

# Involvement of an Academic Institution in Assessing the Health Sector Status for Service Delivery in Western Kenya

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## Abstract

**Introduction:** The involvement of academic institutions in knowledge creation through surveys promotes sharing of information and research. Academic institutions need to engage with different stakeholders including communities to meaningfully contribute research information to policy and health systems improvement. The engagement of academic institutions in national surveys enhances linkage and interface between academics and research findings that influence policy and practice in health systems. Approximately one third of researchers from academic institutions engage with stakeholders in the research process which limits dissemination of research findings. **Objective:** This study aimed to determine the role of an academic institution in a national health survey. **Methodology:** A cross-sectional study carried out by an academic institution, the Great Lakes University of Kisumu in 2013 used qualitative and quantitative methods to update data on health workforce, infrastructure and health services provided in health facilities in Western Kenya. Hand-held Global Positioning System devices were used alongside laptop computers and printed questionnaires for data collection. Supervision and training of students hired as research assistances for data collection constituted an integral part of the survey. The students received both financial support as motivation and academic training to ensure that data collection was rigorous and valid. Academic courses offered to these students comprised practical surveys, questionnaire design and statistics on complex data analysis. Stakeholders as key partners were involved at the different stages of survey design and implementation. **Results:** The quality of survey data obtained by the academic institution was deemed reliable and valid by the end-users due to the rigor applied in the survey design, data quality checks at points of collection, data entry and analysis, and report production. The in-depth and accurate information collected in minimal time indicated thoroughness in the survey design that included comprehensive data collection instruments. The survey results revealed that the use of hand devices and computers for data collection was effective and reliable since data was relayed in real time, followed with immediate verification of the entered data by the research team. **Conclusions:** National surveys should engage academic institutions to enrich survey processes and to ensure quality survey data due to the experience and skills of their personnel. Stakeholders should be engaged as partners in surveys and for dissemination of survey results. Costs of surveys can be minimized through use of modern research technologies.

## Keywords

Academic, University, Health Facility, Survey, Partnership, Stakeholder, Global Positioning System

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## 1. Introduction

Health research provides basic information on the state of

health and disease of a population (Pittman, P., Trinity, M., Tsai, J., 2010). Research or surveys are a necessary undertaking at all levels of a system and needs to be prioritized

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at national and lower levels for knowledge enhancement, planning for health improvement, health sustainability and general development. Waswa (2006) in his study points out that knowledge is developed as a product of research and surveys and this has been shown to contribute immensely to better health and development. The study echoes the World Health Organization's (WHO 1996) view that the creation and utilization of information at all levels in the health delivery system is a prerequisite for a well-performing health care system and service delivery. The involvement of academic institutions in knowledge creation through surveys promotes sharing of information and research (Wartman, S., Hillhouse, E., Gunning-Schepers, L., and Wong, J., 2009).

Academic institutions need to engage with different stakeholders, including communities for balance in academics and research and to meaningfully contribute information to policy and health systems improvement (Horton, 2000). The participation of academic institutions in surveys and research is fundamental in terms of technical guidance in the process of survey design, execution, data quality, research analysis, reporting and dissemination of research findings. Research findings often influence policies and strategies for health planning. A critical challenge facing national surveys in the public sector and research in general is the unavailability of skilled survey statisticians and methodologists to ensure robustness in research outcomes. The vital need for these skills can be met with the involvement of academic institutions that in most cases have resident experts. They form the laboratories where the basic tools of survey and research for essential knowledge and skills are generated and made available for other institutions. (Paul, B., Alex, B., Nick, H., & Geoff, S. (2014).

Availing the knowledge and skills from academic institutions to national surveys enhances linkage and interface between academics, practice and policy in health systems. The involvement of different stakeholders facilitates the exchange of research findings between those who produce research information and the end users (WHO, 1996; Hanney, S., Gonzalez-Block, M., Buxton, M. J. and Kogan, M. 2003). In most research in academic institutions, approximately one third of researchers engage with stakeholders in the research process (Brownson, R. C., Fielding, J. E., Maylahn C. M. (2009) which limits dissemination of research findings. While it is relatively easy to focus on research findings and to determine how results will be used, often the research process for engaging different players is given less attention.

