THE STUDY OF UNIT COST AND QUALITY OF EDUCATION OF GHAZANFAR INSTITUTE OF HEALTH SCIENCE AND PRIVATE INSTITUTES IN KABUL PROVINCE FOR THE YEARS OF 2009- 2012

Mr. Ajmal Behzad

A Thesis Submitted in Partial Fulfillment of the Requirements

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

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Thesis Title	THE STUDY OF UNIT COST AND QUALITY OF EDUCATION OF GHAZANFAR INSTITUTE OF HEALTH SCIENCE AND PRIVATE INSTITUTES IN KABUL PROVINCE FOR THE YEARS OF 2009-2012
By	Mr. Ajmal Behzad
Field of Study	Health Economics and Health Care Management
Thesis Advisor	Chantal Herberholz, Ph.D.
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อัจมาล์ เบซาด :การศึกษาต้นทุนต่อหน่วยและคุณภาพการศึกษาของสถาบันวิทยาศาสตร์สุขภาพการ์ซานฟาร์ และสถาบันการศึกษาเอกชนในจังหวัดกาบูล จากปี พ 2552.ศ.ถึง 2555 (THE STUDY OF UNIT COST AND QUALITY OF EDUCATION OF GHAZANFAR INSTITUTE OF HEALTH SCIENCE (GIHS) AND PRIVATE INSTITUTES IN KABUL PROVINCE FROM 2009TO 2012). อชันทาล แฮร์เบอร์โฮลส์.ดร.อ :ที่ปรึกษาวิทยานิพนธ์หลัก ., อที่ปรึกษา. ปิยะ หาญวรวงศ์ชัย.นพ.ดร.อ :วิทยานิพนธ์ร่วม, 150 หน้า.

การศึกษาวิจัยนี้เป็นการศึกษาวิจัยเชิงพรรณนา ซึ่งประกอบด้วยสองส่วน คือ การคำนวณหาต้นทุนต่อหน่วยหรือต้นทุนต่อผู้จบการศึกษาหนึ่งคน และการวิเคราะห์คุณภาพของการเรียนการสอน ในหลักสูตรต่าง ๆ ได้แก่การพยาบาล การผดุงครรภ์ เภสัชวิทยา เทคนิคการแพทย์ กายภาพบำบัด รังสีวิทยา ทันตาภิบาล และวิสัญญีวิทยา โดยทำการศึกษาในสถาบันวิทยาศาสตร์สุขภาพการ์ซานฟาร์)GIHS) และสถาบันการศึกษาเอกชนอีก แห่งในจังหวัดกาบูล การวิเคราะห์ต้นทุนเฉลี่ยใน 5GIHS ทำภายใต้มุมมองของผู้ให้บริการ ซึ่งรวมถึงเงินสนับสนุนจากผู้บริจาค และค่าใช้จ่ายเพื่อจัดที่พักอาศัย ในขณะที่การวิเคราะห์ต้นทุนเฉลี่ยต่อหน่วยในสถาบันการศึกษาเอกชนคำนวณจากมุมของผู้จ่าย

ผลการศึกษาพบว่าใน GIHS ต้นทุนเฉลี่ยต่อหน่วย ของหลักสูตรการพยาบาลเท่ากับ US$ 4, 231การผดุงครรภ์ US$ 6, เภสัชวิทยา 404 US$ 6, เทคนิคการแพทย์ 796US$ 5, กายภาพบำบัด 705US$ 5, รังสีวิทยา 329US$ 6, ทันตาภิบาล 106US$ 8, และวิสัญญีวิทยา 015 US$ 1, ในขณะที่ต้นทุนเฉลี่ยต่อหน่วยในสถาบันการศึกษาเอกชน เท่ากับ 074US$ 1,สำหรับการพยาบาล 590, US$ 1,สำหรับ 409 การผดุงครรภ์, US$ 1,สำหรับ เภสัชวิทยา 425, US$ 1,สำหรับเทคนิคการแพทย์ 216, US$ 1,สำหรับทันตาภิบาล ในขณะที่ การ 216 คำนวณต้นทุนที่ไม่รวมค่าใช้จ่ายในการที่:พักอาศัย ของ GIHS จะทำให้ต้นทุนต่อหน่วยของหลักสูตรการพยาบาลลดลงเหลือ US$ 1,816 ผดุงครรภ์เหลือ US$ 4,852 เภสัชวิทยาเหลือ US$ 2,809 เทคนิคการแพทย์เหลือ US$ 3,505 กายภาพบำบัดเหลือ US$ 4,308 รังสีวิทยาเหลือ US$ 3,379 ทันตาภิบาล เหลือ US$ 2,และวิสัญญีวิทยา 948เหลือ US$ 1,133 การศึกษานี้ แสดงให้เห็นว่า ต้นทุนต่อหน่วยใน GIHS สูงเป็นอย่างน้อยสองเท่าของสถาบันการศึกษาเอกชนในบางสาขาวิชา องค์ประกอบหลักของต้นทุนที่สูงกว่าเกิดจากค่าใช้จ่ายในการจัดที่พักอาศัย การบริจาค และผลผลิตในจำนวนนักศึกษาที่เรียนจบที่ต่ำในบางสาขาวิชา ในส่วนคุณภาพการศึกษานั้น การสัมภาษณ์เชิงลึกกับเจ้าหน้าที่กระทรวงสาธารณสุขและอาจารย์ของทั้ง GIHS และสถาบันการศึกษาเอกชน พบว่า คุณภาพการศึกษาใน GIHS ดีกว่าคุณภาพในสถาบันการศึกษาเอกชน โดยเฉพาะอย่างยิ่งในด้านทักษะ ซึ่งอาจเป็นผลจากการที่ GIHS มีสถานพยาบาลภาครัฐต่าง ๆ เป็นสถาบันฝึกฝนทักษะ แต่ในทางตรงกันข้าม การสำรวจความคิดเห็นในกลุ่มนักศึกษาพบว่าคุณภาพของการศึกษาในสถาบันการศึกษาเอกชนดีกว่า GIHS โดยสรุป การศึกษานี้ แสดงให้เห็นว่า ควรลดต้นทุนของ GIHS หรือเพิ่มผลผลิตต่อหลักสูตร ในขณะเดียวกัน ควรมีการพัฒนาคุณภาพของสถาบันการศึกษาเอกชนในการพัฒนาทักษะของผู้เรียน

สาขาวิชา เศรษฐศาสตร์สาธารณสุขและการจัดการบริการสุขภาพ ลายมือชื่อนิสิต .....

ปีการศึกษา 2555..... ลายมือชื่อ อที่ปรึกษาวิทยานิพนธ์หลัก .....

ลายมือชื่อ อที่ปรึกษาวิทยานิพนธ์ร่วม .....

5485701029: MAJOR HEALTH ECONOMICS AND HEALTH CARE MANAGEMENT

KEYWORDS: GIHS UNIT COST/ PRIVATE HEALTH SCIENCE INSTITUTE UNIT COST/ QUALITY OF EDUCATION

AJMAL BEHZAD: THE STUDY OF UNIT COST AND QUALITY OF EDUCATION OF GHAZANFAR INSTITUTE OF HEALTH SCIENCE (GIHS) AND PRIVATE INSTITUTES IN KABUL PROVINCE FROM 2009 TO 2012. ADVISOR CHANTAL HERBERHOLZ, Ph.D. CO–ADVISOR: PIYA HANVORAVONGCHAI M.D. 150 pp.

This study is a descriptive type of research that contains two parts, a calculation of the unit cost or cost per graduate student and an assessment of the quality of education of nursing, midwifery, pharmacy, technology, physiotherapy, radiology, dentistry and anesthesia disciplines in GIHS and 5 private institutes of health science in Kabul province. The average cost calculation in GIHS is done from the provider perspective including donor support for GIHS and accommodation, while the average unit cost in private institutes is calculated from the purchaser perspective. The study finds the average unit cost of nursing to be equal to US$ 4,231, midwifery US$ 6,404, pharmacy US$ 6,796, technology US$ 5,705, physiotherapy US$ 5,329, radiology US$ 6,106, dentistry US$8,015, and anesthesia US$ 1,074 for the whole period of the study in GIHS while this average cost amounts US$ 1,590 for nursing, US$ 1,409 for midwifery, US$ 1,425 for pharmacy, US$ 1,216 for technology, and US$ 1,216 for dentistry in private institutes from the purchaser perspective for the whole period of the study. When excluding the accommodation cost of GIHS, the unit cost of nursing decreased to US$ 1,816, midwifery to US$ 4,852, pharmacy to US$ 2,809, technology to US$ 3,505, physiotherapy to US$ 4,308, radiology to US$ 3,379, dentistry to US$2,948 and anesthesia to US$ 1,133. The study shows that the unit cost in GIHS is at least twice as much the unit cost in private institutes in some disciplines, which is mainly due to the high cost of accommodation, donations and the low output of disciplines in terms of number of graduate students. In terms of quality of education, however, the findings show that the quality of education is perceived to be better in GIHS, especially in terms of practical work due to the availability of public facilities to GIHS, according to the in-depth interviews with officials from MoPH and lecturers from GIHS and private institutes. The student survey on the other hand interestingly indicates that the quality of education is better in private institutes than GIHS. In general the study findings reveal that GIHS cost needs to be decreased or output per discipline increased and that the quality of practical work in private institutes needs to be improved.

Field of Study: Health Economics and Health care Management Student's Signature……...

Academic Year: 2012……. Advisor's Signature……..

Co-advisor's Signature……

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LIST OF ABBREVIATIONS

AFS	Afghan Currency Unit
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CDC	Center for Disease Control
CHC	Community Health Center
CHNE	Community Health Nursing Education
CHW	Community Health Worker
CME	Community Midwifery Education
CMH	Commission on Macroeconomics and Health
EPHS	Essential package of Health Services
EU	European Union
GDHR	General Directorate of Human Resources
GDP	Gross Domestic Product
GIHS	Ghazanfar Institute of Health Science
HEFD	Health Economics and Financing Directorate
HP	Health Post
HSSP	Health Service Support Project
IHS	Institute of Health Sciences
MD	Medical Doctor
MMR	Maternal mortality ratio
MoF	Ministry of Finance
MoHE	Ministry of Higher Education
MoPH	Ministry of Public Health

MSH	Management Science for Health
SDCA	Step Down Cost Allocation
THE	Total health expenditure
USAID	United States Assistance for International Development
WB	World Bank
WFME	World Federation for Medical Education
WHO	World Health Organization

CHAPTER I
INTRODUCTION

This chapter focuses on the general introduction of thesis problem and its significance, the role of health workforce especially paramedical practitioners in the health sector, current situation and the need for paramedical practitioners reviewing other countries and Afghanistan current health workforce situation and need . This chapter also discusses the research question for the study, the objectives of the study meanwhile the scope of the work and the hypothesis for this study.

1.1 Problems and Significance

The role and importance of nurses, midwives and other paramedical health workforce has been identified to be important in all over the world. This is approved through many academic and experimental studies (Bossert, Bärnighausen, Bowser, Mitchell, & Gedik, 2007). The importance and significance of paramedical practitioners are in the agenda of human resources of many developing and developed countries. Shortage of professional paramedical practitioners like; nurses, midwives, laboratory technicians, pharmacist, anesthesiologists, physiotherapists and others sensibly exists in the world especially in developing countries of sub Saharan Africa and countries like Afghanistan(Kinfu, Poz, Mercer, & Evans, 2009). Many factors contribute to shortage of them in the developing countries, some of the factors may include, low investment in the area of paramedic education and other push and pull factors like migration of them to developed countries to seek of a better life, better salaries and lack of accommodation, security and living facilities in the rural area of developing countries, are all causes that lead them to shortage of paramedics accordingly (MoPH, 2011d).

