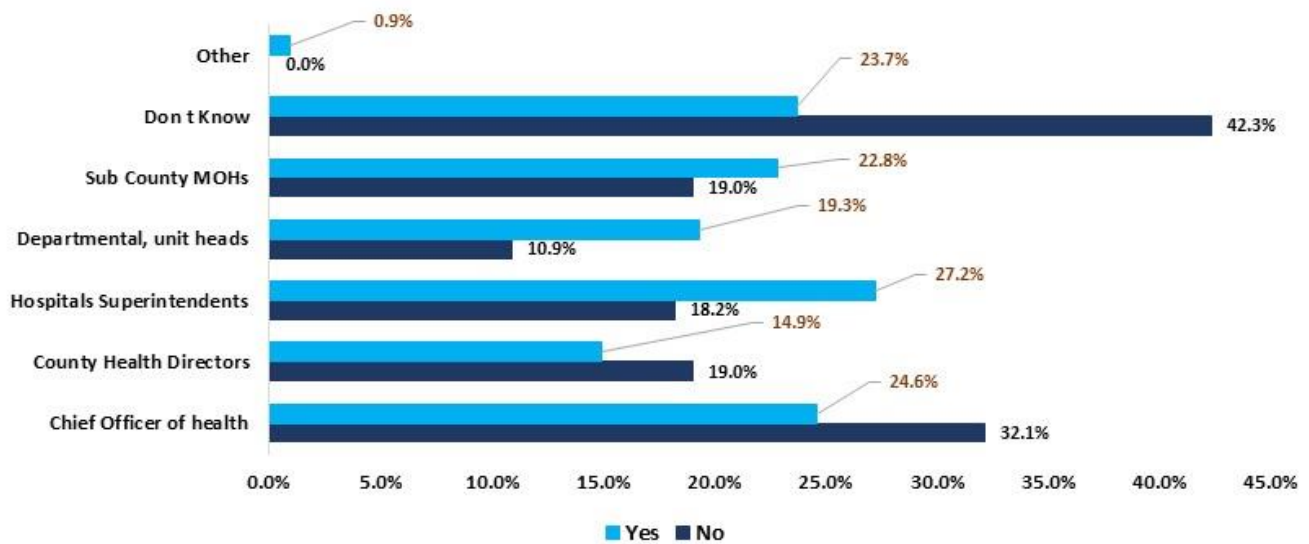


Figure 27: HCWs understanding of the process disaggregated by those trained and those not trained

An analysis of the indicators that are mostly used in the planning and budgeting process findings are shown in the figure 28.

Findings also showed that the top 3 important health service delivery components that should be prioritised in the planning and budgeting processes are emergency, outpatient services and pharmaceutical drugs in that order (figure 29).

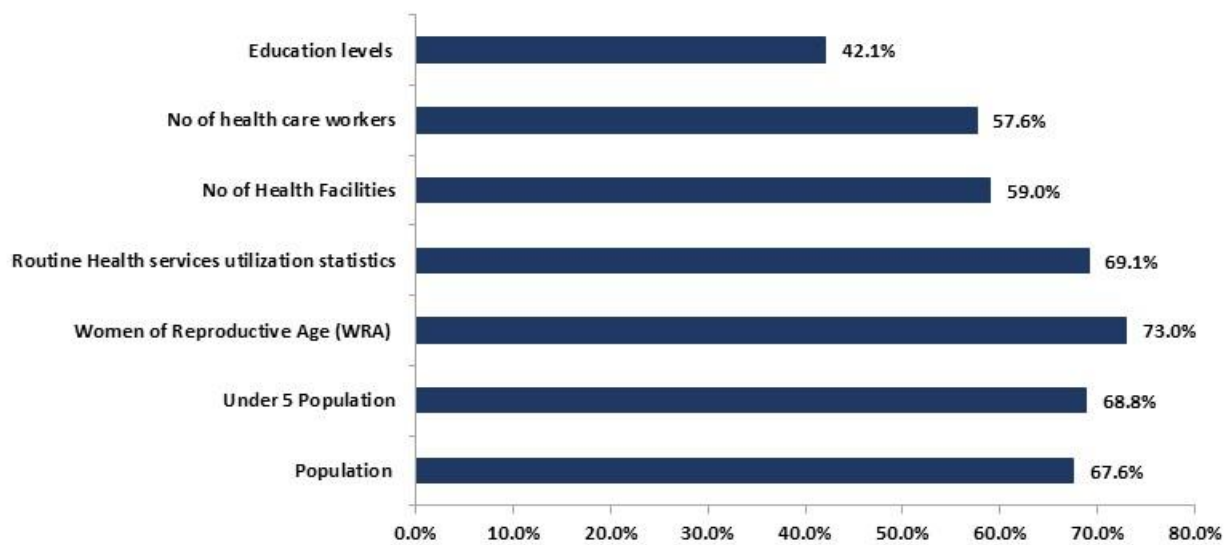


Figure 28: Indicators mostly used in health planning and budgeting by HCWs

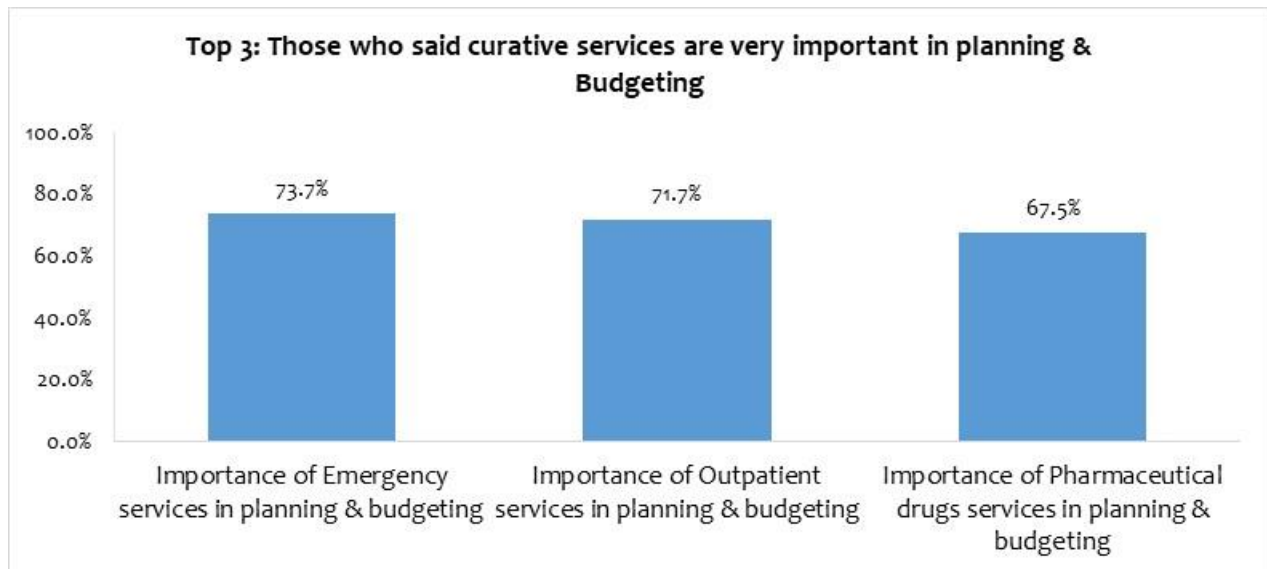


Figure 29: HCWS Top Three Priorities in Planning and Budgeting

Critical health development components that should be prioritized in the planning and budgeting process from figure 30 include the PHC facilities, procurement of hospital equipment and rehabilitation of PHC facilities in that order.

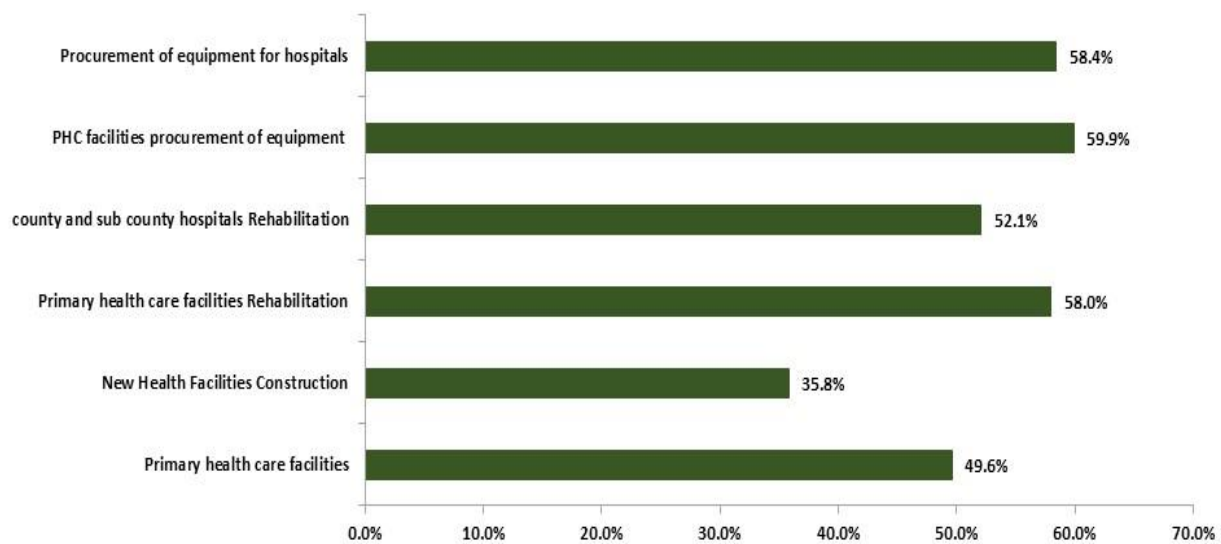


Figure 30: HCWS Top Three Priorities in Planning and Budgeting process

How the health care workers perceived their level of knowledge and capacity in planning and budgeting

Table 11: HCWs self-knowledge scores on planning and budgeting

	Planning skills	Budgeting skills
Rate score 100%	56.4%	46.0%
Mean	5.65	4.56
S. D		
	n=251	n=249

Reasons as to why the health care workers rated their score as above for the planning skills (n=251);