Health facility surveys have been carried out in sub-Saharan Africa to determine service availability and use over decades. These surveys have been helpful in understanding health systems status where survey results are used for policy direction and implementation. The surveys employ common

features in methodologies such as cross-sectional data analysis and trend analysis to unearth gaps in indicator achievements and to provide directions for improved service delivery. Country level health surveys undertaken for planning purposes include demographic health surveys, knowledge, attitude and practice (KAP) surveys, and other sector specific surveys related to disease prevalence. In the health sector, recent assessments have included service accessibility and availability surveys. One particular survey is the Service Availability Readiness and Mapping (SARAM) survey which provides information on human resources, infrastructure and health service availability. A number of such surveys have been carried out in Kenya that has engaged academic institutions to provide technical expertise for updating information in health facilities.

In 2013 a SARAM assessment was undertaken in order to assist in planning for the health sector in Kenya and specifically to determine available services at different levels of the health system comprised of dispensaries and health centres (Tier 2), hospitals (Tier 3) and referral hospitals (Tier 4) and where the end user of health services is the community at Tier 1. Due to the newly devolved county systems in the country, a need was identified in 2013 to provide validated information to assist in planning and implementation of health services (Kipchumba, K. (2012). The SARAM survey aimed to assist in providing up-to-date information and in identifying service delivery gaps, that is, availability of services and readiness of the health facilities to provide services. The survey further aimed to determine the numbers, capacity and skills of the health workforce; health information; health products; health financing; health infrastructure and products; and health leadership. Such information was aimed at helping the counties to plan for needed resources and for building the capacities of health personnel for effective delivery of services. The Great Lakes University of Kisumu (GLUK) undertook the survey for Western and Nyanza regions over a period of four months in 2013.

## 2. Methodology

### 2.1. Study Design

The study was a cross-sectional survey using qualitative and quantitative methods to update the health facilities in the country. These health facilities included: public health facilities owned and managed by the Ministry of Health, institutions owned by municipal authorities; and private not-for-profit facilities, i.e., those owned and managed by faith-based organisations, non-governmental organizations, civil society organizations and other non-profit/public benefit organizations. Included in the survey were private-for-profit facilities manned by private individuals, organisations or

groups as profit making enterprises.

## 2.2. Study Area and Population

GLUK conducted the study in all the health facilities in Nyanza and Western Provinces. In Nyanza Province, a total of six Counties (Homabay, Kisii, Kisumu, Migori, Nyamira and Siaya) with a population of 5,442,711 and a total of 917 facilities were surveyed while in Western Province, a total of four Counties (Bungoma, Busia, Kakamenga and Vihiga) with a population of 4,334,282 (Kenya Demographic Health Survey, 2009) and a total of 531 health facilities were surveyed.

## 2.3. Study Sample and Methods

The study was a complete census of the health facilities in these regions. The study sample comprised all health facilities in Nyanza and Western Province which incorporated private, public and faith based institutions.

## 2.4. Data Collection and Analysis

The survey was carried out by 70 research assistants and 20 data entry clerks. All had a minimum of a diploma certificate qualification and had different levels of previous experience in research data collection exercises. The 90 recruits were trained by GLUK senior staff members who were also their supervisors during the survey. The objectives of the survey, ethical survey practices, completion of the survey tools, confidentiality of survey information, discipline and time management were emphasised during the training that lasted two days. Time was an invaluable resource in this exercise and realistic timelines were set and communicated to the entire team.

Two sets of validated structured and semi-structured questionnaires were used for data collection. The first tool was a survey core questionnaire used to collect information on the following: facility identification, service availability, summary of human resources for health, infrastructure, equipment, transport, communication, health products and service delivery readiness. The second tool was a questionnaire that required a computer and internet access and was used to collect facility management data on: management identification, human resource for health (staffing), infrastructure, equipment, transport and communication, service delivery organization and readiness, and health leadership readiness.