Unequal distribution of health workforce in the developing countries is another factor for insufficient use of current resources. In case of Afghanistan most of the health work force like Medical Doctors, Nurses, Midwives, and technicians are accumulated in the big cities of the countries and do not prefer to go to rural areas due

to lack of facilities and meanwhile there is no incentive for them to encourage them (MoPH, 2011e). This is the same case in most of other developing countries as well and can lead to a crisis in the countries if a comprehensive global decision does not take place by implementing policies and strategies in order how to cope with the problem and how to increase and retain paramedical practitioners in the developing countries(Kinfu et al., 2009).

The need for health care work force in developing countries is always discussed through several studies and findings. This need for health workforce specially mid level health workers like Nurse, Midwife and other paramedics in Africa is a great challenge due to brain drain in these countries(Mullan et al., 2009).

Afghanistan is one of the developing countries that have the problem of professional health workforce shortage(MoPH, 2009). Three decades of war destroyed every sector of the country from the infrastructure. The health sector is one of the sectors that have been damaged quite heavily in the country. During the war most of the professional health work force of the country migrated to other countries like western and other neighboring. A small mass of health work force that was in the country was all gathered in the capital and big cities. After the collapse of Taliban regime, establishment of the new Islamic government and the involvement of the international community in the country most of the sectors is renovated including the health sector.

According to National Policy & Strategy for Nursing and Midwifery Services 2011-2015 of MoPH, Afghanistan has around 13,887 nurses and 6,605 midwives (including both public and private sectors; this includes 305 Assistant Doctors). However by 2016, around 11,868 nurses and 6,303 more midwives will be deployed(MoPH, 2011d).

WHO recommendation of doctors, nurses and midwives (combined) are to be 23 per 10,000 population. This is while Afghanistan has 7.26 which is one third of the recommendation. Meanwhile the country has a considerable increase in the training of nurses and midwives and according to the plan scheduled for the next 5 years, the ratio of doctors/nurses/midwives to 10,000 populations will only increase to 9.12(MoPH, 2011c). This means Afghanistan still need for more

doctors/Nurses/Midwives in the coming future. This is also specified in the MoPH strategic direction of improving human resources as “Increase the number of female nurses, physiotherapists, x-ray technicians, psycho-social and anesthetic nurses and other categories of staff as needed” (MoPH, 2011e).

According to the report of the state of the world midwifery 2011 by UNFPA, Afghanistan is among the top 10 countries that have the lowest number of midwife per 1,000 births and need to increase the number of midwives triple or quadruple(UNFPA, 2011).

However, MoPH General Directorate of Human Resource (GDHR) with the assistance of USAID and European Union (EU) launched a data base to track the number of all health workforce in the country, still the data base does not provide information about cost of training medical health workers. Lack of data about the cost of training and education of health workforce including Medical doctors, Nurses, Midwives and other paramedical practitioners in the country at this stage is sensible. There is only information about the cost of training community midwife and licensed midwife that was supported by United States Assistance for International Development (USAID) until 2011 (MoPH, 2009).

Culture of research, data collection and the importance of data in the Afghanistan health sector is improved fortunately during the last decade. The Ministry of Public Health (MoPH), in its *National Health Information Systems Strategic Plan* (2009-2013), identifies the need to ensure the availability, coordination, management, distribution and use of accurate, reliable, and user-friendly health information via a number of activities; including the routine collection of health information through the Health Management Information System, Surveillance, as well as program monitoring and evaluation (MoPH, 2011e).

Like other developing countries Afghanistan health sector needs necessary data and analysis about different programs and projects in the country to better identify problems and challenges and to tackle and address these challenges professionally and evidence base.

One of the reasons for conducting this study is the development of private sector in the area of medical trainings and education in Kabul province (the capital of the

country). Since after 2002 beside Public Institute for training of mid-level health workers which is Ghazanfar Institute of Health Science (GIHS), the MoPH allowed private Institutes for training of nurses, midwives and other paramedical practitioners, currently there are more than 10 newly established private Institutes that graduate mid-level health workers in Kabul province it is worthwhile to calculate cost of training paramedics in both public which provides free trainings for student and private training which the student have to pay a tuition fee. However access to private Institutes data for cost analysis of training paramedics is not be feasible from the provider perspective but looking at the issue from the purchaser point of view it might be useful for MoPH to identify the unit cost of training a nurse, midwife and other paramedical practitioners in order to better regulate them or even to compare the current publicly funded Institutes versus private education as payer considering the quality of education. The reason for consideration of quality of education is because it is the key to ensure minimum standards and a better education system. When comparing the costs while the quality is not considered it may be difficult to conclude based on the finding since better quality of education may cost more.

The other reason for analysis of cost of educating nurses, midwives and other paramedical practitioners in Afghanistan is shortage of mid-level health workforce in the health sector as mentioned above. If we consider Afghanistan health indicators most of them like maternal health, child health, a great part of primary health care services and a sensible part of secondary and tertiary services performance and success relate to mid-level health work force like nurses, midwives and other paramedics along beside the role of medical doctors. In Afghanistan generally the ratio of doctor to other mid-level health workers is not according to the standard (MoPH, 2009).

Considering the importance and role of mid-level health workers it is important to identify the cost of training paramedical practitioners in public and private institutes.

Cost analysis of GIHS and private Institute can help MoPH to achieve the national human resource policy objectives of increasing number Institutes of health sciences for the training of nurses, midwives and other paramedical practitioners since

the unit cost calculation of training a paramedic in Kabul can help us to forecast budget for other institutes in the provinces, meanwhile it can help GIHS and other Institutes of MoPH to estimate future annual budget plan. This study can also help Ministry of Higher Education (MoHE) in terms of establishment of nursing courses in the region and other provincial level(MoPH, 2011c).

All the above discussion leads us to answer the question of what is the cost of producing a Nurse, Midwife and or a paramedical practitioner in public and private sector.

1.2 Research Question

What is the cost of producing a mid-level health worker in GIHS from the provider's perspective and the cost of producing the same type of mid-level health worker in private health science institutes from the purchaser's perspective considering the quality of education?

1.3 Objectives

The overall objective of this study is to find the cost per graduate of GIHS' training departments from the provider perspective, while for private institutes the focus is on the cost of tuition and other cost from the purchaser perspective. Meanwhile, the study will also assess generally the quality of education in both GIHS and private institutes by conducting a survey and in-depth interviews with stakeholders.

1.3.1 General Objective

The main objective of this study is to calculate and compare the unit cost per graduate student of GIHS across its 8 disciplines from the provider perspective with the unit cost of graduating a student in private health science institutes from the

purchaser perspective, considering the quality of education, in Kabul Province during the period of March 2009- March 2012.

1.3.2 Specific Objectives

The specific objectives focus on detailed information about the cost of GIHS since this is a public institute and calculation of detailed information about GIHS cost can help the institute and the MoPH to better manage future budgets and cost drivers of the institutes. Below are the specific objectives of the study regarding the detailed cost of GIHS.

a- To break down cost by different cost centers of GIHS.
b- To break down cost by different disciplines of GIHS.
c- To identify the average cost of each discipline per enrolled student per year.
d- To compare the quality of training in GIHS and private health science institutes in general.

1.4 Hypothesis

The cost of producing a mid-level health worker is assumed to be lower in the GIHS (excluding the accommodation cost of GIHS; due to the existence of many disciplines in one institute and lower staff and lecturer salary than in private institutes) but of higher quality (due to the higher experience of lecturers at GIHS) than in existing private institutes in Kabul province.

1.5 Scope of Work

The scope of work for this study will be GIHS and a sample of 5 private health institutes who train nurses, midwives and other paramedical practitioners in Kabul province. The study will analyze the cost per graduate student in each discipline of GIHS from the provider perspective. While for the 5 private institutes in Kabul

province this study will calculate the cost of tuition per graduate student of each discipline that exists. There are 8 different majors or disciplines, namely Nursing, Midwifery, Lab. technicians, Anesthesia, Physiotherapy, Radiology, Dentistry and Pharmacy in GIHS, but not all are offered by private institutes. The target group for cost analysis of GIHS and private institutes consists of students who graduated by March 2012 for study programs that last 3, 2 and 1 year respectively.

Regarding the cost analysis of private institutes, the private institutes follow the curricula of GIHS and almost all of them teach the same disciplines. However some of the disciplines like X-ray technician, Physiotherapy and Anesthesia do not exist in private institutes for the study period. Out of 10 private paramedical training institutes those 5 institutes that have been operating on the same time period with the most disciplines are chosen.

The comparison of cost and quality in public versus private will be done considering the quality of education in both GIHS and private institutes generally. To analyze the quality of education a qualitative research is conducted by doing in-depth interviews asking about the quality of education from the MoPH stakeholders and lecturers from GIHS and private institutes and a survey questionnaire that asks about the quality of education from the graduate students of GIHS and private institutes using Likert scaling method. The in-depth interviews and students' survey was conducted from March 10th to the 26th.

CHAPTER II
GENERAL INFORMATION ABOUT AFGHANISTAN

This chapter discusses more about the country's population, geographic situation and economy. This chapter also includes the country health system and major package of health services currently MoPH is providing services to the people of the country. The county health financing current situation and flow is also introduced shortly in this chapter. Meanwhile this chapter contains information about training of medical and paramedical practitioners' situation at both public and private sectors, the current number of medical universities and Institutes beside that the community Nursing and midwifery program is introduced in this chapter.

2.1 Country Profile

Afghanistan is a country that has passed more than three decades of war. The total population of the country has been estimated (26,500,000) with 34 provinces and around 401 districts(CSO, 2011-12) Geographical distribution of provinces in Afghanistan is quite complex from the northern mountains to the small desert portion in the south west. It is a multi-ethnic country; the official languages are Pashto and Dari while Uzbiki, Turkmeni, Balochi, Pashaee and Norsitani are other local languages in the country (CSO, 2011-12). Most of the country's population is Muslim with a small number of Hindus. The neighboring countries of Afghanistan are, Pakistan in the east and south with the longest border, Iran in the west, Tajikistan, Uzbekistan and Turkmenistan are other countries in the north that have borders with Afghanistan. The country has a small border with China in the northeast part of the territories.

2.2 Country Economy

Afghanistan economy is improved significantly since 2002. The role of international community assistance is predominant in this improvement for most of the country infrastructural settings have been rebuilt and renewed. The country's economy is based on agriculture as well, there for the economy of the country significantly dependent on agriculture. Agricultural products, including carpets and rugs, contribute to 80 percent of the total official and legal exports. Dried fruits and nuts such as raisins, figs, almonds and pistachios are major exports. GDP of the country is increased tremendously to US$572 per capita in 2010, however this is while 36 percent of the country's population unemployed and lives under the poverty line , IMF, 2011 cited by (MoPH, 2011a). According to the Ministry of Finance (MoF) national budget report, the country inflation rate average is estimated to be 7.8% in years 2009-2011 (MoF, 2011).

2.3 Country Health System

By 2002 the Afghanistan health status was the worst in the world. Most of the health sector infrastructure was destroyed and shortage of professional health work forces in the health sector was predominant. Maternal and child death rate were highest in the world and access to health care services were less than 9% (MoPH, 2011e). To tackle the problem and renew the infrastructure of health sector in 2002, after the establishment of the Islamic Transitional Government of Afghanistan, fourteen separate development programs were created within the new government's National Development Framework (MoPH, 2010). One of these frameworks was Consultative Group on Health and Nutrition (CGHN) whose members included important stakeholders such as donors, line ministries, NGOs, UN agencies, Embassies and International Assistance Forces. CGHN in 2002 proposed to develop a Basic Package of Health Services (BPHS) as the primary package for health care provision in the overall country to address the highest priority health problems with services and interventions especially rural areas.