Table 12: Reasons why HCWs rated the score for planning

	Percent
Not well trained	36.3%
Well trained	40.6%
Little trained	17.9%
Learning	5.2%
Total	100.0%

Reasons as to why the health care workers rated their score as above for the budgeting skills n=249

Table 13: Reasons why HCWs rated the score for budgeting skills

	Percent
Not well trained	37.4%
Well trained	37.0%
Little trained	14.9%
Learning	9.6%
Total	100.0%

The top 3 statements that the health care workers agreed with

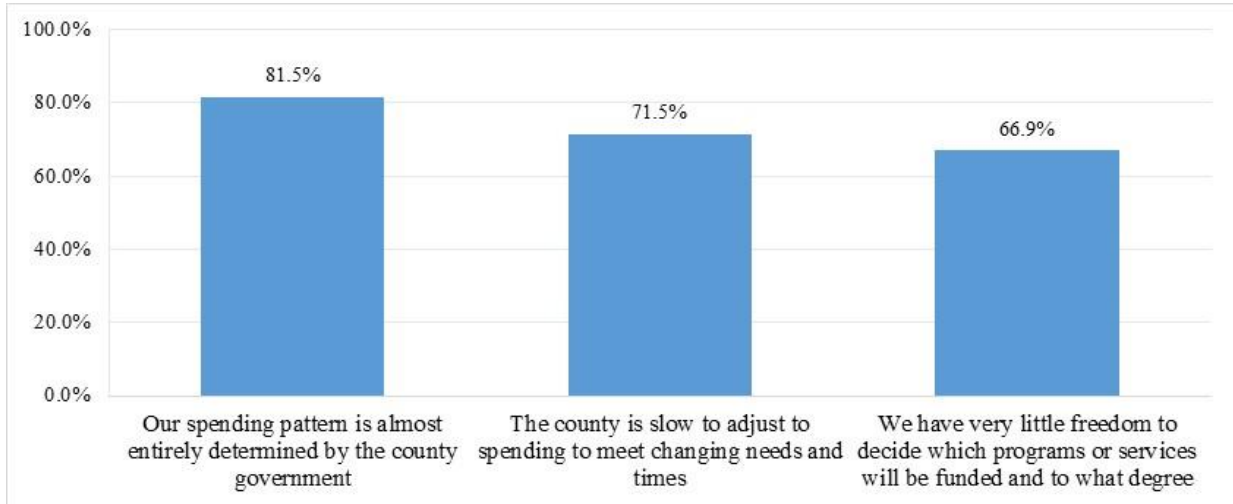


Figure 31: Top three statements HCWs agreed with

Further assessing of the extent of application of the input-based factors in the budgeting process, the statement ‘spending pattern is determined by the county government, followed by ‘Do not incorporate needs in the budgeting process’ and ‘HCWs do not input into the budgets’ are the top three statements that resonated with them. These shows significant gaps in the planning and budgeting process including poor participation.

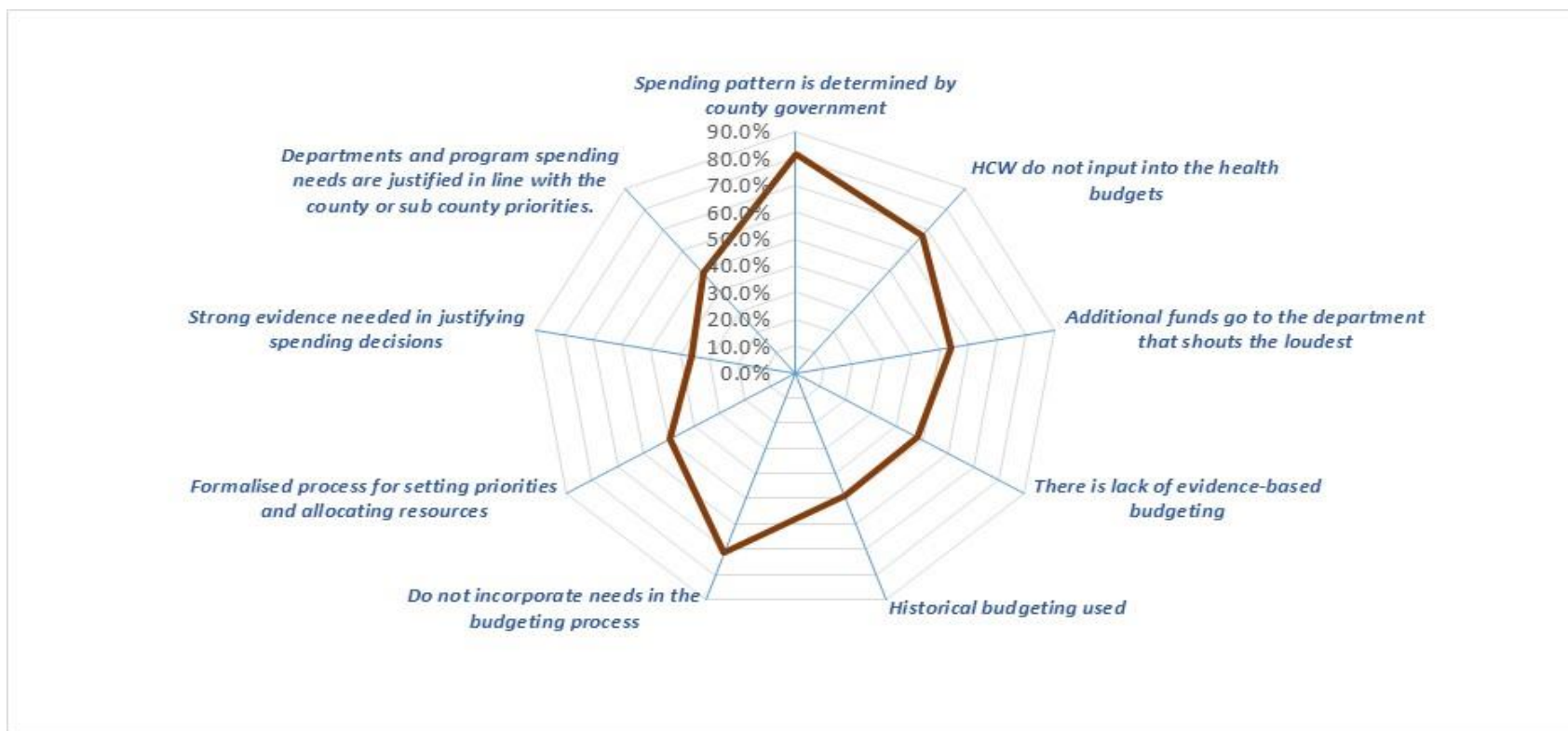


Figure 32: HCWs views on the statements highlighted

Opinions from the among trained and non-trained health care workers on how much of the budget allocation should go into the remuneration of the health care workers showed variation with the non-trained indicating entire 100%.

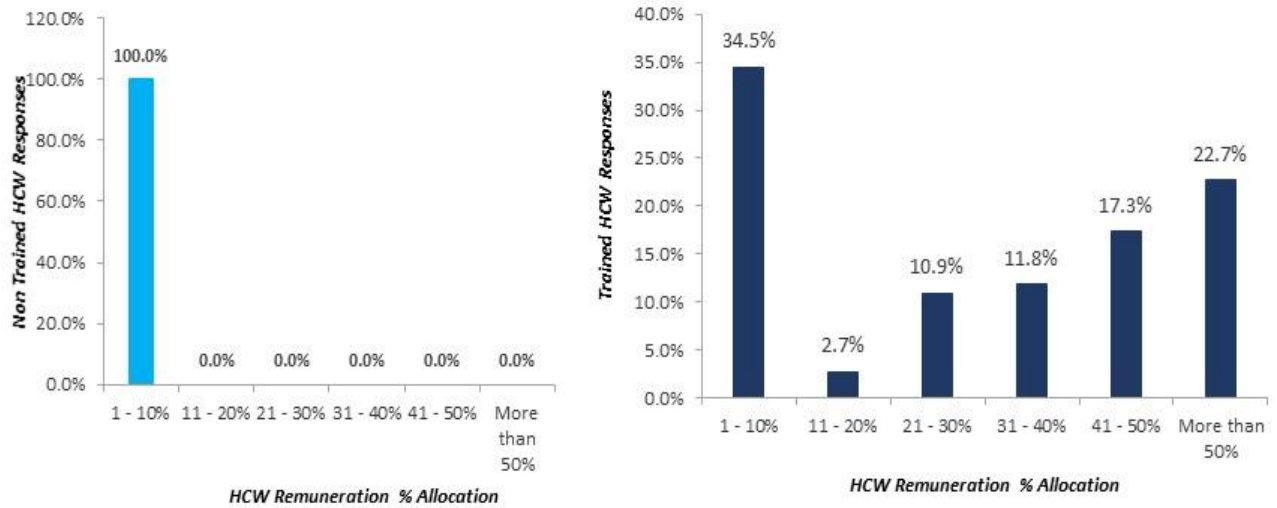


Figure 33: HCWs opinions on human resource remuneration

Importance of the budgetary implementation feedback to the health care workers among the trained and non-trained showed a higher level of score among the trained-on importance of budgetary feedback (Fig 34).

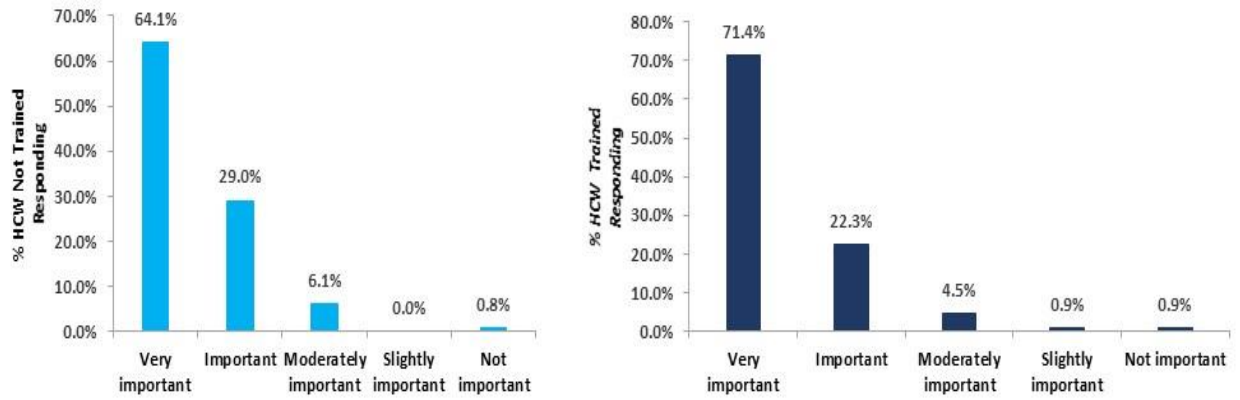


Figure 34: HCWs views on budgetary feedback

Kind of planning and budgetary feedback the health care workers staff would like to receive for their sub-county, department or unit mainly was the expenditure reports (Figure 35).