The team of 70 research assistants carried out pre-tests of the survey tools and familiarised themselves with logistics for the field exercise. Each was assigned a certain number of facilities for mapping and collecting information. Trained research assistants visited all the health facilities and administered the questionnaire through face-to-face interviews. A Quality

Assurance Team was constituted from GLUK and included national and county representatives from the Ministry of Health. As part of verification, all the completed paper questionnaires were stamped at the respective facilities before being transported to the data entry centre at the University. Data verification was carried out in real-time during the field work.

Software developed for the survey was used for real-time data entry and for summarization of both the health facility and management questionnaires. An excel tool was used to capture human resource, transport and partners information. In addition to the paper questionnaires, the data collection process was automated through use of handheld global position system (GPS) devices for collecting geo-codes from the health facilities and management levels

The use of a combined paper-based tool and hand-held devices for data collection was new for collecting data on service delivery and health workforce capacity. Use of both tools provided a more efficient data collection, management and analysis process while geographical mapping of facilities made it easy to investigate the domains of service delivery, human resource and infrastructure.

The data entry training was led by one of the lead supervisors who was also the chief instructor and assistant lecturer at the Information and Technology Department of GLUK. Double data entry processes was made possible through the use of a manual excel spreadsheet and an online entry system; while time consuming, this procedure ensured data accuracy and timely transmission to a central data base. However, internet access hampered the exercise to some extent. Data was analyzed using SPSS statistics software for descriptive statistics, cross tabulations and frequencies.

## 3. Findings

### 3.1. Quality of Data

The quality of data obtained during the survey was deemed reliable and valid because of the rigor involved in the research process that consisted of data quality checks at every point of collection and entry, and supervision and training of research assistances for data collection. The constitution of a Quality Assurance Team provided an oversight role and ensured that the information being collected was reliable. Engagement of an academic institution such as GLUK that had previous research experience in the two study regions enabled in-depth data collection on variables consisting of health facility availability, type of health facility and geographical location, infrastructure and level of care, staff availability against number of health facilities, and capacities to provide health services. The detailed survey

information is presented below to illustrate the type of survey data obtained through engagement of GLUK as an academic institution.

Thirty four percent (34%) of the health facilities surveyed were from Tier 3 and below of the health system. These facilities consisted of hospitals, health centres, dispensaries, clinics and nursing homes (Table 1).

### 3.1.1. Capacity to Provide Health Services

#### *Physical Health Facility availability*

**Table 1.** Number and type of health facilities by County.

County	Total Number of Health Facility	Hospital (%)	Health Centre (%)	Dispensary (%)	Medical Clinic (%)	Maternity/ Nursing Home (%)
Bungoma	141	8	14	56	18	4
Busia	80	9	19	59	10	4
Kakamega	229	7	16	42	29	6
Vihiga	87	9	21	30	37	3
Homabay	180	7	22	55	13	3
Kisii	140	13	22	49	12	4
Kisumu	154	11	22	45	14	8
Migori	169	8	16	55	15	6
Siaya	155	5	24	58	10	3

### 3.1.2. Physical Infrastructure Availability

Hospitals had the essential infrastructure to provide primary, inpatient and outpatient care (Table 2).

**Table 2.** Physical infrastructure by level of care.

Form of stand-alone physical infrastructure	Level of care at which infrastructure presence was assessed	
	Primary care	Hospital
Outpatient department	√	√
Causality department	-	√
Maternity and Child Health Unit	√	√
Maternity Unit	√	√
In-patient Unit	-	√
Administration Unit	√	√
Diagnostics and investigation Unit	√	√
Medical support services (Intensive Care Unit, physical therapy unit, mortuary, maintenance workshop)	-	√
Support Unit	-	√

### 3.1.3. Health Workforce Availability

**Table 3.** Health Workforce Availability.

County	Population Estimates	Staff Availability	Number of Facilities	% of Staff per Population Estimates
Bungoma	1,527,632	1,282	141	0.08
Busia	824,392	751	80	0.09
Homabay	1,058,610	927	180	0.08
Kakamega	1,865,958	1,868	229	0.10
Kisii	1,268,693	413	140	0.03
Kisumu	1,059,733	827	154	0.07
Migori	1,012,113	713	169	0.07
Nyamira	700,597	459	114	0.06
Siaya	929,402	732	155	0.07
Vihiga	615,897	643	87	0.10

Out of 11 counties, two (Kakamega and Vihiga) had the highest staff (0.10%) per the population estimates (Table 3). The type of facilities and whether they were public or private may have been an influencing factor in staff availability in the two counties.