To successfully and achieve better health care provision after the introduction of BPHS the role of an appropriate referral system where all patients could access to the required services found to be essential. There for soon after establishment of the BPHS whose main focus was primary health care service provision, the MOPH's Hospital Management Task Force identified the need to develop a framework for the hospital improvement of the health system. They introduced the Essential package of health care services (EPHS)(MoPH, 2005).

Considering the two main packages of BPHS and EPHS, health services in Afghanistan operate at three levels: health posts (HP) and community health workers (CHWs) provide service in the community or village level; basic health centers (BHCs), comprehensive health centers (CHCs), and district hospitals operate in the larger villages or communities of a district, provincial and regional hospitals comprise the third level. In urban areas, due to a lack of facilities offering basic curative and preventive services, urban clinics, hospitals, and specialty hospitals provide the services that HPs, BHCs and CHCs provide in rural areas (MoPH, 2010). According to the BPHS summary of services, staffing, facilities features and essential drug classification, the type and number of staff in a HP is one male and one female CHW while in BHC the staffing is 1 nurse (male), 1 community midwife, 1 community health supervisor, 2 vaccinators and 1 physician male or female. The staffing in a CHC is 1 nurse male. 1 nurse female, 2 community midwife, 1 community health supervisor, 2 vaccinator, 1 physician male and 1 female, 1 laboratory technician and 1 pharmacy technician and finally a psychosocial counselor for those facilities funded for mental services (MoPH, 2010). This is while that there are other type of health facility such as health sub center, and mobile health team which are defined in BPHS for some areas where needed.

Walking through 2002 the Afghanistan health sector has achieved sensible achievements in the area of primary health care service provision, maternal and child and other infectious disease case detection and prevention in the recent one decade. Access to primary health care services is improved from 9% to between 60 to 80% in 2008 (MoPH, 2011e). This was not possible without continuous effort of MOPH and their health workers. Training and existence of the health workforce in Afghanistan have been a great issue during this period. MoPH has focused on the training and

capacity building of health workforce during this period, but still shortage of health workforce is a challenge. Despite the recent achievements, the country still has some of the worst health related indicators. This is due to lack of health care access in a very urban area and security in some part of the country (MoPH, 2011e).

Below is the table of Afghanistan health and health related indicators. Data are collected from different sources of Afghanistan Central Statistics Organization and MoPH official documents and reports.

Table 2.1 Afghanistan health related indicators 2012

Total Population	26,500,000
Total Fertility Rate per Women	5.1
Life Expectancy, Male	62 years
Life Expectancy, Female	64 years
Maternal Mortality Ratio (per 100,000 population) (Excluding the South Zone)	327
Infant Mortality Rate (Per 1,000 live births) (Excluding the South Zone)	77
Under Five Mortality Rate (Per 1,000 live births)	97
Number of health workforce (per 1,000 population)	0.65
Number of Medical Doctor (per 1,000 population)	0.29
Number of Nurse (per 1,000 population)	0.24
Number of Midwife (per 1,000 population)	0.12
Skill Birth attendance Rate	24
GDP per capita	US$572
Total health expenditure as % of GDP	10
Government health expenditure as % of total government expenditure	4

Sources: (CSO, 2011-12; MoPH, 2009, 2011a, 2011b)

2.4 Health Financing in Afghanistan

Afghanistan health financing is highly donor dependent. Donor support for health flows through two major sources, off-budget and on-budget (MoPH, 2012).

Off- budget includes all donors, the UN and other international and national Organization's funding which directly transfers to the health care providers.

On-budget funding includes funds that are being channeled through the Ministry of Finance to the MoPH. This is while some of donor support is being channeled through on budget flow for the MoPH like the World Bank (WB) health projects and some of USAID projects.

According to the Afghanistan first report of National Health Accounts (NHA) 2008-2009 that was released in 2011, total health expenditure (THE) per capita in the country was around US$ 1.0 billion (US$42 per capita) which more than 76% of it is out of pocket expenditure. The rest of it is a share of donor and government of Afghanistan. Donor share represents 75% of total public expenditures on health. Percentage of Government total expenditure for health is only 4% while the country THE as % of GDP is around 10% as it is mentioned above in table 2.1 (MoPH, 2011b).

2.5 Health Workforce Training in Afghanistan

A health work force is the person who is directly or indirectly involved in the provision of health care services.

Pre service education of the health workforce in Afghanistan is still public sector dominant than private Institutes for Medical Organizations. This means by 2001 there was no private Organization to train and graduate students in the health sector. Training of health workforce including medical doctors, Nurses, Midwives and other allied health workers were all under Public Universities and Institutes. In Afghanistan Ministry of Higher Education and MoPH are the two main sources for Public Universities and Institutes. Medical Universities around the country are the place where all medical doctors including military doctors are being trained and

graduate. There are currently seven medical Faculties in Kabul, Kapisa (Alberuny), Kandahar, Herat, Balkh, Nangarhar and Khost for training of medical doctors (curative medical doctors and Dentists). The duration of graduating from medical faculty is seven years including one year of full practical work in the public hospital with the degree of Medical Doctor (MD). Since 2008 two new sections for training of Nurses and public health professionals is established under Kabul Medical University (KMU) and training period for nursing studies and public health is around 4 years with a degree of bachelor (MoPH, 2009).

Beside that Ministry of higher education has pharmacy faculty under its Universities structure in all over the country Universities. Pharmacists are being graduated as bachelor under this program by completing four years of training.

There is no specific educational institute for training of admin staff who work in the health sector. Usually government civil servants work as admin employee at this part.

It is found that of the graduated midwives, an average of 82% of Institutes of health science graduates which GIHS is one of them and 89% of community Midwifery Education (CME) graduates were deployed after graduation, with 76% of IHS graduates and 84% of CME graduates still working in 2009(HSSP, Jhpiego, & Hopkins, 2011).

Table 2.2 Number of public and private pre-service training institutes in the country

Type of training institution	Type of ownership		Degree
	Public	Private for Profit	
Medical Schools	7	2	MD
Schools of Dentistry	1	-	MD
Schools of Pharmacy	1	-	Bachelor
Nursing & Midwifery Schools	19	2	Diploma

Paramedical (Pharmacy technician, Dentistry technician, Lab technician, Physiotherapy, Radiology and Anesthesia)	9[1]	4	Diploma
Total	37	8	

Source: (MoPH, 2009).

The total numbers of private health science institutions, however, are around 18 by March 2013 according to the information from the GIHS office who provides permit letter to private institutes. This is while only 5 of the above institutes are officially registered with MoPH, others were newly established and their documentations are under the process. For this study only those institutes that have graduate students and the students are introduced for passing the government exam are considered to be interviewed.

Table below shows detailed number of health worker in the country

Table 2.3 Brief overview of current qualified health workers, those in training estimated numbers by the end of 2016 in public and private sector

Category	**No staff (2011) MoPH official and contracted (A)**	**Estimate Staff MoHE plus (A) & private (B) (dual counted once) (C) =A+B**	**Estimate students to Complete by end 2016 (D)**	**Estimate No of Employed by end 2016 (E) = C+D**

[1] Including GIHS in Kabul, the rest of 8 other institutes of health science are located in Kunduz, Kandahar, Badakhshan, Balkh, Herat, Farah, Helmand and Nangarhar provinces

Doctor	6,162	6,830	3,029 (which ¼ is female)	9,859
Nurse: General community, Anesthetic and Auxiliary	5,197	8,690	3,178 (which 1/3 is female)	11,868
Midwives: hospital community and assistant	2605	4,000	2,303	6,303
Dentists/dental technicians	484 (133/351)	3,000 (500/2,500)	1,264 (419/611) (which ½ is female)	4,019
Pharmacists/pharmacy technicians	1,360	3,050 (550/2,500)	1,264 (419/845) (which ½ is female)	4,314
Laboratory/radiology technicians	1,734	5,000	939 (777/162) (which 1/3 is female)	5,939
Other allied health workers: Physiotherapists, Orthopedic technicians, Psycho-social counselors, etc.	141	300	125 (which over ½ is female)	425

Source: (MoPH, 2011c)

2.6 Community Nursing and Midwifery Education

Soon after the implementation of BPHS and EPHS, the need for health workforce specially Nurses and midwives have been sensible as an urgent need. Since 2002 there were only few public Institutes of health science who were graduating paramedical practitioners. MoPH along with the donor agencies planned to intensify the process increasing number of midwives and nurses besides strengthening the current institutes. They established Community Midwifery Education (CME) and community Health Nursing (CHNE) programs in the provinces to train nurses and midwives for the community health facilities. The programs started with the assistance of major donors, USAID, World Bank (WB) and European Union (EU). Schools in almost every province established in order to increase the number of nurses and midwives especially in the rural areas (HSSP et al., 2011). The possible benefit of these programs is the high deployment rate of graduate students since the students are being selected from the community by the local council of the community according to the need of the community. Beside that the graduate students are committed to work for the same community for a specific period of the time. The programs are successful in terms of declining MMR and child mortality by increasing number of midwives and nurses in the health facilities where other female worker are not keen to work (HSSP et al., 2011).

2.7 Ghazanfar Institute of health science (GIHS)

The MoPH is currently running around 9 institutes of health science in different provinces of the country for training of licensed nurses, midwives and other paramedical practitioners at diploma level. GIHS is one of the major Institutes for training of nurses, midwives and paramedic practitioners in Kabul province while the other 8 schools are located in other provinces of the country (MoPH, 2009). The Institute was built in the year 1976 in Wazer Akbar Khan area of Kabul. In 1978 as a Post Basic School of Nursing this Institute was opened in Kabul as the ‘first teacher

training institute' for the preparation of nursing teachers in the country. Since that time there has been quite a big change in the educational curriculum and disciplines of paramedical practitioners (MoPH, 2011d). The reason for the selection of GIHS for this study is because it is the only major public Institutes in Kabul province that train not only nursing and midwifery programs but other paramedical practitioners like: laboratory technician, pharmacy technician, dentistry technician, radiology technician, physiotherapy technician and anesthesia nurse. Criteria for selection of student in this Institute are twelve grade graduate of high school and students will be selected through a competitive process of Ministry of higher education program called cancour (MoPH, 2009). Education including hostel for students are all free of charge and there is no any fee to be paid by the student during the study period excluding student routine expenditure.

The processes for selection of students in private institutes are also based on the competitive entry exam but not national level (cancour exam). The entry exams in private institutes are conducted by the institute with the representative of MoPH and GIHS.

The curriculum of private institutes is the same as GIHS and they are obligated to follow the same curriculum of GIHS and the same study period for disciplines.

Table 2.4 Study period of each discipline in GIHS and private institutes in Kabul province

No	Discipline	Course duration		
		GIHS	Private Institutes	Degree awarded
1	Nursing	3 Years	3 Years	Diploma
2	Midwifery	2 Years	2 Years	Diploma
3	Technology	2 Years	2 Years	Diploma
4	Radiology	3 years	Not exists	Diploma
5	Dentistry	2 Years	2 Years	Diploma
6	pharmacy tech.	2 Years	3 Years	Diploma
7	Physiotherapy	3 Years	Not exists	Diploma
8	Anesthesia	1 Year	Not exists	Diploma

CHAPTER III
LITERATURE REVIEW

This chapter contains two major parts, the first part focuses on literature review about cost definition, concept and method of cost analysis and the second part discusses about the quality comparison of medical education. The first part of this chapter discusses mainly on four major aspect of literature review. First it discusses overall about the economic benefit of education, cost definition, theory and concept by reviewing text books, articles and other academic papers. It also discusses about the costing approaches and allocation methods that are being used for different cost analysis around the world. The other aspect is the review of past studies that have been done in the medical education area and about cost of graduating medical doctors, nurses, midwives and other paramedics. The second part of this chapter discusses about the quality assessment and comparison of medical education of the international experiences and the method for quality assessment of medical and other educational Universities and Institutes.