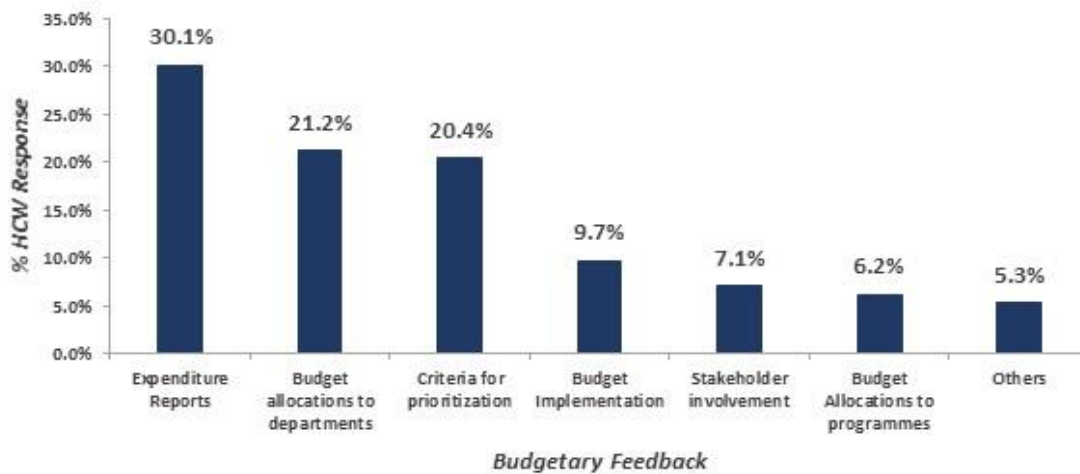


Figure 35: HCWs response on type of feedback required

Health care worker level of satisfaction of the budget allocation for health activities in the county (n= 244). A majority were not satisfied with the level of budgets (Figure 36).

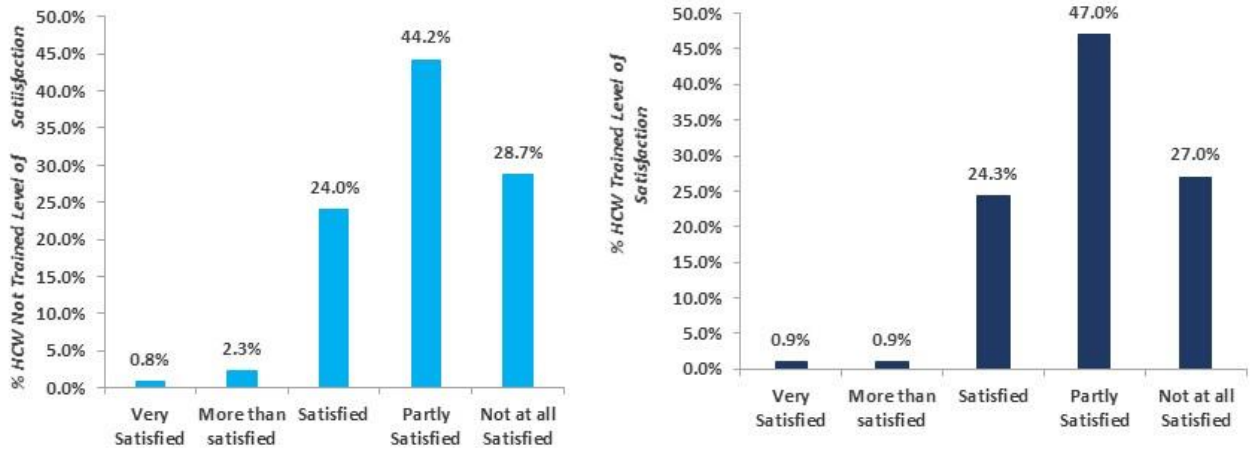


Figure 36: HCWs level of satisfaction with the county budgets (Trained and Non-trained)

Figure 37 shows the reasons for dissatisfaction with the county budget allocations for health activities in the county

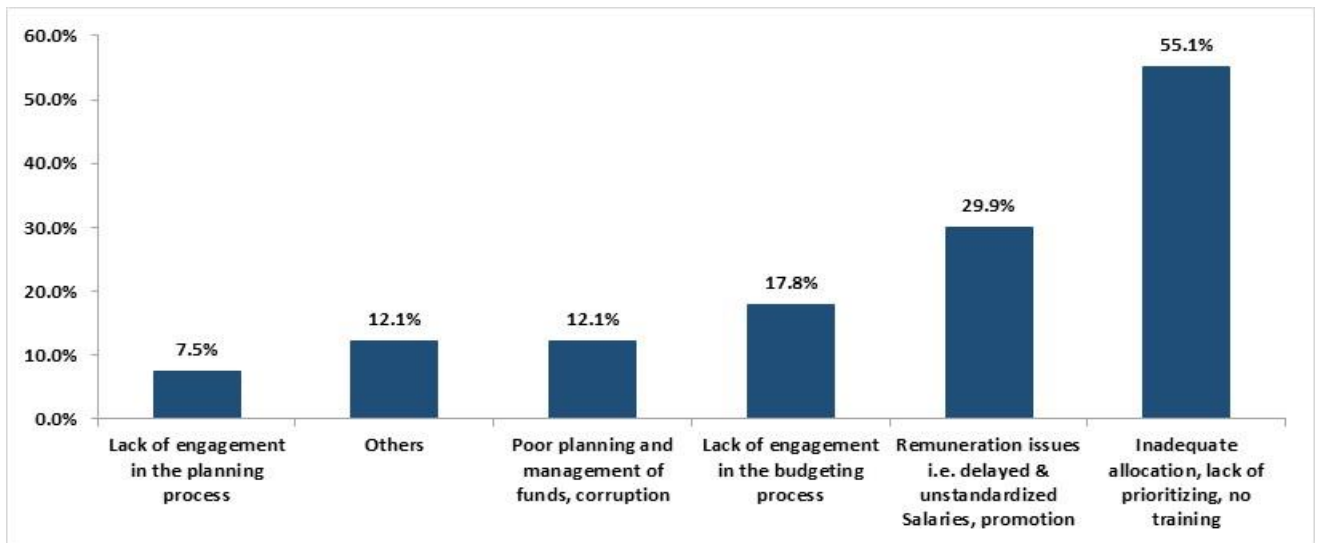


Figure 37: HCWs reasons of dissatisfaction

What would need to be done by the county high level management in order to improve the budget allocation for health services in Nairobi County (Figure 38), most HCWs 25.8% suggested effective engagement in the planning and budgeting processes.

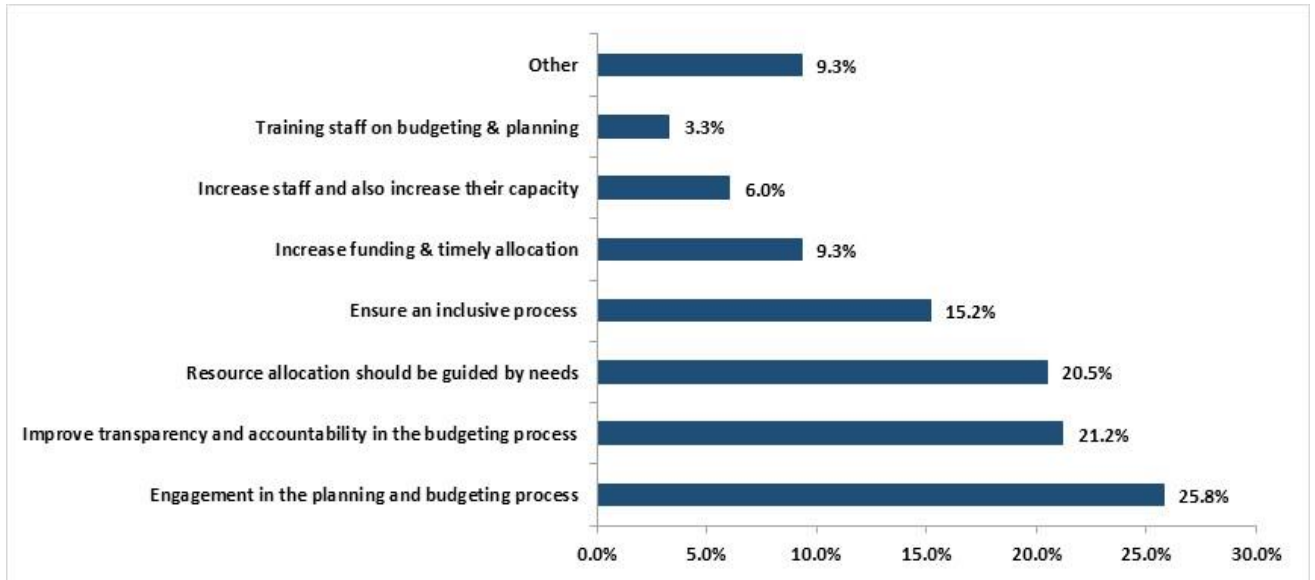


Figure 38: HCWs suggestions of areas of improvement

4.1.3b Extent to which the health managers apply input (Need and Supply-side) factors in the budgeting process

Among the health managers top three health service areas that are crucial and require to be included in the planning and budget process include Maternal and child health (88%), Tuberculosis (88%) and immunization services (84%).

Health managers top three indicators that are used in health planning and budgeting include immunization coverage (87.5%), ANC coverage (83.3%) and FP coverage (62.5%).

The health managers considered the following health services as crucial and should be considered during the planning and budgeting process, to ensure adequate resources and inputs required for optimal delivery of services (Figure 39).