### 3.1.4. Capacity to Provide Health Services

The mean availability of essential health services at facilities was low at 27%, with availability higher at primary care facilities as compared to hospitals (Figure 1). Availability of services was marginally higher amongst public facilities as compared to private facilities. On the other hand, only 0.3% of facilities provided all their expected essential health services, with dispensaries marginally having the highest proportion of facilities providing all their expected services.

On specific services, general outpatient, integrated Maternal-Neonatal and Child Health (MNCH) and reproductive health services were the most available, while laboratory, imaging and palliative care services were the least available. This finding may be reflective of the level of care

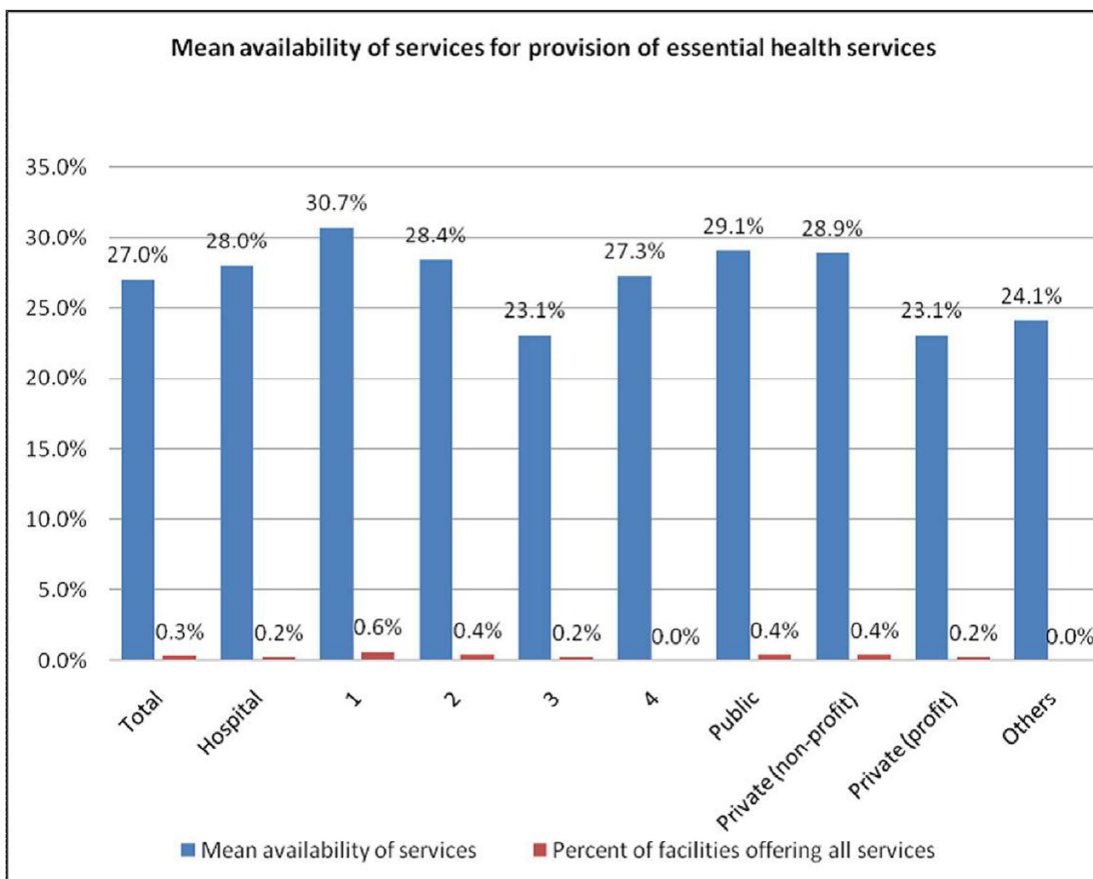
for the majority of health facilities that were mostly providing primary care and referral services.