3.1 Role of Education in Economy

It is always argued that education is an investment in a country. Literature reviews identified studies found that there is a direct link between human capital and economic growth in a country (Smith, 1993).

Training of human resources is a long term kind of investment that has a positive impact to the country. There for developed countries invest a lot in the training of human resources. One of the developing countries problems in health sector in terms of quality health care services is low investment in the education of health workers. This means there has not been enough investment for quality education in the medical Institutes and Universities which lead to low quality production of health care workers and consequently causes a low quality of health care service provision (Spinaci, Currat, Shetty, Crowell, & Kehler, 2006).

Attaining substantial health goals requires time and money as usual. Approximately 40 countries chose to follow up on the findings from the 2001 report of the Commission on Macroeconomics and Health (CMH). The CMH report provided evidence of the links between health and economic development, and emphasized that the poorest populations are disproportionately affected by preventable diseases and bear the brunt of the financial burden of illness. The Commission recommended a massive scale-up of health investments, accompanied by a critical review of the inefficiencies and malfunctioning of health systems (Spinaci et al., 2006).

The economic return of Nurse Midwives and other paramedics has been argued through many studies (Kinfu et al., 2009; Mullan et al., 2009; Smith, 1993; Starck & Faan, 2005). One of the arguments is that educating more nurses can help address patient safety. People in developed countries are well aware of the problem of medical errors in today's health care environment. The absence of nurses is a major causative factor in errors being committed. Errors are costly not only in terms of human life and suffering but also in terms of lawsuits as well as the general efficiency of operation. An investment to increase the availability of nurses can pay off in decreased error rates of health institutions (Starck & Faan, 2005).

It is also argued that educating more trained mid-level health worker can help them regarding easy access to job which indirectly help the government in terms of the employment rate. Creation of job opportunity can motivate public to get a higher education (Starck & Faan, 2005).

Interest to higher education can direct or indirectly help economy in terms of developing private Institutions, creation of another job opportunity and tax collection from private institution can help economic growth. The study mentioned that school's contribution to the local economy and the state economy in the US has been US$69 and US$75 respectively (Starck & Faan, 2005).

3.2 Cost Concept and Theory

3.2.1 Definition of Cost

Cost is the value of resources for attaining goods or services or the measurement of resources used for production of a service or other product (Drummond, Sculpher, W.Torrance, J.O'Brien, & L.Stoddart, 2005).

Economists distinguish between financial cost and economic cost. This depends on the perspective of measuring resources for production of a good or product to identify the cost economically or financially (Guy & Kodjo, 1995).

Usually economic cost and social perspective cost are described in quite similar situations in the text books. This includes the opportunity cost that is being discussed in some literatures. There is difference between economic cost and financial cost. Usually in financial cost calculation the opportunity cost of land and other indirect costs that are spent for the specific activity are not included while economic cost will include all direct and indirect including opportunity cost (Drummond et al., 2005).

The other classification of cost is the fixed costs and recurrent costs. Fixed costs are usually costs that are usually last for more than a year in terms of use and durability. The fixed cost is usually included infrastructure, equipment (technical and administrative) and rolling stock (Guy & Kodjo, 1995).

Recurring costs are called for those expenses that do not last more than a year. Usually salaries, consumable materials cost of routine management staff are classified under recurrent costs (Guy & Kodjo, 1995).

3.2.2 Cost Perspective

To estimate the full cost of a service or product, it is necessary to identify the point of view for cost analysis. Considering the perspective in the cost analysis help us to identify whose cost should be taken into account. The reason gives us an idea about how broad the area of our study will be (Mogyorosy & Smith, 2005).

According to many costing studies and literatures, there are four types of costing perspective as below.

a. Patient perspective

From this perspective we usually consider and account for those costs that are spent with patient and other relevant that are dependent to patients. Opportunity cost related to patient usually considered to identify the full cost of the patient. The opportunity cost are including the missing time of patient from work and other visitors' time who visit patient including the transportation cost. Opportunity cost data collection will be feasible by conducting interviews (Mogyorosy & Smith, 2005).

b.Payer/ purchaser perspective

Payer or purchaser can be an individual or a legal person who seeks to buy a product. Usually costs that are calculated from the payer perspective are those that are being paid to the product/service provider. This method's cost data calculation and estimation are usually easy just by collecting data about the fee and other cost payer will pay for purchasing a product or service (Mogyorosy & Smith, 2005).

c.Provider perspective

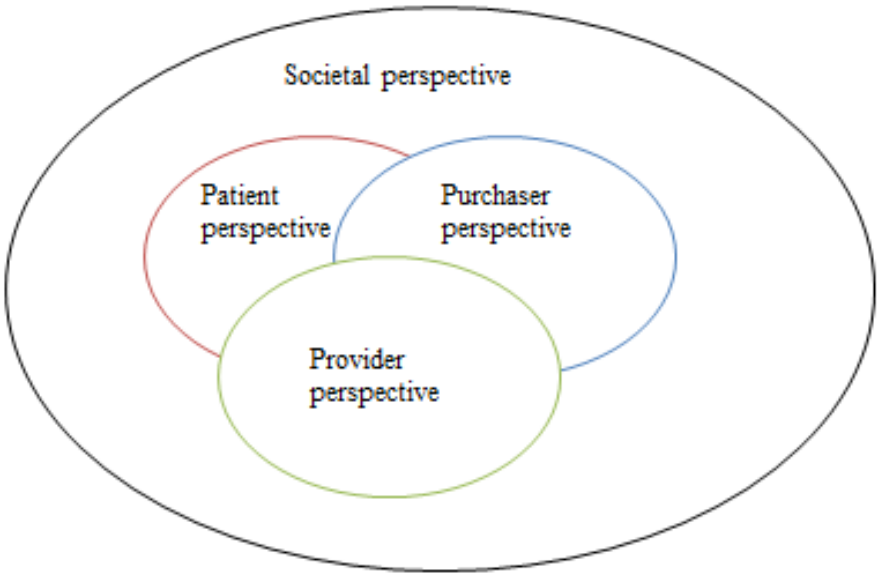
The provider perspective usually calculates the cost of a product or service by accounting the expenditure for the production of a product or service (Mogyorosy & Smith, 2005).

d.Societal perspective

Societal perspective includes all the above mentioned perspectives. It means the full cost analysis or the economic cost analysis including all aspects, figure 3.1 below shows the perspective of cost analysis (Mogyorosy & Smith, 2005).

Each of the above perspective has its own area of study; and as mentioned the broadest one is the societal perspective that includes patient, payer and provider's perspective (Mogyorosy & Smith, 2005).

Figure 3.1 Perspective of Cost analysis



Source: (Mogyorosy & Smith, 2005)

3.2.3 Introduction to Cost Analysis

Before starting cost analysis and its methodology the question of why we are analyzing cost is the first question when we begin with cost estimates for materiel systems, automated information systems, units, training, and other projects. Therefor it is necessary to understand the reason and rationale behind our work (Young, 2002). Below are some points to consider while commencing cost analysis.

Each cost analysis should contain:

(1) A clear definition and understand of what is going to be cost (Young, 2002).

(2) All assumptions, rules, and constraint specifications, assumed or

Imposed, must be considered in the analysis. They must each be explained with adequate rationale (Young, 2002).

(3) An estimate of all expected costs, directly or indirectly associated with the program over its life, including disposal considering the perspective. The cost estimate must include all data sources used (Young, 2002).

(4) Key limitations in terms of elements that were excluded (Young, 2002).

(5) Enough documentation to support cost analysis and its methodology to permit for analysis (Young, 2002).

3.2.4 Steps to Consider in the Cost Analysis

Literatures identified some important points that need to be considered while starting cost analysis. Studies which are done about cost analysis of medical education have considered the following four steps in the calculation of the cost of education (Drummond et al., 2005).

A. Grouping and cost center identification
B. Identification of Direct cost for each cost center
C. Selection of allocation criteria for cost allocation
D. Total cost and unit cost calculation

It is necessary to specify the final or an objective cost center while grouping cost centers since the objective cost center is the main cost center that other cost centers cost will be allocated to them in order to identify the full cost and unit cost (Conteh & Walker, 2004).

A. Grouping and cost center identification

Clear understanding about administrative structure, function and Organogram of an Institute can help us in grouping and cost center identification. Based on the structure of the entity that is being cost usually the major units for cost center identification could be as below.

- Administrative Unit
- Support Unit
- Objective/Final Unit

B. Identification of Direct cost for each cost center

There are three components of direct cost for each cost center. These are the main determinants of direct cost.

- Labor Cost (LC):
- Material Cost (MC)
- Capital Cost (CC)

C. Selection of allocation criteria for cost allocation

Allocation criteria are important and sensitive in cost analysis for direct costs of other cost centers will be allocated based on this. Change in allocation criteria may cause significant change in the final unit cost.

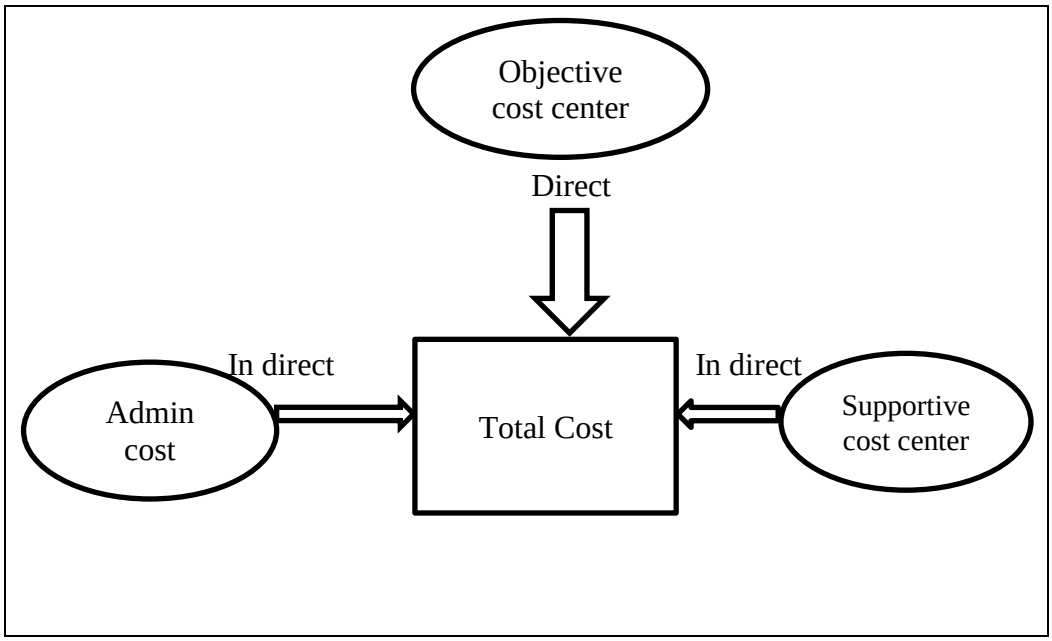
D. Total cost and unit cost calculation

Total cost is the summation of direct and indirect costs for the objective cost center. By dividing the total cost to outputs we get unit cost.

$TC = \sum DC + IDC$

Unit Cost = TC/total output

Figure 3.2 Total cost estimation



Source: (Anh, 2011)

3.2.5 Cost Analysis Methods

There are several appropriate methods for unit cost estimation of a particular service. Selecting the appropriate method depends on the type of service, the reason and the economic feasibility of cost calculation. There is no universally accepted appropriate costing methodology to follow since each service has a different administrative setting and vary country by country.

Different cost concepts and different method should be used depending upon the purpose for which data are available since there are some limitations of data availability (Mogyorosy & Smith, 2005).

Most of the textbooks and literatures use of the Classical or typical method of costing while some others prefer activity based cost analysis (ABC). Each of them has their own preference and limits (Conteh & Walker, 2004; Franklin, 2006).