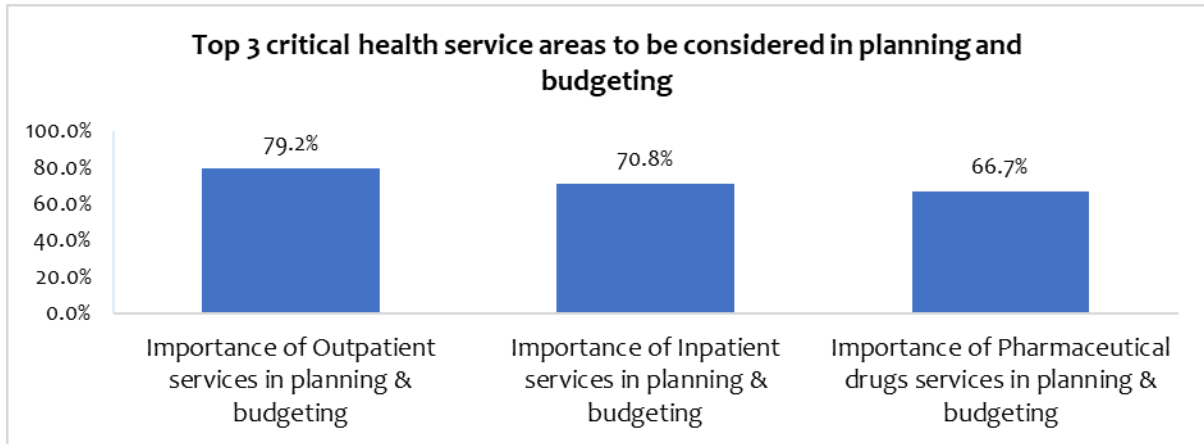


Figure 39: Critical health service areas

The health managers self-rated their planning and budgeting skills quite low. A Likert scale of 1 to 10 was used to self-score, 1 being the lowest score and 10 being the highest score. The mean score for planning was 5.57 while the mean score for budgeting was lower at 4.21. A majority of them (60%) gave the reasons of the score as ‘not well trained’, ‘learning’ and ‘some sort of training’ for the reason. For the budgeting skills most (75%) shared that they had not received any training, or were not well trained and others that they were learning on the job. Very few of them have had formal training on government budgeting processes and PFM systems in general.

When sharing the following statements with the managers, a majority of them agreed with the following statements (Figure 40).

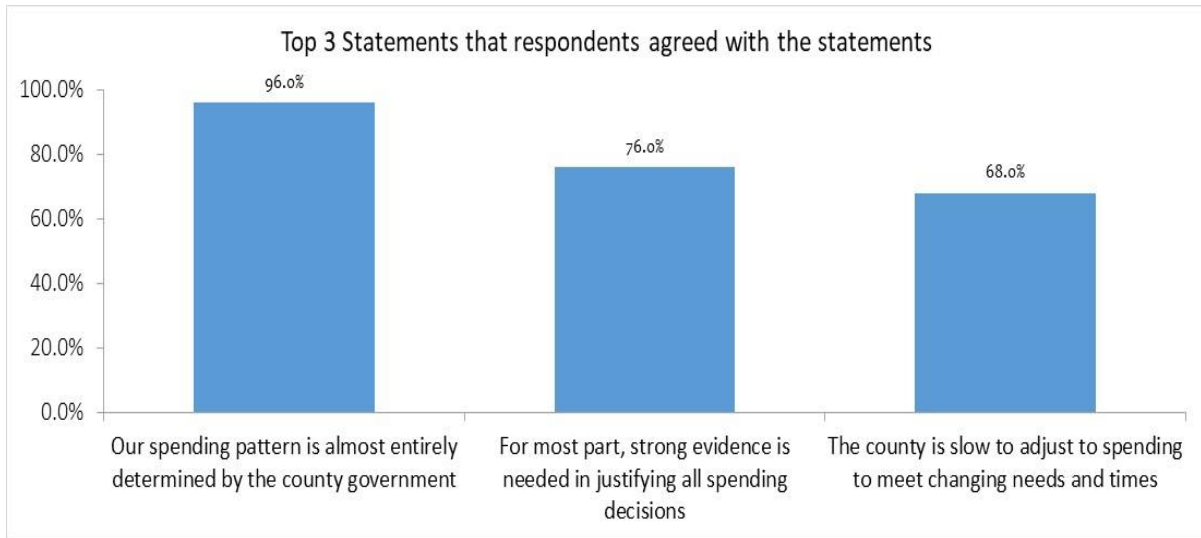


Figure 40: Planning and budget statements

4.1.4a Determining the relationship between HCWs knowledge and application in health service planning and budgeting

The strength and character of the relationship between *knowledge* (those that have received training on health planning and budgeting) and *application* (those participating in health planning and budgeting processes) of need-based and supply-side factors among health care workers in planning and budgeting process, binomial logistic regression (often referred to simply as logistic regression) was used.

Before conducting the binomials logistic regression, the *dependent variable* (participating) and the *independent variable* (knowledge) had to ‘pass’ the assumptions of;

- (a) the dependent variable was measured on a dichotomous scale i.e., ‘yes’ and ‘no’.
- (b) Independence of observations and the dependent variable had mutually exclusive and exhaustive categories.

H₀: (Null hypothesis) There is no difference in the application (involvement) in the health planning and budgeting process between the trained and the untrained

H_A: (Alternative hypothesis) There is a difference in the application (involvement) in the health planning and budgeting process between the trained and the untrained

The output from the test is shown below:

Table 14: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	120.812	1	.000
	Block	120.812	1	.000
	Model	120.812	1	.000

P Value < 0.00005, statistically significant

Table 15: Variance explanation

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	221.800 ^a	.375	.509

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Variable is explained 50.9%, there are other explanatory reasons or factors such as work load etc.

Table 16: Category Prediction

Classification Table						
	Observed			Predicted		Percentage Correct
	Involved in Health Planning and Budgeting	Yes	No	Yes	No	
Step 1	Involved in Health Planning and Budgeting	Yes		93	6	93.9
		No		45	113	71.5
	Overall Percentage					80.2

a. The cut value is .500

The model above is more of a classification model

Table 17: Variable in the equation

		B	S. E	Wald	df	Sig	Exp (B)	95% C.I. for EXP (B)	
								Lower	Upper
Step 1 ^a	Train (1)	2 3.662	.457	64.305	1	.000	38.922	15.905	95.250
	Constant	-.726	.182	15.981	1	.000	.484		

Variables (s) entered on step 1: train 2

Based on the results in Table 15, a logistic regression was performed to ascertain the relationship of *knowledge (training on health and budgeting)*, on the *application (involvement)* of the same.

The logistic regression model was statistically significant, $\chi^2 (1) = 120.8, p < .0005$. The model explained 50.9% (Nagelkerke R²) of the variance in application and correctly classified 80.2% (Table 16) of cases in our dataset. Those *trained* are 38.9 (Table 17) times more likely to be *involved (application of the knowledge)* in the *health planning and budgeting process* compared to those not trained.

From the result we reject the null hypothesis and state there is a difference in application (involvement or participation) in the health planning and budgeting process between those who are trained and the untrained.

The Logistic Regression Model

From Table 15 we get the regression equation model as;

$$\ln(\text{ODDS}) = -0.726 + 3.662 \text{Knowledge}$$

Using the above model, we can predict the odds that a trained or untrained subject will be engaged in the health planning and budget process.

$$e^{a+bx}$$

The odds prediction equation is ODDS =

If our subject is untrained (train=0) then the;

$$e^{-0.726+3.662(0)} = e^{-0.726}$$

ODDS = 0.484. That is, those not trained are only 0.484 as likely to be engaged (application of the knowledge) in the health planning and budgeting process.

However, if our subject is the trained (train = 1), then the ODDS

$$e^{-0.726+3.662(1)} = e^{2.936}$$

= 18.84. That is, those trained are 18.84 times likely to be engaged (application of the knowledge) in the health planning and budgeting process.

Probabilities

To see the probabilities of those trained and not trained being involved in the application of the knowledge, we convert odds to probabilities, as shown below.

For the trained:

$$\hat{Y} = \frac{ODDS}{1+ODDS} = \frac{18.84}{1+18.84} = 0.95$$

That is, the model predicts that 95% of the trained will be *involved (application of the knowledge)* in the *health planning and budgeting process*.

For the untrained:

$$\hat{Y} = \frac{ODDS}{1+ODDS} = \frac{0.484}{1+0.484} = 0.326$$

That is, the model predicts that 33% of the untrained will be *involved (application of the knowledge)* in the *health planning and budgeting process*.

4.1.4b Qualitative information for the health managers on the planning and budgeting process

While administering the semi-structured questionnaires, some qualitative questions were asked on what are the main challenges around the planning and budgeting process in the county and whether the managers are satisfied with the county health priorities that are budgeted for, this is what they had to say;

“Most of the hospital requirements like drugs and lab reagents are not available, patients are referred to Kenyatta National Hospital most of the time”

Manager, Mbagathi Hospital

Other respondents shared the following with regard to inclusivity, transparency and participatory planning and budgeting process as well as budgetary feedback;

“There is need for the process to be inclusive, and always provide us with the feedback on plans and budget performance, this makes us motivated and to know that when we are engaged in the process it’s not just doing but that we are actually implementing it.”

Manager, county department of health

On issues to do with timely disbursement of funds which is affected by many other factors including prioritising other sectors rather than focusing on critical health services; the managers shared;

“There is need to increase funds to the hospitals to enable the hospitals have the basic needs to provide some of the outpatient services. We are asked to develop the departmental plans and budgets, but we never hear how much has been given to the hospital or department. There is need to have transparency and timely disbursement of the funds to the respective hospitals and departments.”

Sub-county, health manager

Most of the managers have been trained on planning and budgeting but on whether the right training was administered especially on understanding the budgeting linking health financing and PFM process. One of the respondents had this to say;

“We have been trained on planning by many external partners and we understand the budgeting but relevant training like public budgeting, we do not have a clear understanding how this works, the process of reporting and what is needed from me?”

Manager, Sub-County

“Even when we plan and budget for activities accordingly, we never see the money getting to our department, and this therefore makes us not see the need of engaging on the task. We just focus on working with partners.”