### 3.1.5. Non-Operational Facilities

The survey found a number of facilities that were non-operational (39), were closed (53), could not be traced (4), were pending to be opened (7) or were permanently closed or changed business (7). Two facilities refused to be interviewed while 3 were operational but were found to be closed during the survey exercise.

### 3.2. Expertise in Surveys

The survey was able to collect in-depth and accurate information indicating that the survey design used was adequate as it ensured that data collection instruments and processes met research rigor. This was noted by the comprehensive nature of the data collection tools designed specifically for the survey and the software used for real-time data entry.



**KEY: 1 – Health Centre; 2 – Dispensaries; 3 – Medical Clinics/stand alone Voluntary Counseling & Testing Clinics; 4 – Others**

**Figure 1.** Mean availability of services for provision of essential health services.



### 3.3. Use of Research Technology

The survey results revealed that the use of hand devices and computers for data collection was time-saving and reliable as data was relayed in real time and immediate cross checking of data was possible. Data verification was carried out in real-time during the field work, as information was being entered into the survey software by the research team.

### 3.4. Recruitment and Training of Research Team

The robust results from the survey was partly an indication that the students hired as research assistants were highly motivated since they received both financial and academic research training to ensure quality data collection. The academic courses offered to these students that were relevant to the survey included: practical survey, questionnaire design and statistics on complex data analysis.

### 3.5. Stakeholder Engagement

A forum was organized for all stakeholders in the survey as part of feedback and evaluation of the survey process. Those represented were national and county level Ministry of Health personnel and representatives from organizations that contributed to technical and financial support of the survey. At this forum, recommendations on the survey processes were made to inform future similar exercises. Mention was made on the need for prior communication to stakeholders regarding survey activities. Recommendations were made for stakeholders at national and county levels to use the survey data for strategic planning, priority allocation of health resources and for monitoring and evaluating their health and development interventions.

## 4. Discussions

Engagement of academic institutions contributes to quality of data in surveys, provides expertise in research rigor, and utilizes existing technology for research and transfer of research knowledge and skills to upcoming researchers.

### 4.1. Quality of Data

The quality of data obtained in a health system survey depends on the survey tools designed and the possibility of including the key questions in the survey tool. In this study, three key tools were generated and used for an efficient and reliable data collection process. These tools were pre-tested to ensure validity and reliability of the collected data.

### 4.2. Expertise in Surveys

The role of GLUK as an academic institution in the survey introduced scientific rigor and high quality data collection, processing and presentation. Apart from knowledge transfer through teaching and research, academic institutions can contribute to study designs and methodologies for conducting research. They are able to contextualise research findings for planning and allocation of health resources to meet health needs of populations.

### 4.3. Use of Research Technology

Health system surveys are critical for proper planning, distribution of resources and decision making. It is therefore important that the technology used to obtain information is reliable and accurate. In this study, the use of handheld devices during the survey was cost effective and provided accurate information for planning and decision-making and added a new element to community surveys (Kaseje, 2014).

### 4.4. Recruitment and Training of Research Team

The type of training provided to students by academic institutions influences the quality of information students collect in surveys. In this study, the training of students by GLUK provided the necessary human resource support for effective data collection processes and enabled students to practically demonstrate their acquired knowledge and skills. The element of training also helped students to display their professional commitment and discipline when conducting research.

### 4.5. Stakeholder Engagement

The engagement of GLUK brought on board an academic angle to the survey which was further enriched by one of the University's mandate of engaging stakeholders at policy making levels as well as engagement with county systems and communities. GLUK engagement with communities was possible through the University partnership programme with community groups and leadership. Due to the active engagement of the stakeholders, they valued the survey data and recommended annual surveys to inform their decisions.

## 5. Conclusion and Recommendation

The role of GLUK as an academic institution in the field survey contributed rigor to survey processes. National surveys should engage academic institutions to enrich and to ensure quality survey processes. The outcomes of surveys on the

health sector readiness to provide services should be widely disseminated using stakeholder and other policy forums in addition to publications and conference disseminations. Costs of surveys can be minimized through use of modern research technologies.

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