A. Classical or Typical Method of Cost Analysis

This type has different allocation methods for identification of final cost and unit cost (Drummond et al., 2005).

1.Direct cost allocation

2.Step down cost allocation (SDCA)

3.Step down with iteration (double step down method)

4.Simultaneous equation cost allocation

B. Activity Based Costing

This is a costing approach that assigns resource costs to a cost object based on activities performed for the cost object (Franklin, 2006).

To better understand each method of allocation detail from different literatures.

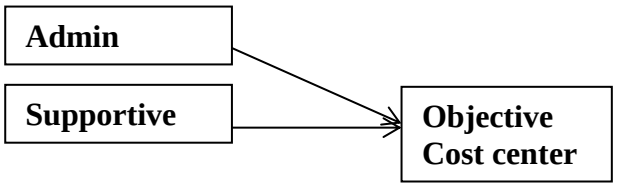
1. *Direct cost allocation*

   This method is the classical method of cost allocation process for total and unit cost analysis. In this method we allocate the cost of other cost centers like administration and ancillary to objective cost center (Anh, 2011; Bogahawaththage, 2007).

   For example if we have three cost centers of admin, Supportive and the final or objective cost center. Costs from admin and supportive will directly be allocated to objective cost center to find the final total cost.

   The advantage of this method is the simplicity and easy understanding of the method while this method ignores the interaction between other cost centers and does not provide us the exact and actual number about the cost of each cost center.

Figure 3.3 Direct cost allocation method



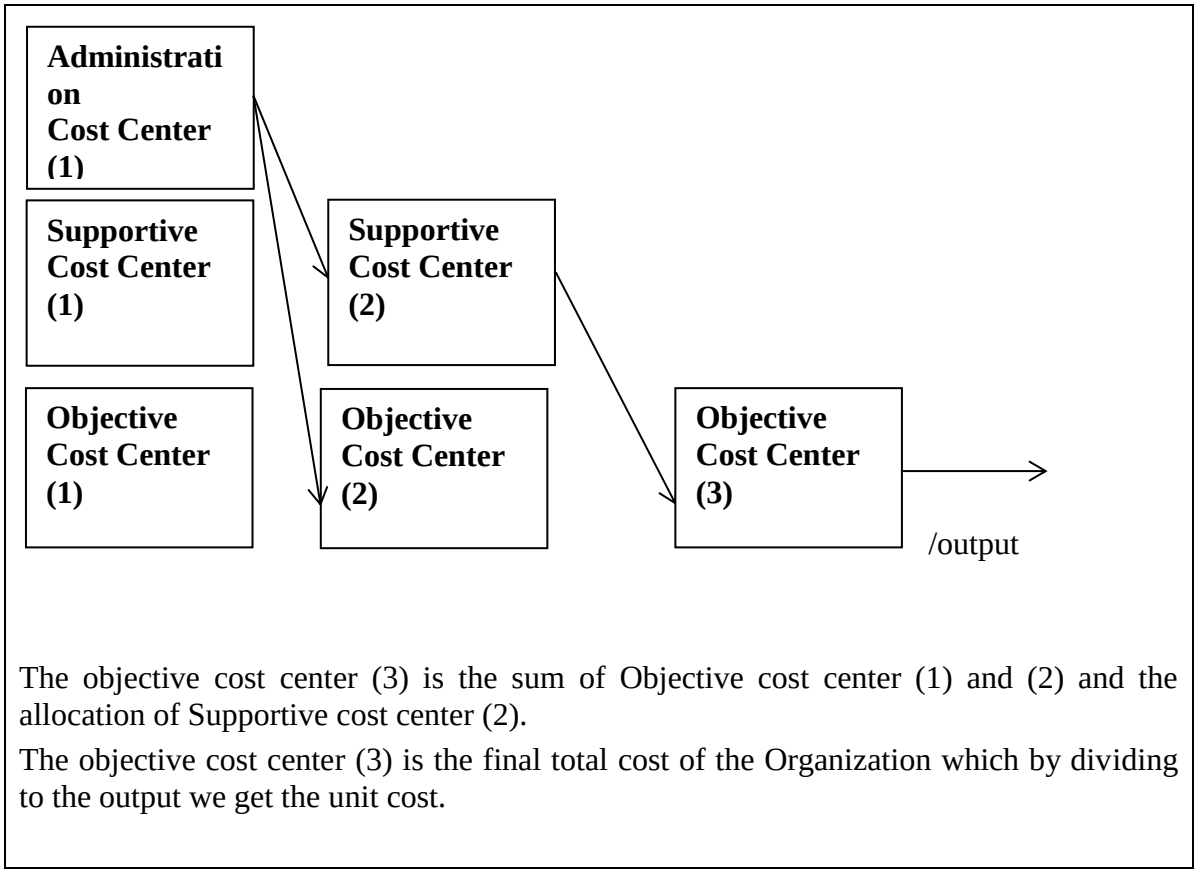
Source: (Drummond et al., 2005)

2. *SDCA*

This method of cost allocation for calculation of total cost and unit cost is common for cost analysis of hospital unit cost, like "Hospical" tool which is an excel based tool for cost analysis of hospital developed by Management Science for Health (MSH). In this method cost center will be ranked based on their share of work to other departments while the one with no share of work from others will be the first top and respectively the other users until the objective cost center which all other cost centers cost will be allocated to it.

The advantage of this method more than the direct method however it is simple beside that we can allocate the cost of other cost center to each other considering the ranking means we can allocate costs of the top cost center to the lowers while we cannot allocate from below to above cost centers.

Figure 3.4 SDCA method



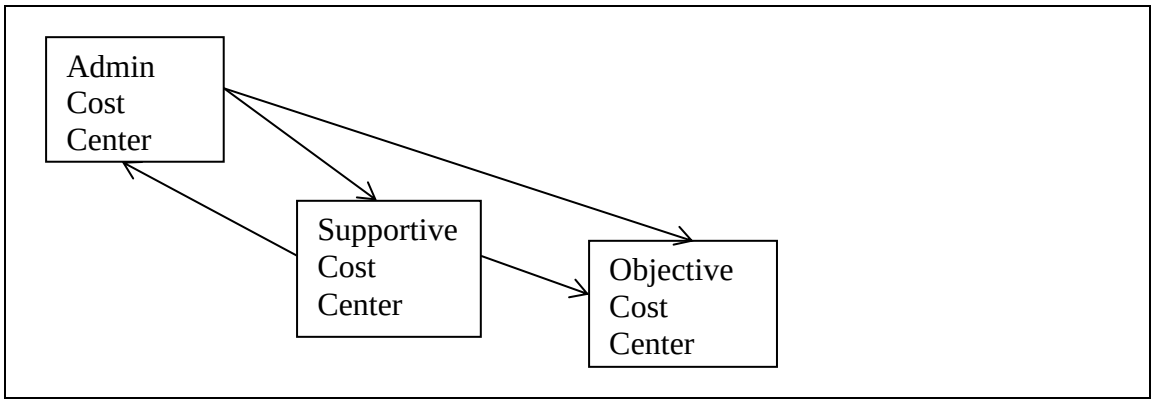
Source: (Drummond et al., 2005)

3. *Step down with iteration method*

   In this method after identifying of cost centers and direct costs for each of the admin, supportive and objective cost centers, the allocation method will be done not only from admin to supportive but from supportive to admin as well.

   The good point about this method is the consideration of supportive cost for an admin while this method makes the process complex and not easy to understand.

Figure 3.5 Step down with iteration method



Source: (Drummond et al., 2005)

4. *Simultaneous equation cost allocation method*

   In this method we can use the same data of the above methods but the only difference is the allocation of cost to each other will be based on some linear equation (Drummond et al., 2005).

Table 3.1 Summary of different cost allocation method strength and weak points

Allocation method	**Strength**	**Weakness**
Direct cost allocation	*Overhead allocation to objective cost center, Simple and easy to understand and explain*	*No interaction between overhead cost centers, the actual cost of overhead cost centers may be ignored and it is not much recommended for cost estimation due to low reliability, opportunity cost explains not correctly.*

SDCA	*Cost allocation between overhead cost centers, a bit complicated than the direct cost allocation method but still Simple and easy to understand, mostly used for cost analysis and good reliability*	*Interaction between overhead costs only from top to down overhead cost centers not simultaneously to both sides, department selection of overhead costs as first may affect the result, opportunity cost may explain not perfectly.*
Step down with iteration	*Simultaneous cost allocation between overhead cost centers, better reliability*	*More complicated than SDCA method due to interaction between overhead cost centers, cost allocation still not simultaneously, opportunity cost may explain better than other above method.*
Simultaneous equation cost allocation	*The most reliable and exact method of cost analysis theoretically, explains almost the opportunity cost, consider the interaction between all cost centers including main objective cost center*	*The most complex method of calculation, not easy to explain and understand, assumes all cost as a variable cost.*

Source: author

3.3 Previous Studies on Cost Analysis of Healthcare Worker

Research studies about cost and quality comparison of educational medical Institutes especially paramedical practitioners have been very limited. There are some researches that have been done in US but access to some of the specific study about cost analysis of paramedical practitioners has been really challenging.

Below are few studies that are somehow related to cost and cost analysis of medical health worker education and trainings which can help us to conclude and rely on their method of analysis and approaches.

Recently USAID- health Sector Support Project (HSSP) had an assessment of the midwifery education program in Afghanistan community and licensed midwifery programs during the years 2006 to 2010. They assessed the program quality of education, enrollment rate, graduation rate and deployment rate. For the quality assessment they conducted qualitative research through individual interviews and focused group discussion among the program stakeholders, part of that they estimated the economic cost of training one midwife in the CME program under USAID fund and two public Institutes of health sciences for the Midwifery programs in Herat and Kabul. The method for cost calculation was to identify the cost per enrollee, cost per graduate midwife, cost per student per year and the total program cost. The study found the mean of cost per enrollee of CME program was US$11, 922 and cost per graduate midwife was US$12, 201 while the mean of cost per enrollee of institute of health science (HIS) was US$5, 256 and mean of cost per graduate midwife was US$5, 474 in IHSs. The overall mean of cost for enrolling was found US$10, 322 and cost per graduate overall mean was calculated US$10, 784. The quality assessments of the program have been done by evaluating graduate midwives through questionnaires, in-depth interview and focused group discussion. The study found that most of the graduate midwives have been satisfied with the quality of education in both CME and IHSs (HSSP et al., 2011).

Cost analysis of medical specialty training program in Sri Lanka is a study that has been done as part of the thesis fulfillment by Miss Jeevani Bilingual Hewa Boghawaththage in 2007. The study objective of this study has been analysis of the cost of the Medical Microbiology training program for the full year of 2007. Direct method of cost allocation has been used for cost analysis in the study by identifying three cost center of Administration Unit, Education supports Unit and Education Unit (as an objective cost center). Each cost center included other small departments that have been categorized under the three major cost centers. The study followed the standard steps of cost analysis including; cost center identification, direct cost identification of each cost center, indirect cost allocation of administrative and supporting Units to Education Unit, Total cost estimation and finally Unit cost calculation by dividing the total cost by the number of outputs (number of Medical

Doctors trained). The author found the total cost of the specialty program around 53,873,222.57 Sri Lankan Rupees. The research could help government for future budget planning of the same type of programs and how to cope with the shortage of specialists in the field of medicine. The main finding of the study was identification of more than 50% of the cost expensed for oversea training that need to be decreased considering not to affect the quality of training. Another finding of the study was identification of higher study cost for foreigner students that the actual cost of the program that has been identified through the study (Bogahawaththage, 2007).