Manager, county department of health

Others shared

Inclusive planning and budgeting process is important and contributes to staff motivation, learning and overall optimal performance.

“We are never involved especially in the budgeting process; plans we actually share but when it comes to the budget, we do not know what is provided for and when to expect it. This leads to uncertainties in planning and activities since we are not sure what was approved and what we are going to receive.”

Manager, county department of health

When asked whether they were satisfied with the processes and the level of budgets to hospitals, departments and how much is actually spent.

The health managers shared that they were not satisfied (76%) due to challenges related to delayed salaries, poor processes that are not inclusive, lack of feedback and political interference of the process particularly budgeting process. They had this to say;

Health budgets need to be allocated based on the needs of the communities, and the requirements that health facilities need to provide the services. The facility improvement funds previously helped us to buy the requirements we needed, but now we usually have nothing but to refer the patients to buy the items or to another hospital

Managers in the county department of health

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

In the face of declining external funding for the health sector, efforts are being made to ensure that countries move to self-sufficiency, resulting in concerted efforts to increase domestic public resources for health and improve on efficiencies on delivery of services (Fagan T and Lang E, 2019). Whereas countries have committed to gradually mobilizing domestic public resources for health, this has not been seen to be of sufficient quantities that will ensure the long-term sustainability of critical and life-saving programs as well as support progress towards achievement of UHC 2030 goals.

To ensure that countries engage and mobilize domestic public resources for health and enhance sustainability efforts for the critical programmes such as MCH, significant investment is needed in improving the knowledge of the health care workers and managers in understanding public finance and planning for health. In most countries these tasks are the responsibility of the economists at the national level, mainly seconded to the health ministries to support planning and budgeting processes. Lack of knowledge and participation in planning and budgeting within the health sector particularly among the technical teams, leads to policy-making, planning, costing and budgeting taking place independently of each other, leading to misalignment between health priorities, allocation and use of resources. It is also important for the health workers and managers to understand the political economy of the budget making and approval process to enhance their effective participation` and engagement (Rajan D. *et al*, 2016).

The different approaches in budgeting process highlighted by Savedoff William, in the WHO discussion report of 2003 were found to be utilized in developing plans and budgets. However, there were challenges and gaps of the way the processes are managed leading to dissatisfaction and lack of motivation among the health workers. For instance, from the qualitative data analysis, the health workers do not get any feedback regarding what the actual budget looks like and therefore are unable to implement the plans and budgets.

Countries are also grappling with the low fiscal space, exploring feasible approaches that can increase fiscal space for health such as increasing efficiency and reducing waste in the health care system (Barroy H. *et al*, 2016). Increasing efficiency and reducing waste in the health care system is one of the noble approaches that can be achieved by ensuring effective prioritization of scarce resources and maximizing health outcomes. Maximizing the desired health outcomes should also take into perspective equity considerations by allocating resources based on need. Additionally, efficiency can also be achieved by ensuring the process of prioritization in planning and budgeting are inclusive, transparent, evidence-based and incorporate the values of the communities (Barasa *et al*, 2016) which can only happen when health workers and managers are included in the process.

Health care workers and managers knowledge on planning and budgeting

Health care workers and managers knowledge in the planning and budgeting processes is critical especially at the subnational levels, since the health workers understand the needs of the communities they serve. Their participation in these processes can lead to motivation and empowerment leading to better health outcomes, especially when their contributions are included in the actual plans and budgets. The goal of devolving health services to the counties was to ensure that the planning process better target the needs of the communities,

by bringing services closer to the people improving access and allowing for community engagement, in addition to improving health care worker morale and reducing turnover. Health managers and workers have the opportunity to focus on improving the quality of care, access and equity and empowering sub-national governments by increasing innovation and efficiency (Barasa E. W. *et al*, 2017).

Prior devolution the planning and budgeting processes were centralized at the national level, and the capacity as well as knowledge was mainly centralized at the national level. At the subnational level, very few health workers and managers have the capacity and skills to understand the budgeting process and its link to the planning cycle. Findings from this study have shown that, health workers are participating in the planning and budgeting process but very few have formal training on planning, public financial systems and its relation to health financing.

Understanding the basic principles of public budgeting as well as the political dynamics that enable the budget elaboration and approval processes is important. A review of the health workers understanding of the process of approval showed gaps in knowledge.

County governments have insufficient human resource capacity at the subnational level, some counties have economists seconded to the health department, however most of them do not have sufficient knowledge to equip them with the relevant skills to participate in the health sector public budgeting processes leaving responsibilities to the subnational treasuries personnel and politicians, who do not understand the health needs and supply-side issues that affect health service delivery, when and how to use need and supply-side indicators in the budgeting process.

Further, this study established that some of the health workers involved in planning and budgeting were not trained. Among those trained on budgeting, very few were trained on the relevant budget training that is important for county health planning and budgeting process. From the responses, it was clear that there are quite significant variations in the planning and budgeting courses organized by different entities, and there is no consistency in the trainings offered and what is considered as adequate for the health care workers by government.

Although these figures showed that more health workers had been trained on planning and budgeting for health services, it can still be argued that the trainings may not have been relevant or sufficient enough to enable the county health teams participate effectively in the processes. The study findings also revealed that more health workers are trained on planning compared to the budget trainings.

A key component of the quality budget trainings is inclusion of modules such as public financial management 2021, (PFM) and Medium-Term Expenditure Framework (MTEF). For countries where there are reforms such as in Kenya where Programme Based Budgeting (PBB) is currently being implemented, a module on this topic can be included in the training content. Additionally, intergovernmental processes for highly decentralized governance systems should be included to aid effective planning between the two levels of government (Rajan D. *et al*, 2016) and (WHO, 2017).

Among the health managers, the study established that very few had received training on planning and budgeting. From these findings, it is clear that lack of a coordinated approach from government, training institutions and other providers is lacking, given the varied types and length of planning and budgeting trainings.

Reduced autonomy over the financial management of the county hospitals has led to poor performance of the hospitals and lack of essential goods required for the delivery of services (Barassa E. *et al*, 2017) due to delays in disbursement of funds to the county hospitals. Despite all the HCWs and managers having trained in the budget processes such as in Pumwani County hospital, the reduced autonomy over financial management since devolution, changes in PFM rules and policy reforms such as the fees maternal services affect the effectiveness of the budget implementation at the hospital. Study revealed that most of the hospital managers had been trained in planning and budgeting, since these were activities, they were responsible for prior devolution. With the PFM 2012 reform that came about with devolution, these responsibilities are not part of the management team since the funding flows were rearranged affecting staff morale to participate in the planning and budgeting process.

Ineffective service delivery brought about by the lack of need-based or supply side inputs into the budgeting process results, in indirect costs to patients due to lack of resources to procure basic needs for health service delivery; low motivations levels of the hospital management team and overall performance leading to poor health outcomes. Pre-devolution, the hospitals operated bank accounts and prepared quarterly budgets outlining the utilization of the user fees (FIFs). The processes required the hospitals to submit budgets to the national government, obtaining authority to incur expenditure (Barassa E. *et al*, 2017). This process was viewed as more efficient as the hospital managers adhered to the approved budgets and budgeting guidelines. There was predictability in flow of funds to semi-autonomous hospitals.

A review of their understanding on the need and supply side indicators utilization showed also a significant variation between the health workers and health managers revealing a mismatch in the county health priorities between the two groups that were sampled.

Health Care workers and managers application/participation of knowledge on planning and budgeting processes

Application of the knowledge was measured by participation of the health workers and manager in the planning and budgeting process in the county health department. The study explored on whether the health workers and managers were using the community needs and priorities in informing the plans and budgets using the bottom-up approach

Among the health workers, those participating in the budgeting process were higher than those who were actually trained. Further analysis of the HCWs to determine whether they have the required knowledge and participate as well as use need-based and supply-side input parameters in the budgeting processes, showed significant gaps in their understanding and application. A majority of the HCWs did not know how the need-based factors such as population, poverty levels, education are applied in the planning and budgeting process. These are critical factors that enhance equity in provision of the health services.

Maternal Child Health (MCH) services were considered by the health care workers to be the most important of all the health services, followed by immunization services, while NCDs were the least in terms of prioritization in the planning and budgeting process. With the rising mortality rates related to NCDs, there is need to create awareness among the HCWs to prioritize the prevention related activities for NCDs to reduce the burden at the national referral hospitals. However, this was considered as the least in terms of prioritisation in the budget process.

A review of the application of health service statistics in the budgeting process showed also significant gaps among the health care workers. It can therefore be argued that these gaps call for intensive training of the health care workers to understand the budgeting process as well as ensure the health plans are aligned to the budgets increasing efficiencies in the budget implementation.

Among the supply-side factors' provision of emergency services, provision of outpatient services and procurement of drugs and equipment were viewed as the most important components for health service delivery. Availability of drugs in health facilities is a key indicator for quality of care (Okarafor A. O. *et al*, 2007). Poor access to drugs and equipment that facilitate health service provision result in low morale among the HCWs, because they lack the necessary tools to enable them perform effectively in their work, ultimately leading to poor health outcomes.

The study also demonstrated that despite the HCWs knowledge and their participation in the processes, decisions are made at the county management level. Additionally, findings also indicated that there is minimal use of the health data in the budgeting process. The HCWs do not also know how the decisions to fund certain activities are made. A majority feel that their inputs into the budgeting process are not considered or are not included, and so feel no need to engage when decisions are made at a higher level (Kamau *et al*, 2017) (Kamau *et al*, 2017).

Further, a majority of the HCWs were not satisfied with the level of budget allocation. Some of the reasons for the low satisfaction with the budgets included; inadequate allocation to the county health department; salary delays leading to low motivation of staff; lack of engagement in the budgeting process and poor planning and management of funds.

One of the key areas of improvement that they suggested was the need for them to be engaged – inclusiveness in the process and actual budget execution.

The study demonstrated that there was a significant relationship between the knowledge of health care workers and participation in the budgeting process. Those who were trained and gained knowledge in planning and budget trainings were likely to participate. However, their understanding of the need and supply-side factors in the budgeting process is not clear and there are significant gaps that need to be addressed to make the process be responsive to the county health needs.

Relationship between health workers knowledge and participation in health service planning and budgeting

Logistic regression was used to determine the relationship between knowledge and application. The model established that those trained were likely to participate in the planning and budgeting processes compared to those not trained.

This study therefore establishes that there is a strong association in health worker knowledge in planning and budgeting, and their effective participation in these processes.

Health worker training and regular updates is crucial in ensuring that they are effectively engaging in the planning and budget processes. Health managers also highlighted the need to have them trained so that they can participate and engage in the processes. Rajan D., *et al*, 2016 emphasized the need for all stakeholders including health managers and workers to understand the way budgets are formed, allocated and used. The role of health workers and managers in providing timely inputs into the budgeting process, contribute to the progress towards achieving UHC.

There is therefore need for effective quality training of health care workers in the relevant planning and budgeting process to address the gap that was established among health workers and managers who are already participating in the budgeting process.

5.2 Conclusion

The study therefore established the following conclusions;

- Health care workers and managers are not adequately equipped with the right knowledge to effectively engage and provide the needed inputs into the budgeting process.
- There is no standardized training content and curriculum on planning and budgeting targeting health workers and managers. The study showed varied responses in terms of the type of training they received and length of training on planning and budgeting
- A majority of the HCWs did not know how the need-based and supply-side factors are applied especially in the budgeting process, varied responses were noted in the use of certain need-based indicators to support their planning and budgeting knowledge across the health workers and the health managers.
- Key pointer issues such as the approval processes were not known by the health workers creating lack of understanding in the budget approval processes.
- There is lack of transparency in the budgeting process in the county department of health. The process is not inclusive and this demotivates the health workers and managers.
- The process of planning and budgeting does not foster a participatory process, yet the health workers would like to be engaged and involved in process with clear communication and feedback mechanism but this does not happen.
- A significant higher number of health workers participated in the planning and budgeting process compared to those who were trained.

- Delays in disbursement of funds to the county health departments further complicates issues among health workers and managers leading to mistrust due to lack of transparency and information sharing on budget related issues, in addition creating lethargy among the health workers.

It's clear that there is a strong association between knowledge and participation of the health workers and managers in the planning and budgeting processes.

5.3 Recommendations

From the results that have been obtained, the following recommendations can be drawn;

1. Health care workers and managers should be provided with the relevant training in planning and budgeting because this contributes to their effective participation and engagement in these processes. Health workers and managers who have knowledge are likely to be engaged and provide timely inputs into the budgeting process that is responsive to community needs and supply-side needs from a provider perspective.
2. The training content on planning and budget in the health sector should be reviewed to ensure there is standardization to create consistency in the information that is provided and enhance quality of training for the health care workers and managers in the county.
3. Medical training institutions need to incorporate planning and budgeting for health modules or units in the training curriculums, to ensure that the health workers and managers with the clinical backgrounds have some level of knowledge on public finance. A majority of the HCWs do not know how the need-based and supply-side factors are applied in the budgeting process, hence the need for the trainings to include these components in the curriculum.

4. The county treasury and health department should ensure the planning, budgeting and implementation process is inclusive, transparent and participatory as well as aligned to county health priorities to enhance good planning and budgeting practices in the health sector.
5. The planning and budgeting decision-making process at the county should be transparent enough in view of the politics that unfold during the entire budget formulation, approval and implementation processes. HCWs should be provided with skills to understand the political economy in the health sector, this mainly means understanding the incentives, institutions, interest and ideas, and how they impact on the planning and budgeting decisions. Using for instance the Teskey programme model to navigate through the challenges over time (Whaites A, 2017).
6. The county leadership should consider providing budgetary feedback on budget allocation and expenditure to enhance accountability and transparency in use of the funds. This will increase the morale and motivation of the HCWs, in addition motivate them to effectively participate in the planning and budgeting process.

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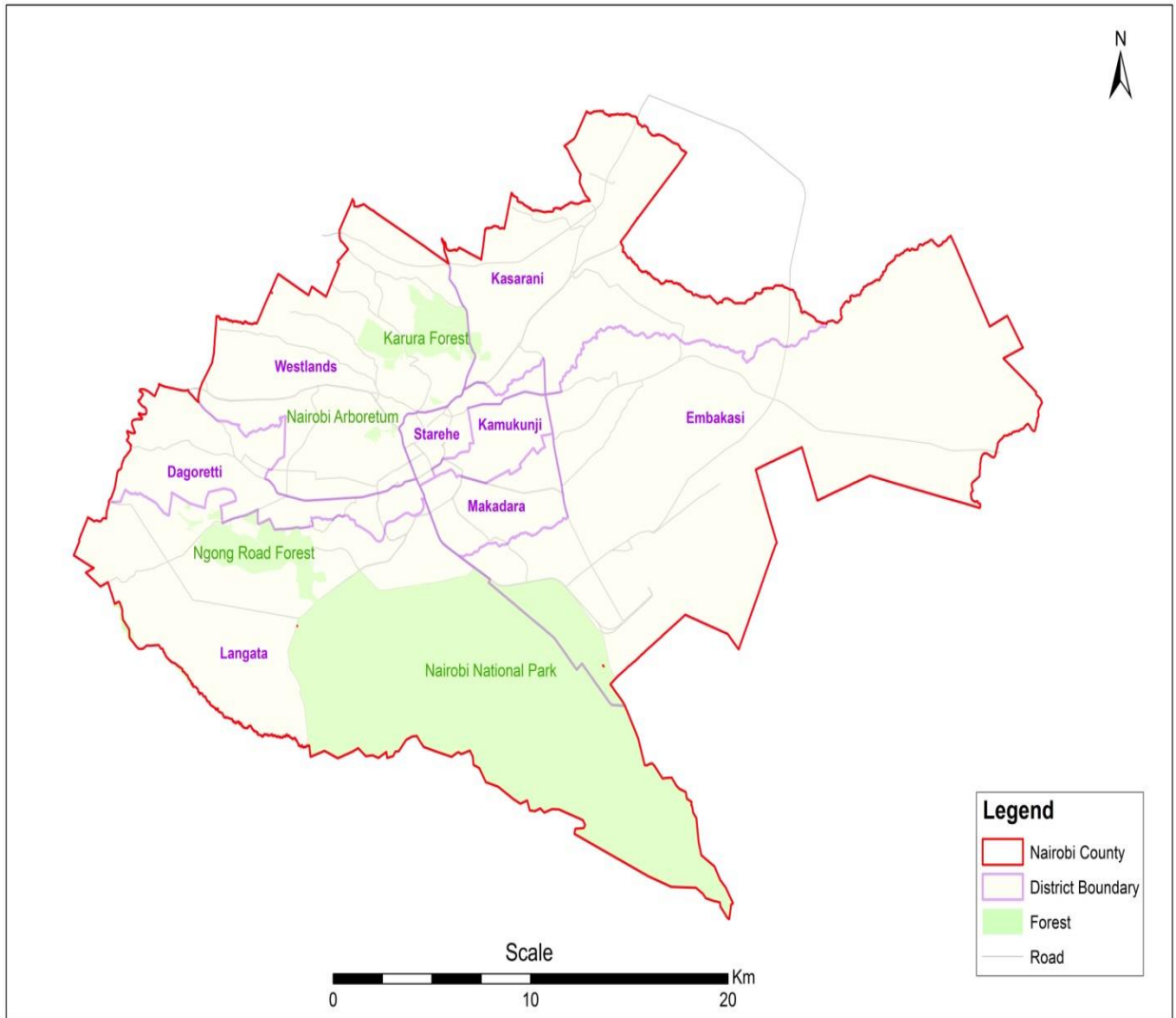
APPENDICES

Appendix 1: Proposed programmes and sub-programmes for health by National Treasury

ANNEX VII: UPDATED LIST OF PROGRAMMES AND SUB-PROGRAMMES FOR FY 2014/15	
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY	MINISTRY OF HEALTH
P.1 Primary Education	P.1 Preventive and Promotive Health Services
SP. 1.1 Free Primary Education	SP. 1.1 Communicable disease control
SP. 1.2 Special Needs Education	SP. 1.2 Health Promotion
SP. 1.3 Alternative provision of Basic Education	SP. 1.3 Non-communicable Disease Prevention & Control
SP. 1.4 Early Child Development and Education	SP. 1.4 Government Chemist
SP. 1.5 Primary Teachers Training and In-servicing	SP. 1.5 Radiation Protection
SP. 1.6 Alternative Basic Adult & Continuing Education	P.2 Curative Health Services
SP.1.7 School Health, Nutrition and Meals	SP. 2.1 National Referral Hospitals
SP. 1.8 Expanding Education Opportunities in ASALs	SP. 2.2 Mental Health
SP. 1.9 ICT Capacity Development	SP. 2.3 Specialized services (Spinal Injury)
P.2 Secondary Education	SP. 2.4 Forensic and Diagnostics
SP. 2.1 Secondary Bursary Management Services	SP. 2.5 Free Primary Healthcare Initiative
SP. 2.2 Free Day Secondary Education	P.3 Health Research and Development
SP. 2.3 Secondary Teachers Education Services	SP. 2.1 Capacity Building & Training
SP. 2.4 Secondary Teachers In-Service	SP. 2.2 Research & Innovations
SP. 2.5 Special Needs education	SP. 2.3 Research Ethics, Standards & Regulation
P.3 Quality Assurance and Standards	P.4 General Administration, Planning & Support Services
SP. 3.1 Curriculum Development	SP. 2.1 Health Policy, Planning & Financing
SP. 3.2 Examination and Certification	SP. 2.2 Health Standards, Quality Assurance & Standards
SP. 3.3 Co-Curriculum Activities	SP. 2.3 National Quality Control Laboratories
P.4 University Education	SP. 2.4 Human Resource Management
SP. 4.1 University Education	P.5 Maternal and Child Health
SP. 4.2 Quality Assurance and Standards	SP. 2.1 Family planning services
SP. 4.3 Higher Education Support Services	SP. 2.2 Maternity
P.5 Technical Vocational Education and Training	SP. 2.3 Immunization
SP. 5.1 Technical Accreditation and Quality Assurance	MINISTRY OF TRANSPORT AND INFRASTRUCTURE
SP. 5.2 Technical Trainers and Instructor Services	P.1 General Administration, Planning and Support Services
SP. 5.3 Special Needs in Technical and Vocational Education	S.P.1.1 Human Resources and Support Services
SP. 5.4 Infrastructure Development and Expansion	S.P.1.2 Financial Management Services
P. 6 Research, Science, Technology and Innovation	S.P.4.3 Information Communications Services
SP. 6.1 Research Management and Development	P.2 Road Transport
SP. 6.2 Knowledge and Innovation Development and Commercialization	SP. 2.1 Construction of Roads and Bridges
SP. 6.3 Science and Technology Development and Promotion	SP. 2.2 Rehabilitation of Roads
P.7 Youth Training and Development	SP. 2.3 Maintenance of Roads
SP. 7.1 Revitalization of Youth Polytechnics	SP. 2.4 Design of Roads and Bridges
SP. 7.2 Curriculum Development	SP. 2.5 Road Safety Intervention
SP. 7.3 Quality Assurance and Standards	P3 Rail Transport
SP. 7.4 ICT Integration in Youth Polytechnics	SP. 3.1 Rail Transport
P. 8 General Administration, Planning and Support Services	P4 Marine Transport
S.P.8.1 Headquarters Administrative Services	SP. 4.1 Marine Transport
S.P.8.2 County Administrative Services	P5 Air Transport
	SP. 5.1 Air Transport
	P6 Government Clearing Services
	SP. 6.1 Government Clearing Services