Journal of Professional Nursing in 2005, discussed about (the cost of doing business in nursing). This study discussed the cost of delivering education to health profession methods and approaches. The article specifically focused on nursing bachelor degree. The study reviews the various institutions experience of different method of cost estimation in Unit States of America and UK. The study also discusses about how private schools need to identify the revenue source in order to better operate. The study reviewed different costing experience about the nursing program and found that the cost of nursing program per year were different from US$7, 822 to US$8, 150 for the year 1983-1984 which in 2004 US dollar is equal to US$14, 236 to US$ 14,833. Understanding the main source of fund for medical schools and institutes has been very important. Finding of this study explained an example of Texas medical schools and institutes that their major source of fund had been state proportioned budget and tuition fee paid by students. The study finally concluded that most of public and private Institutes of nursing have lack of information about the costs of educating students. If it is need to increase educational capacity to address the nation's need for nurses, especially at the entry level, it is necessary to have a cost analysis relying on historical data to identify the cost of producing a nurse (Starck & Faan, 2005).

Determining the full cost of medical education in Thai Binh, Vietnam, a study that was conducted in Vietnam which was the first full cost analysis of medical education in low income countries. The Thai Binh School is one of the four regional public schools of medicine in the country. The objective of the study was to identify the full cost of medical education graduation for the period of 6 years, the average cost per year and the major curriculum component of the school. The costs that were

included in the study was the medical education cost excluding the housing, subsistence and other out of pocket expenditure that students spend for books and supplies. Cost determination was done by identifying staff time spend to departments by using the staff table of work. They analyzed the actual expenditure of the school using the annual financial record. They identified four main curriculum component of (Preparatory work, Medical Science, Clinical theory and Clinical practice). They identified annual cost of each component then the total cost and identified the share of each cost center as of total cost. The study found the cost of medical education for 6 years differs from US$9, 527 to US$ 12,285. However the study concludes that cost comparison of medical education between countries may not be possible due to differences in duration of study in each country, the quality of education, the education system of public and many other factors (William, Andrew, & Tham, 2001).

The report of the state of the world's Midwifery 2011 by UNFPA is a special report about the midwifery program situation in all around the world. The report states about the cost of inputs related to midwifery education per year in nine developing countries in page 24. The report table shows that input costs for each country are different for example in Afghanistan case all expenses including the housing, food and other training materials were included as input cost and the cost of each midwifery student were estimated from US$8,000 to US$9,000. While the report shows that the lowest cost per student per year was in Ghana US$1,502 however the costs included the Tuition, transportation, living fees, books, educational visits. According to this table the highest cost per student per year was from Sudan with US$11, 800 and the cost of the program in Afghanistan was the second highest while the low cost were from Ghana and Malawi (UNFPA, 2011).

Table 3.2 Input cost table of midwifery program for nine developing countries

Country	Duration of training	Scope of costing	Cost of each student per year (US$)

Afghanistan	2 years	All expenses including housing, food, training material etc.	8,000- 9,000
Burundi	4 years	Tuition, transportation, accommodation and living fees, registration fees, internet fees, library charges	3,250
Ethiopia	4 years	School fees (classroom learning and clinical experience in the field)	1,630
Ghana	3 years	Tuition, transportation, living fees, books, educational visits	1,502
Kenya	-	Recurrent expenditures	1,800
Malawi	3 years	Tuition, boarding facility fees	1,504
Sudan (southern Sudan)	3 years	Scholarship, full board, books and transportation fees	11,800
Tanzania	-	Recurrent expenditures	3,236
Yemen	2 years	Tuition fees	1,250

Source: (UNFPA, 2011)

3.4 Quality of Medical Education

The issue of quality in both medical education and health service provision is vital. Most of the developed countries spend a lot to improve quality of education which impacts on the quality of health services since training a health worker give us the high outcome.

Data from the Afghanistan midwifery program shows that the increase in quality of education and number of midwives increased the provision of antenatal care (ANC) and skilled birth attendance rate in the country. It was done through a study using difference in differences method and data about the number of midwives before 2003 were graduated and 2008 National Risk and Vulnerability Assessment data (HSSP et al., 2011).

3.4.1 Measurement of the Quality of Medical Education

There are some standard and approved ways of assessing quality of education such as accreditation, conducting surveys, in-depth interview, and focused group discussion which are discussed as below.

The study that was conducted by USAID in Afghanistan about the pre-service evaluation of midwifery program, part of it was to assess the quality of education by conducting method of semi structured in-depth interviews among graduated midwives with 26 questions about the program and a competency score in different part of training program was obtained (HSSP et al., 2011).

In 2004 WHO and World Federation for Medical Education (WFME) established a task force on accreditation and improvement of quality of medical education. WHO, history of commitment for better and quality provision of education comes from 1948 when the organization established. WFME also has a good background on the involvement of improving medical education quality marked by the International Collaborative Program for the Reorientation of medical education since 1984. Program of a global standard in medical education for better health care

services was started in 1997 by the WFME. The purpose of this collaboration between WHO and WFME was accreditation and improvement in the quality of medical education to better address health care problem according to the need of the society. The report compiled different countries experience about improving quality of education and found that most of the countries need to have a standard accreditation system for improving the quality of education by setting some standards regarding number and size of school, the teaching method, educational outcome and many more. The standards are measurable by giving score (WHO, 2004).

According to a study about the quality assurance of medical education at the University of Zürich, Faculty of Medicine and published in 2012. They established an agency for accreditation and quality assurance. They used from the published international literatures. They identified three main stages of quality assurance in the accreditation process. The first one is a self-assessment of institutes of them according to the standards given to them. Second stage includes the external assessment by a group of external experts. And last accreditation through a formal body like government to evaluate the quality of medical education. The University finally developed a self-assessment manual for accrediting quality of medical education based on the three main stages and criteria mentioned above. Their University was the first University in Switzerland in 2005 that has been accredited (Schirlo & Heusser, 2010).

According to the report of the state of Midwifery today 2011 by UNFPA, most of the countries have been implemented the accreditation of midwifery education programs by the government or other authorized regulatory organizations to ensuring educational standards are met. The majority of midwifery training programs is indeed accredited by the government of the countries in which they operate. Accreditations for private midwifery education in these counties are similar to the public sector. While countries reported the existence of accreditation, but in some countries the board of accreditation has not been able to accredit all entities and institutes due to lack of resources or volunteer cooperation of institutes especially private institutes (UNFPA, 2011).

In order to better assess and evaluate the quality of a service or product there should be some criteria to evaluate them. The issue of quality assessment is usually being assessed by doing qualitative researchers and conducting surveys. It's also concerned with the development of social phenomena in the world. This means it concerned with the social aspects of the world and try to answer the following questions (Hancock, Ockleford, & Windridge, 2009).

- Why do people behave the way they do
- How ideas and people manner are formed what are the causes
- How people are being affected by the events occur around them

Qualitative research is useful in health and social settings, especially when we want to know peoples' experiences, views and sought.

There are different qualitative research methods such as; observation, feeling, case study, focused group discussion and in-depth interviews. Qualitative research is useful in a health or social care setting(Hancock et al., 2009). Quality comparison usually assessed by conducting qualitative interviews. Qualitative Interviews are among the most familiar strategies for collecting qualitative data. There are 3 different types of qualitative interview; unstructured, semi structured and structured(Crabtree, Bloom, & Benjamin, 2006).

Of the 3 different types of interview semi structured interview has been preferred for the qualitative research projects. This type of interview usually been designed according to a schedule around a set of open ended questions while other questions will be raised during the interview. Semi structured in-depth interviews are being used widely for qualitative researches of an individual or group interview(Crabtree et al., 2006).

3.4.2 Applied Studies on Quality Assessment of Medical Education

A study in Pakistan about assessing quality of residency education has been done recently under the title of Postgraduate medical education in 2013. The objective of the study was to determine the quality of the residency program among resident students and measuring the level of their satisfaction. The study was a cross

sectional survey type of study in Pakistan Institute of Medical Science, Islamabad for the period of September to November 2008. Residents who have followed the program for one year have been included in the study. A questionnaire consisting 14 questions was used for this purpose, the Likert scaling method was used by giving five points grades to the questions. The results were added up from all questions of the questioners and score was given from zero strongly disagree to 100 strongly agree based on the response of the participants. The response rate was 73% of which answering 109 out of 150 contacted participants. Their response rate about various educational attribute was different of which good response have been given to case studies 75.96%, supervision during the study around 70.27% and access to journals around 69.54% (Saaiq & Khaleeq Uz, 2013).

In 2007 a study was conducted in faculty of medicine in Sarajevo in Bosnia and Herzegovina on how to assess and improve quality of medical education focusing on lessons learned from that faculty. The author used Likert five degree scaling method. They surveyed around 521 students of the faculties of biomedical science, Stomatology, Pharmacy and Nursing college students of final year and postgraduate from the University of Sarajevo. Based on the results of the survey the author concluded that reform need to be carried out according to the need and regulations must be set to insure the quality of education, internal and external evaluation of the quality of education must be carried out, some standards need to be set, educational standards according to students need must be ensure, curriculum and program need must be harmonized with the requirement of the programs, number of library and other facilities need to be increased according to the students need and many other recommendations (Masic, Novo, Deljkovic, Omerhodzic, & Piralic, 2007).

This is while that another study was conducted in the same faculty of Medicine to assess the same criteria of the study in 2007, in Sarajevo in Bosnia and Herzegovina in 2012 to assess and improve quality of medical education. The goal of the study was to measure students' satisfaction and to identify weak and outdated parts of medical education. The study was done based on a survey of sampling 108 final year students of the medical faculty in Sarajevo in 2011. The survey questionnaire was developed based on scaling method of 1 to 5 points. The result of the survey showed that above 90% of students rate the quality of medical education in

the faculty under 3 of possible 5 the best number, while this was around average grade of 3 for the year 2008. The result also found out that the independent service unpreparedness raised around 70% after finishing education while this was around 53% in 2008. The ratio of lecturers to students was graded 3 out of 5 by 80% of the participants. Satisfaction of students grading about the concept of preclinical training was estimated around grade 1 of a possible 5 by 44% of the participants which was similar to 2008 findings. The study finally concluded that the problems and weak points of medical education in the faculty of medicine university of Sarajevo remained during the period of more than a decade and it need to be urgently changed and improvement and necessary reforming in the educational system must be implemented (Masic, 2012).

There is another study from sub Saharan Africa about the quality of pre service education of midwifery program. The study is a mixed of qualitative and quantitative participatory that was conducted in Ethiopia, Ghana and Malawi. The participants of the study were different stakeholders including donors, government policy makers, representatives from supporting agencies, Midwives and students in the education program. The study found challenges way forward the midwifery education program from the selection of students in the curriculum, clinical practice, accreditation and assessment of the program. The study recommended that the issue of quality is necessary for the program and must be considered when designing and implementing the educational program. The study identified the role of qualified teachers in theoretical and clinical work are the main manpower for the program (Fullerton, Johnson, Thompson, & Vivio, 2011).

CHAPTER IV
RESEARCH METHOD

This part discusses about the research design method for cost analysis of GIHS and private institutes, data collection process, quality assessment process, type of qualitative research method to compare GIHS with private institutes and limitation of the study.

4.1 Research Design

This study is a descriptive type of research method. A mix of primary and secondary data is used for this research. In this chapter of this study, it does not only find the cost per graduate student in GIHS and private institutes but also assesses the quality of education through surveying students' point of view using the Likert method of scaling and qualitative method of in-depth interview with stakeholders.