Source: Republic of Kenya, National Treasury MTEF Guidelines 2014/15

Appendix 2: Map of Nairobi County



Source: Nairobi County Integrated Development Plan

Appendix 3: Informed Consent form for health care workers in Nairobi County

Informed consent form

Informed Consent Form for county health workers in Nairobi County.

Research Title: Health Worker Factors associated with budget allocations in Nairobi County

Principal Investigator: Joyce Mutanu Kyalo

Organization: University of Nairobi, School of Public and Global Health.

Supervisors:

Professor Joseph Wangombe, Professor, School of Public and Global Health, University of Nairobi

Dr. Richard Ayah. Lecturer, School of Public and Global Health, University of Nairobi

Part 1: Participants Information Guide

Study title: HEALTH WORKER FACTORS ASSOCIATED WITH BUDGET ALLOCATIONS IN NAIROBI COUNTY

Investigator: KYALO JOYCE MUTANU

The information in this part is meant to assist you understand this study with a view to enabling you give voluntary and informed consent to your participation. Kindly read it carefully before signing the consent form

Dear participant,

You are invited to participate in a study on Health workers factors that are associated with budget allocation in Nairobi County. Please read this information sheet carefully before you decide whether to participate. If you decide to participate, we thank you. If you decide not to take part, there will be no disadvantages to you of any kind and we thank you for considering our request.

Purpose and Objective of the study

The purpose of this study is to determine health worker factors that influence budget allocation in Nairobi County. The study is for research purposes only and the information

will be collected to help improve linkage between the planning and budget process, making it more responsive to the needs of the population.

Study Procedures

If you decide to participate in the study, you will be asked to fill the questionnaire.

Participant selection

The participants in this study are health workers including managers who are directly involved in planning and budgeting processes at the county or the sub-county level. You have been randomly selected from a list of health workers in Nairobi County to participate in the study.

Benefits of participating in the study

By participating in the study, you will provide information that will help us understand capacity related challenges in the budgeting process among health workers in Nairobi County. This information will help us make improvement in the process by ensuring that the needs of the population and health care workers are addressed in the budget decision making.

Voluntarism

Your participation in this study is voluntary. You may choose not to participate in the study. You may withdraw consent at any time and decide not to continue participating in the study.

Confidentiality

No names or personal information will be collected at any stage during the study. Any information that will be collected during the study will be kept confidential. The data collected from the study will be stored in the personal computer of the researcher Ms Joyce Kyalo and presented as a thesis towards the Master of Public Health Degree.

Signature of Participant

I have read the above information. I have been given the opportunity to ask questions and the questions have been answered satisfactorily. I agree to participate in the study.

Signature of Participant: _____

Date: _____

Signature of Investigators

I have explained the research to the participant and answered his/her questions to the best of my ability. I confirm that consent has been given freely.

Signature of Investigator: _____

Date: _____

Appendix 4 :Summary of the distribution of health care workers by county and subcounty

Designations	County Health Office	Pumwani	Mbagathi	Mama Lucy	Mutuini	Embakasi East	Westlands SCHMT	Langata SCHMT	Starehe SCHMT	Makadara SCHMT	Kasarani SCHMT	Kamukunji	Ruaraka	Embakasi west	Dagoretti	Total
Specialists	4	10	15	21	1	1		1		1	1	1	2	1	1	60
Medical officers	2	34	22	30		2	2	1	2	1	1	0	2	3	0	102
COs	5	10	38	37	1	19	7	14	22	24	23	11	3	13	12	239
Nurses	16	163	191	195	19	43	154	23	64	90	79	39	80	65	64	1,285
Occupational therapists	2	2	0	4			0	0	2	0	0	0	3	0	0	13
Physiotherapists	0	2	14	8			0	0	0	0	0	0	2	0	0	26
Orthopeadic technologists	0	2	3	3			0	0	1	0	0	0	0	0	1	10
Pharmacists/tech	3	8	20	15		1	2	6	1	3	2	3	5	3	1	73
laboratory techs	6	8	11	19	2	4	4	10	8	15	11	8	3	4	4	117
Biomedical engineers	1	2	2	4			0	2	0	0	0	0	1	0	0	12
Radiologists	0		1	0			0	0	0	0	0	0	0	0	0	1
Radiographers	0	2	9	7			0	0	0	0	0	0	2	0	0	20
Nutritionists	0	2	6	4		4	3	8	3	5	4	3	4	0	3	49
HRIOs	3	3	9	8	2	1	1	3	1	2	5	1	1	0	1	41
Health administrators (procurement & H	2	2	5	7	1		0	0	0	1	0	0	0	0	1	19
Statistical Officers	0	1	0	0			0	0	0	0		0	0	0	0	1
Public Health officers/COHO	9	1	2	5		3	8	20	21	9	18	12	8	5	30	151
Mortuary Attendant	0	1	1	1			0	0	0	0	0	0	0	0	0	3
Social worker	1	1	0	4			0	0	0	0	0	0	0	1	0	7
Total	54	254	349	372	26	78	181	88	125	151	144	78	116	95	118	2229

Source: Nairobi County Human Resources Information Systems (HRISO, 2016)

The sampling frame excluded non health care workers who are mainly support staff

Appendix 5: Study Questionnaire

Please answer the questions as accurately as you can. The information submitted will be treated in Confidence.

Questionnaire Number -----Date of interview----- Time of interview -----

Instructions: Please fill in the required information in the blank spaces or tick against the responses.

Demographic Information (Health Worker Individual Factors)

1. What is your primary professional training: _____
2. Which year did you qualify in your primary professional training? Year: _____
3. How long have you been in practice as health care worker? (Please round to the nearest whole number, no fractions or decimals) _____ Years
4. Sex
 Female
 Male
5. Specify Sub County/Ward: _____
6. Specify Duty station/Health facility _____
7. Department/Unit: _____
8. What is your designation? (Tick one)
 Medical Officer
 Nurse
 Health Administrator
 Clinical Officer
 Consultant
 Pharmacist/Technologist
 Laboratory Technologist
 Nutritionist
 Health Record Information Officer (HRIO)
 Dentist/COHO)
 Other (Specify)
Specify: _____

The following questions ask about your knowledge of the planning and budgeting process.

9. Have you been engaged in a full year planning process in your unit?
 No
 Yes
10. Have you been engaged in contributing or producing budgets for your facility/department/units in the last one year?
 No
 Yes
11. Have you ever received formal training on planning for Health services?
 No
 Yes
 If yes; specify training _____
 Length of training _____
12. Have you ever received any training on budgeting for health services?
 No
 Yes
 If yes; specify training _____
 Length of training _____
13. Does your department develop plans and budgets?
 No
 Yes
14. Explain the planning and budgeting process in your department?

15. How are the following relevant in your planning and budgeting process?
 Population size

 Under-five population

 Women-of-reproductive (WRA) age population

- Don't Know
16. How are the following considered in your planning and budgeting process?
 Population living below the poverty line

 Primary school educated population

Don't Know

17. How are the following relevant in determining the amount that your facility/department/unit should receive?

Utilization of the service, explain

Catchment area population that you serve, explain

Don't Know

18. In your opinion, how important are the following health services?

	Very Important	Important	Moderately important	Slightly Important	Not Important
Preventive					
Maternal and Child health Services					
Family Planning					
Immunization services					
Malaria control					
TB Control					
HIV prevention and control					
Nutrition					
NCD prevention and control					

The following questions ask about the application of need- based and supply-side factors in the planning and budgeting process.

19. Which of the following health indicators do you use in your planning and budgeting process for health services?

- Immunization coverage
- ANC coverage
- FP coverage
- ART Coverage
- Don't Know
- Other (specify)

Specify: _____

20. Which of the following are important in your budgeting process?

- Number of primary health care (PHC) facilities (Health centers and dispensaries)
- Number of Health care workers
- Number of county hospitals
- Don't Know
- Other (specify)

Specify: _____

21. Once your plan and budget for the year is finalized, to whom is it submitted to?

- Chief Officer of health
- County Health Directors
- Hospitals Superintendents'
- Departmental/unit heads
- Sub County MOHs
- Don't Know
- Other (specify)

Specify: _____

22. In your opinion, what is the most important component to consider in the planning and budgeting process for health services?

	Very Important	Important	Moderately important	Slightly Important	Not Important
Catchment population					
Under-five population					
Women of reproductive age population					
Utilization of health Services					
Number of facilities					
Number of health care Workers					
Number of households that cannot afford healthcare					
Level of education of the population					

23. In your opinion, how important are the following curative health service areas in planning and budgeting process?

	Very Important	Important	Moderately important	Slightly Important	Not Important
Curative Services					

Mental health					
Rehabilitative					
Emergency					
Outpatient					
Diagnostics					
Inpatient					
Pharmaceutical drugs					
Health Facility development					
Health Facility rehabilitation					

24. In your opinion, how important are the following health development areas in the budgeting process in the county?

	Very Important	Important	Moderately important	Slightly Important	Not Important
Developing new primary health care Facilities					
Developing new hospitals					
Rehabilitating existing primary health care facilities					
Rehabilitating hospitals					
Procurement of equipment for PHC facilities					
Procurement of equipment for hospitals					

25. From a scale of 1 to 10, how would you rate your planning skills

	1 (Poor)	2	3	4	5	6	7	8	9	10 (Excellent)
Planning Skills										

Explain: _____

26. From a scale of 1 to 10, how would you rate your budgeting skills?

	1 (Poor)	2	3	4	5	6	7	8	9	10 (Excellent)
Budgeting Skills										

Explain: _____

27. Do you agree or disagree with each of the following statements?

(Please tick one response for each choice)

		Agree	Not sure	Disagree
--	--	--------------	-----------------	-----------------

Political (External)	Our spending pattern is almost entirely determined by the county government			
	We have very little freedom to decide which programs or services will be funded and to what degree			
Political (Internal)	It seems like additional money goes to the departments and programs which complain the loudest and they are also the best at avoiding cuts			
	Their arguments are not necessarily evidence based			
Historical	Each department expects to receive the same amount as in the past year each year			
	The county is slow to adjust to spending to meet changing needs and times			
Formal	There is a formal process that is used to set priorities and allocate resources for health			
	Everyone knows how the rules are and how and why decisions are made			
	For most part, strong evidence is needed in justifying all spending decisions			
	Our entire budget is reassessed each year			
	All departments and program spending needs are justified in terms of whether or not it meets the county or sub county priorities.			

28. In your opinion, what percentage of the total county health budget should go to remuneration of health care workers?

Percentage: _____

29. How important is planning and budgetary feedback to you and your work?

Very Important	Important	Moderately important	Slightly Important	Not Important

30. What planning and budgetary feedback would you like to receive within your facility/department/unit?

Explain: _____

31. How would you rate your level of satisfaction of county budget allocation for health activities?
(Please tick one response for each choice)

Very Satisfied	More than satisfied	Satisfied	Partly Satisfied	Not at all Satisfied

32. Please specify the cause of your response above (question 31)?

- Delayed Salaries
- Inadequate commodities and supplies
- Inadequate staff training
- Timely salaries, adequate commodities and supplies and adequate staff training
- Don't Know

33. What would you suggest to be done by high level management in order to improve the budget allocation for health services in Nairobi County?

END.

Thank you for taking time to participate in the study.

Appendix 6: Ethics Approval



UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel: (254-020) 2726300 Ext 44355



KNH-UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: <http://www.erc.uonbi.ac.ke>
Facebook: <https://www.facebook.com/uonknh.erc>
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC



KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/359

14th September, 2016

Kyalo Joyce Mutanu
Reg. No.H57/65062/2010
School of Public Health
College of Health Sciences
University of Nairobi

Dear Joyce

**REVISED RESEARCH PROPOSAL: HEALTH WORKERS FACTORS ASSOCIATED WITH BUDGET ALLOCATIONS
IN NAIROBI COUNTY, KENYA (P506/07/2016)**

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above revised proposal. The approval period is from 14th September 2016 – 13th September 2017.

This approval is subject to compliance with the following requirements:

- Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
- Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
- Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Protect to discover

Appendix 7: Mama Lucy Kibaki Hospital Letter

Mama Lucy Kibaki Hospital

Research Title: Health Worker Factors associated with budget allocations in Nairobi County
Principal Investigator: Joyce Mutanu Kyalo
Organization: University of Nairobi, School of Public Health.

Dear Sir/Madam,

Study Title: Health Worker Factors associated with budget allocations in Nairobi County

I would wish to seek your consent to conduct the above mentioned study for purposes of qualifying for the MPH degree in you county.

Purpose and Objective of the study

The purpose of this study is to determine health worker factors that influence budget allocation in Nairobi County. The study is for research purposes only and the information will be collected to help improve linkage between the planning and budget process, making it more responsive to the needs of the population, in addition to informing health worker training institution on need for training to address any gaps that will be identified.

Participant selection

The participants in this study are health workers including managers who are directly involved in delivering services as well as planning or budgeting for activities at the county or the sub-county level.

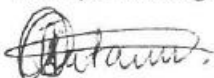
Benefits of the study

The study, will provide information that will help us understand capacity related challenges in planning and budgeting process among health workers in Nairobi County. This information will help us make improvement in the process by ensuring that the needs of the population and health care workers are addressed.

Confidentiality

No names or personal information will be collected at any stage during the study. Any information that will be collected during the study will be kept confidential.

Principal Investigator



Joyce Mutanu Kyalo

Appendix 8: Mama Lucy Kibaki Hospital Payment

MAMA LUCY KIBAKI HOSPITAL
P.O. BOX : - 1278 - 00515 NAIROBI
Tel : 0202362455

CASH SALE
RPT No: 0091953 Date: 18-4-2017a

Patient No: 0F023761/17 13:23
Received from: JOYCE MUTANU KYALO
DESCRIPTION QTY AMT(Ksh)

Research Masters	1.00	4,000.00
Wv/Exm., No: -		0.00
Cash Received		4,000.00
Balance		0.00

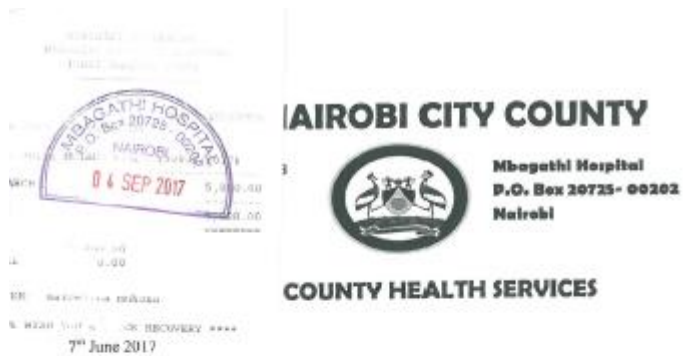
Pymt Mode: Cash Cash Pnt: T111
Cashier: TJM Shift No: 5199

MFL 17411 MOH 201
MAMA LUCY KIBAKI HOSPITAL - EMBAKASI
ATTENDANCE CARD
CAS/UNIT NO: 0F023761/17

NAME: JOYCE MUTANU
AGE: 44yr SEX: F
ADDRESS: KILIMANI

This card should be kept by the patient
and produced at all revisits to this health
institution.

Appendix 9: Mbagathi Hospital Research Approval



Joyce Mutanu Kyalo
University of Nairobi

RE: RESEARCH AUTHORIZATION

This is in reference to your application for authority to carry out a research on *"Health workers factors associated with budget allocations in Nairobi County"*

I am pleased to inform you that your request to undertake the research in the hospital has been granted.

On completion of the research you are expected to submit one hard copy and one soft copy of the research report / thesis to this office.

Kindly adhere to the timeline


Dr. D. Kimutai
Chairman- Research Committee
Mbagathi Hospital



Appendix 10: Nairobi County Approval

NAIROBI CITY COUNTY

Telephone 020 344194

Web: www.nairobi.go.ke



County Health Office,
P. O. Box 30075-00100,
Nairobi,
KENYA.

COUNTY HEALTH SERVICES

REF: CHS/COHS/17/92

22nd March 2017

- All Medical Superintendents
- All Sub County Medical Officers of Health
Nairobi City County

**RE: AUTHORITY TO INTERVIEW HEALTH CARE WORKERS IN NAIROBI
COUNTY HEALTH FACILITIES FROM 27TH MARCH TO 30TH APRIL 2017**

Joyce Mutanu Kyalo, from the University of Nairobi, School of Public Health would like to conduct interview to Health Care Workers in Nairobi City County Facilities entitled:- *"Health Workers Factors associated with budget allocations in Nairobi County"*.

The study will provide information that will help us understand capacity related challenges in planning and budgeting process among health workers in Nairobi County. This information will help us make improvement in the process by ensuring that the needs of the population and health care workers are addressed.

You are therefore required to assist her access your facilities.


DR. S. OCHOLA
AG. CHIEF OFFICER HEALTH SERVICES

C.C.

- County Director of Health

Appendix 11: Nairobi County Research Approval

NAIROBI CITY COUNTY

Telegrams: "PRO-MINHEALTH", Nairobi
Telephone: Nairobi 217131/313481
Fax: 217148
E-mail: pmonairobi@yahoo.com

When replying please quote

Ref. No. CMO/NRB/OPR/VOL1-2/2017/15



COUNTY HEALTH OFFICE
NAIROBI
NYAYO HOUSE
P.O. Box 34349-00100
NAIROBI

COUNTY HEALTH SERVICE

JOYCE MUTANU KYALO

UNIVERSITY OF NAIROBI

SCHOOL OF PUBLIC HEALTH

RE: RESEARCH AUTHORIZATION

This is to inform you that the Nairobi City County Operational Technical Working group reviewed the documents on the study titled, "Health workers factors associated with budget allocation in Nairobi County".

I am pleased to inform you that you have been authorized to undertake the study in Nairobi County.

On completion of the study, you will submit one hard copy and one copy in PDF of the research findings to our operational research technical working group.

A handwritten signature in blue ink, appearing to read 'R. Muli'.

R. MULI



FOR COUNTY DIRECTOR OF MEDICAL SERVICES

CC: Medical Superintendent

All Sub County MOH's

Appendix 12: Pumwani Hospital Approval

NAIROBI CITY COUNTY

Telephone: 020 344194
Web: www.nairobi.go.ke



City Hall
P. O. Box 30075 - 00100
Nairobi
Kenya

COUNTY HEALTH SERVICES:
PUMWANI MATERNITY HOSPITAL

PMH/DMOH/75/0182/2017

18TH APRIL 2017

TO:
KYALO JOYCE MUTANU
SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF NAIROBI

RE: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the research entitled "**Health Workers Factors Associated with Budget Allocations in Nairobi County, Kenya**" has been approved.

You are expected to pay Kshs. 6000/- only.

You are hereby allowed to collect data. We look forward to receiving a summary of the research findings upon completion of the study.

Yours sincerely,



PUMWANI MATERNITY
HOSPITAL
P.O. Box 42342-00100, NAIROBI
TEL: NRB, 0733291-4/0733292

DR. L.O. KUMBA
MEDICAL SUPERINTENDENT