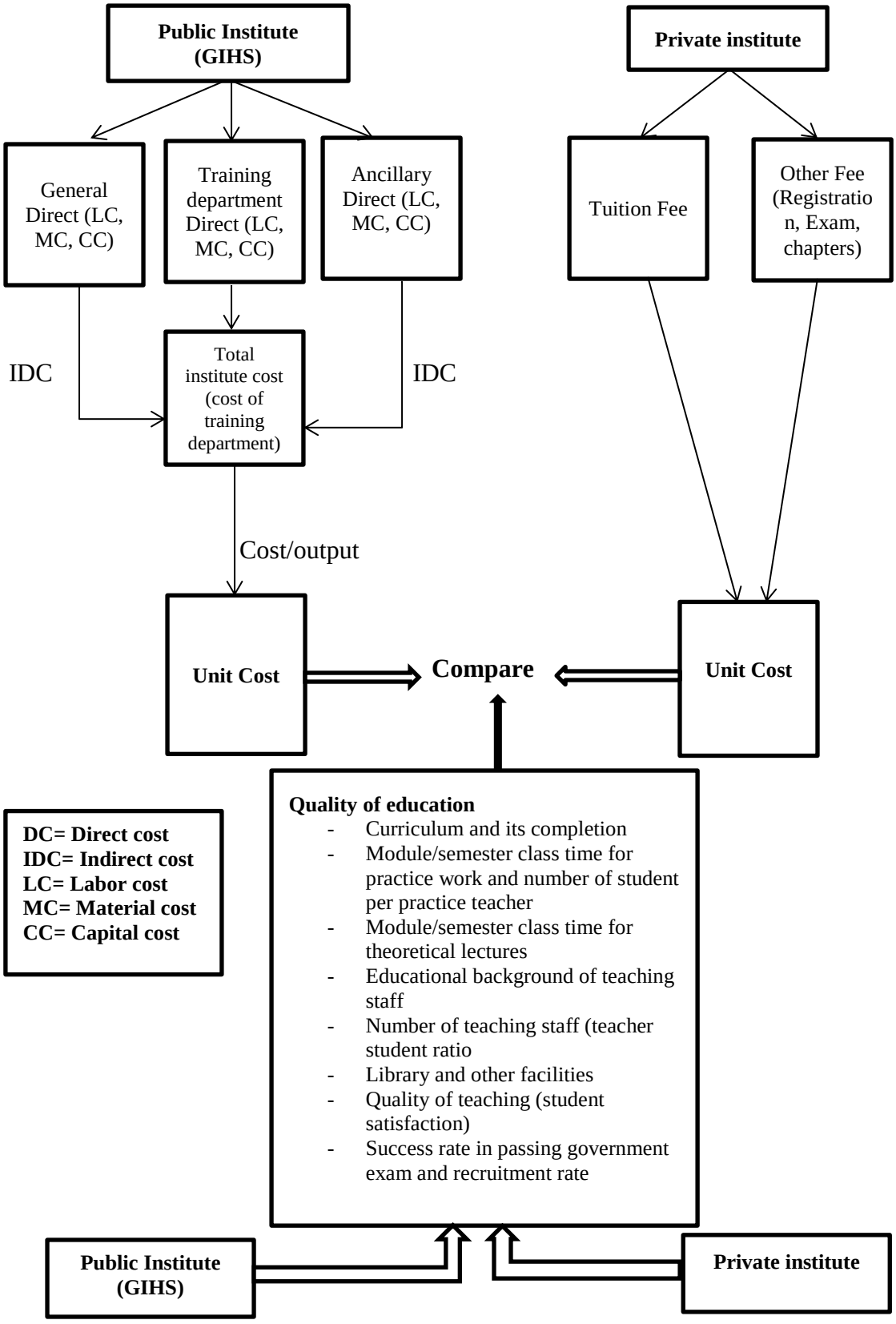
4.2 Conceptual Framework

Figure 4.1 is the general concept for the study that explains costing method for both GIHS and private institutes from two different perspectives.

GIHS cost analysis is from the provider perspective for all disciplines that exists in GIHS. The study find the total cost and then by dividing the total cost by the number of graduate students finally get the unit cost of producing a mid-level health worker. The method for total cost identification of training department is based on SDCA. Private institutes costing method is from the purchaser perspective, considering tuition fees that student are paying for the institute, other additional charges like: registration fee, exam fee and duration of each discipline is asked through a questioner. The reason for not costing private institutes from the provider perspective is the lack of access to private institutions' data. On the other hand this study wants to provide MoPH an idea of what is the cost of producing a mid-level

health worker under MoPH institutions and how much will it cost if MoPH want to contract with private institutes to produce a mid-level health worker in Kabul province. There for MoPH is interested to know how much will it cost to buy the service of producing mid-level health worker from the private institutes. The study will give MoPH a clear picture of cost at both level and based on the results from this study MoPH will be able to decide on expansion of public institutes or contracting out with private institutes. This comparison is not only based on the cost but quality assessment of both considering some general quality of education indexes as well.

Figure 4.1 Study conceptual framework



4.3 Source and Collection of Data

4.3.1 GIHS Data Collection and Analysis

Officially letter is sent to the GIHS administration for permission of data collection from the MoPH- Health Economics and Financing Directorate (HEFD) side. Data are collected from different departments of the Institutes through prepared questionnaires. Since access to soft copies of data and information were not feasible due to non-computerized and handwriting log books, there for hard copies of total staff salary, other expenditure, organizational structure, number of students per discipline per year and other department's information are collected for this study. Data and information of GIHS are collected considering different fiscal/academic years.

Labor cost is collected from the finance department based on the monthly salary sheet of all GIHS staff from different departments. Labor cost includes monthly base salary, professional allowance, food allowance and other new reform salary[2]that is paid to staff as payment.

The material cost of this study includes those that are durable during the year. Material cost and labor cost are also called as recurrent costs (Young, 2002). Material costs for this study are costs such as; stationary, food expenses, Gas and wood, cleaning material, electricity cost, fuel cost, Municipality fee expenses and communication costs like land line and mobile phone costs. The data about costs mentioned above has been collected from the admin and service department and finance department of GIHS who are the responsible for the provision of material costs.

Capital costs are the costs of purchase the major capital assets such as equipment, buildings and land (Drummond et al., 2005). They are being used for more than a year, there for useful of their life must be calculated considering the depreciation of capital assets. The data about all capitals and equipment that are

[2] A separate monthly salary based on the new Pay and Grading Method of civil service committee staffing reform in addition to the main base salary of staff as monthly salary.

purchased are collected from the admin and finance department. For this study since there is no information about the cost of building there for a proxy indicator of rental fee for the building is estimated to compensate the building cost. Other capital costs that are purchased are recorded and depreciation of capital cost is calculated based on the Afghanistan income tax law article 81 for depreciation and income tax manual instruction (MoF, 2010) as shown in Table 4.1. The income tax manual identified the useful life of each capital and a method of straight line depreciation method is considered for capital cost depreciation (MoF, 2010).

It means if the useful life of equipment is five years the total cost at the time of purchase will be divided by five and we get the annual depreciation of the specific equipment.

The reason why the study tracks the capital cost is to value the opportunity cost of an incurred cost however of being a fixed cost. But the question of how long the costs should be tracked is necessary. Usually the quantitative impact of costs for the future will be reduced by discounting and considering the useful life of depreciation(Drummond et al., 2005).

For this study the cost of some capitals like tables, chairs, benches, computers and library assets that their useful life are already completed or due to lack of detail information about the exact purchase cost, the current market value of them are identified by finance department and this current value is calculated as capital cost.

Table 4.1 Assets depreciation according to Afghanistan income tax manual

No.	Kind of asset	Period of Useful Life (in years)	Percentage Allowed Each Year
l.	Brick or stone structures	50	2
2.	Loam structures	20	5
3.	Wooden structure	10	10

4.	Machinery and equipment not otherwise specified below	10	10
5.	Mining equipment	6.5	15
6.	Tools	4	25
7.	Printing equipment and machines	2	50
8.	Handicraft machines	3	33
9	Metallurgical machines	10	10
l0.	Carpets	10	10
ll.	Rugs and other furnishings	4	25
l2.	Chairs, seats, and sofas	4	25
l3.	Desks, tables, and cabinets	10	10
l4.	Office equipment (calculators, typewriters, telephones, etc.)	6.5	15
l5.	Bicycles	5	20
l6.	Trucks	2	50
l7.	Cars	4	25
l8.	Tires and tubes	2	50
l9.	Sacks	2	50
20.	Impure iron stoves and pipes	10	10
2l.	Iron stoves	2	50
22.	Carriages, animal carts, and handcarts	3	33
23.	Construction machines, rollers, and mixers	5	20
24.	Computers and computer related equipment	3	33
25.	Televisions, radios, cellular phones	3	33
26.	Telecommunications equipment / cell towers	7	14

Source: (MoF, 2010)

4.3.2 Private Health Science Institutes Data Collection and Analysis

The five private institutes are selected purposefully among the 10 Institutes, considering those institutes that are active in the period of the study and train most of the disciplines as GIHS. This is because other institutes are even established after the period of the study or does not have more than one or two disciplines. The other reason for selection of 5 private institutes is that these institutes have graduate students and the students are eligible for the government exam. Data from the five private institutes are collected using questionnaire as shown in appendix (B) of the thesis. The questionnaire asks questions about the date of institute establishment, types of disciplines they teach, duration of each discipline, monthly fee, annual fee a student pay since the institutes do not offer full year education, other fees like exam fee, registration fee, fee for photocopying of chapters and books. The cost of accommodation is also asked in the questioner if they provide for students. To assess the quality of education, in-depth interviews are conducted with lecturers from private institutes and another questionnaire is developed to understand about the quality of education from the students' point of view considering the objectives about the quality of education in the conceptual framework.

4.4 Methodology

4.4.1 Method for Cost Analysis of GIHS

The methodology for analyzing the cost of GIHS in this study is based on SDCA technique. The following steps are considered in cost analysis of GIHS (Conteh & Walker, 2004):

A- Identification of Cost centers and Grouping

In order to start cost analysis, cost center identification is the essential step. This can be done by better understanding the structure of the organization (Drummond et al., 2005).

Considering the general organizational structure of GIHS for this study and to better manage costs under cost centers all GIHS departments are grouped under 3 major cost centers of general, ancillary and training department. The training department is the objective cost center for this study.

- General cost center

  This cost center is named as general because most of the departments that their costs are not directly related to trainings are grouped under this cost center. This means, departments that are grouped under this cost center are all related to general administration and services as shown in table 4.3, which provides administrative support to the main objective cost center (training departments) (Drummond et al., 2005).

- Ancillary cost center

  This cost center is specifically for male and female hostel expenses. The reason for grouping male and female hostels cost under ancillary is because this cost center is not directly related to training departments meanwhile this cost can be excluded when we want to compare the cost between GIHS and private because private institutes do not include the ancillary cost. The other reason for grouping of hostel costs as supportive is to have exact information about the costs of hostels which can help us in terms of minimizing it (Drummond et al., 2005).

- Training departments

  This is the main objective cost center that all other indirect costs are allocated to this by SDCA method. Since this study wants to identify cost of all departments there for all disciplines are grouped under training

departments as objective cost center as shown in table 4.2 (Drummond et al., 2005).

Table 4.2 Categories of cost centers and relevant departments in GIHS

General	Ancillary	Training departments
Admin and Services	Male Hostel	Nursing
Printing and publishing	Female Hostel	Midwifery
Maintenance		Technology
Transportation		Radiology
		Dentistry
		Pharmacy
		Physiotherapy
		Anesthesia

B- Direct Cost Identification of Each Cost Center

The next step after cost center identification is the determination of direct costs of each cost center. All departments are grouped under the relevant cost centers and then specify the direct costs. The direct cost is including the labor cost (wages plus other allowances), recurrent cost and capital cost that are directly related to the departments under each cost center. Capital costs are also calculated considering depreciation of assets based on their useful year of life.

C- Indirect Cost Allocation and Total Cost Calculation

After the direct cost determination of each cost center, the next step is the allocation of cost based on the SCDA. In order to find the final total cost and then the

unit cost all other cost centers relevant costs are allocated to the lower cost center as ranked. According to the SDCA method the cost center whose share of the cost of the other cost center is known and the lowest, it is selected as the first rank for allocation of cost to others. For this study since the general cost center cost share to other cost centers is the most and it should be allocated to other cost centers departments therefor it is ranked as first to allocate its cost to other cost centers (ancillary and training departments). Once all cost of general cost center is allocated to ancillary and training departments, then from ancillary relevant cost is allocated to the training department, since training department is the final or the objective cost center there for the total cost of training departments are the total cost.

Allocation criteria for step down from general cost center to ancillary is based on the percentage of general cost center departments work related to ancillary considering the general cost center total expenditure. This is while cost allocation for training department from general cost centers based on the percentage of students in GIHS as of total student for each year and from ancillary to training departments based on the percentage of students who stay in male and female hostels.

The costing for GIHS in this study is from the provider perspective and not only financial cost that includes the provider perspective is considered but also other costs like donor support out of provider budget are also considered in the study.

Three scenarios are considered for identification of cost per graduate student in each discipline. One including the accommodation cost and donor support to the institute, second excluding accommodation or hostel costs scenario and the third scenarios is calculation of cost of graduate student without donor support and excluding accommodation. This can be helpful for MoPH to assess GIHS cost considering accommodation, donor support and the other alternatives without accommodation and donor support in the future.

The reason for inclusion of hostels cost as accommodation in this study for GIHS is because this looks to be a major part of the cost for MoPH that have to be identified. There for the hostel cost of both male and female are classified as supportive or ancillary cost center. In this study both cases of with and without hostel

costs will be considered for comparison purpose of GIHS versus private institute cost per graduate student.

In order to have a better method of analysis all data are managed and analyzed into the sheets as below:

- General Information

  This sheet contains general information about GIHS as shows in appendix (A1) GIHS general information form

- Statistics

  This sheet covers information about overall statistics of number of enrolled and graduate students per department, number of lecturers per department and total number of students by year as shows in appendix (C1) GIHS general statistics for the period of 2009-2012.

- Cost centers

  This sheet contains information about 3 major cost centers and departments that are grouped under each cost center and cost of each department of cost center by different year as shows in appendix (C2) GIHS cost calculation by cost center

- Direct cost calculation

  All direct cost of each cost center and their relevant departments are assigned to their relevant departments in this sheet, including labor cost, material and capital cost as shows in table 5.3 of section 5.3 GIHS direct cost calculation.

- Staff salary and time allocation by department

  Staff salaries including additional allowances are calculated for staff while staff assignment is based on their relevant department and cost center. This sheet also sums up all salaries and allowances of each department for one year. Appendix (A3) is the table for calculation of staff salary and time allocation.

- Expenditure

  All cost of GIHS including Labor, material and capital cost are summed up in this sheet to find the total cost of GIHS per year As shows in tables 5.8, 5.9 and 5.10 of section 5.4.2 in results chapter.

- Step down allocation

  This sheet is the main allocation sheet. In this sheet costs from the general to ancillary and training departments are allocated and final cost per training departments are estimated. The allocation criteria from general cost center to ancillary was based on the percentage of total expenditure of general cost center and for training department the allocation criteria was the percentage of total number of students in GIHS as shows in tables 5.11, 5.12 and 5.13 of section 5.5 of GIHS step down cost calculation.

- Report

  This sheet contains all information about the cost of each training department per year. Allocation of each department cost for 1th, 2nd and 3th year students have been calculated based on share of relevant classes and unit cost or cost per graduate student is calculated in this sheet as shows in tables 5.14 to 5.23.

4.4.2 Study Period and Currency Exchange Rate

Since this study is tracking 3 years cost of the Afghanistan educational system for some disciplines, the period is equal to March 2009 to March 2012 Christian year.

Meanwhile all expenditures that are collected from GIHS are Afghan currency. To better explain this internationally we have converted Afghan currency based on each year exchange rate using Official MoF exchange rate (MoF, 2011).

Below is the table of exchange rate for three years (March 2009 to March 2012).

Table 4.3 Afghan currency (AFS) exchange rate to US dollar

Year	March 2009-March 2010	March 2010- March 2011	March 2011- March 2012
Exchange rate	US$1= 48.5 AFS	US$1= 48.5 AFS	US$1= 47 AFS

Source: (MoF, 2011)

4.4.3 Rationale for Using Step down Costing Approach

SDCA provides a practical approach to get the final/total cost of objective cost centers from which to estimate unit costs. In addition, it identifies specifically the overhead cost and top down allocated method. The method of direct allocation is less refined than SDCA, as it ignores the interaction of overhead departments and allocates them directly to the final cost centers. Step down with iterations and simultaneous allocation use more sophisticated and complex methods to allocate overhead costs and give a full adjustment for the interaction of overhead departments(Drummond et al., 2005).

Another way of calculating unit costs that explained above is Activity-Based Costing (ABC). This method of accounting is different from SDCA as the allocation of personnel time among the direct cost centers becomes the principal means of assigning indirect costs. The strength of ABC is that by using personnel interviews to determine the main activities within an organization, it offers a practical costing approach in approaching unit cost, but a potential constraint of this method, as with the other costing methods apart from direct allocation, is that applying ABC requires a detailed information to be available by cost category and department (Conteh &

Walker, 2004). . Access to this much detail data due to unavailability in Afghanistan and other developing countries is impossible at this stage due to not existence of detailed and appropriate data in different departments of GIHS

As mentioned in the cost analysis approach part, there are several approaches to analyze the unit cost of a training Institute or University. Below are some rational for choosing SDCA for this study.

1. SDCA does not ignore the interaction of overhead department's cost while direct method has this problem.
2. Easy to understand and simplicity
   Understanding SDCA is very easy for readers in the ministry and other stakeholders who use the result of this study.
3. Data limitation
   In Afghanistan and other developing countries access to detailed data is quite hard. For example information about opportunity cost of GIHS for different department's data is not much detail to provide us specifically how much have been spent for each activity.
4. Familiarity with step down approach
   In Afghanistan and other developing countries most of the analysts who do researches are familiar with classical methods of costing and step down approach more than ABC.

4.4.4 Method for the Private Institute Cost Analysis

Private health institutes that are selected for this study are those that have been active during the same period of time. Only tuition fee, registration fee, exam fee and other expenses that a student has to pay is collected for this study. Other costs that students have to pay like transportation fee, individual accommodation fee for this group is not included unless reported by the institutes through the questioner as accommodation cost because most of the institutes do not provide accommodations and transportations to students and students in GIHS also do pay their transportation fee out of their pocket if there is any which is not included in this study A mean of all

five institute cost of tuition is calculated for a one year period then based on the duration of each discipline 3, 2 and 1 year the costs were summed up to find the final unit cost per graduate student.

Table 4.4 Method of data analysis for private institutes cost

Institute	**Monthly tuition fee (A)**	**Other fees (B)**[3]	**Annual sum of A+B**
1	X	Y	X+Y
2	X	Y	X+Y
3	X	Y	X+Y
4	X	Y	X+Y
5	X	Y	X+Y
Mean of total			Mean of X+Y

After identification of cost per year, based on the duration of each discipline such as 3 years, 2 years and 1 year cost per graduate student have been calculated.

4.4.5 Method for Quality Comparison of Public and Private Medical Education

Comparing the unit cost of paramedical student in public and private might not be reliable and rational unless we compare the quality of education in both sectors. For this study two type of assessment is conducted in order to assess the quality of

[3] The other fees amount are provided by private institutes, are average cost for different years.

education in general. To find out the opinion of students about the quality of education in both public and private sector a survey of students who are in their last year of study is conducted. A method of 5 point Likert scaling method is selected for this survey and a questionnaire is developed for this reason to assess the quality of education from the student point of view. Since it is not only students who are involved in the process of education, therefore the study also includes other stakeholders including lecturers and MoPH to share their idea about the quality of education in both public and private. A method of in-depth interview (less structured interview) was selected to find out their point of view in this regard. Less structured (semi structured) interview is a strategy in which the person interviewed is more a participant in meaning making than a conduit from which information is retrieved(Crabtree et al., 2006). Stakeholders who are interviewed are including (MoPH, GIHS, private institutes and alumni/alumna students from both GIHS and private institutes. The main objective of both methods of questioning is to assess the quality of education in terms of 8 criteria as shows in Tables 4.5.

Table 4.5 Objectives for quality assessment of education in GIHS and 5 private institutes

	Objectives to measure quality of education
1	Curriculum and its completion
2	Module/semester class time for practical work and number of students per practice teacher
3	Module/semester class time for theoretical lectures
4	Educational background of teaching staff
5	Number of teaching staff (teacher student ratio
6	Library and other facilities
7	Quality of teaching (student satisfaction)
8	The success rate in passing the government exam and recruitment rate

The responses about the quality of education from the students' survey are scaled from 1 to 5 and the average of scaled questions are measured in general to

compare between the score of GIHS students' response and private health science institutes students' response by considering the above objectives by categorizing the questions. All of the above objectives are included in the questionnaire. For in-depth interviews the guideline questionnaire is categorized such to find out the respondents point of view exactly about the above objectives comparatively.

Table 4.6 Schedule for in-depth interview and students' survey for quality assessment of education in GIHS and private institutes in Kabul

No	Name of stakeholder	Number of interviewees	Type of interview
1	MOPH	2 (Human resource department and Nursing and Midwifery coordination department)	In-depth interview (Semi structured)
2	GIHS	2 Lecturers	In-depth interview (Semi structured)
3	Private Institutes	2 Lecturers	In-depth interview (Semi structured)
4	GIHS alumni/alumna	18 graduate students from all disciplines	Survey through structure questionnaire
5	Private institutes alumni/alumna	71 graduate students from all disciplines	Survey through structure questionnaire

4.4.6 Sampling Design for Students' Quality of Education Survey

The target group for students' survey of quality for this study is the graduate student of GIHS and 5 private institutes in 2012-2013.

The sample size calculation is done based on the formula of manual calculation of sample size from the U.S. Department of health and Human Services (HRSA, 2013).

To manually calculate the sample size we need to have the following information:

- Population Value: Size of the population from which the sample will be selected. (Number of graduate students) Expected Frequency of the Factor under Study always error toward 50%.

Formula for sample size calculation:

Sample Size = n / [1 + (n/population)]

To calculate the sample size based on the above formula we need to fine the (n).

While: **n = Z * Z [P (1-P)/(D*D)]**

Where:

Z= Confidence level and the value of (Z) are:

90%	/	1.645
95%	/	1.960
99%	/	2.575

99.9% / 3.29

For this study we select 95% value for (Z) since this is the most common value accepted in statistics.

P= True proportion of factor in the population, or the expected frequency value. For this study we accept 50% to be the true population.

D= (Expected Frequency - Worst Acceptable): Maximum difference between the sample mean and the population mean, which for this study it is 10%. This means if 50% is the true rate in the population, then the result far from the rate that would be accepted in the sample? If the confidence interval is 10%, then the worst acceptable frequency would be 60% or 40%.

Now to calculate the sample size we have to first calculate the number for (n) :

n=Z*Z[P(1-P)/(D*D)]

n=1.960*1.960[0.5(1-0.5)/(0.1*0.1)

n=3.8416*[0.5(0.50)/(0.01)

n=3.8416*[0.5*(0.5/0.01)]

n=3.8416*[0.5*50]

n=3.8416*[25]

n = 96.04

Source : (HRSA, 2013)

The formula above is the simplest manual method of sample size calculation which is used in many epidemiologic studies and surveys and the calculation is similar to other sample size calculation in epi info and other software programs for sample size calculation.

Now by adding the value of (n) in the formula, since the total number of graduate students from GIHS and 5 private institutes are 1181 from all disciplines, then the sample size will be calculated as below:

Sample Size = n / [1 + (n/population)]

Sample size= 96.04/[1+(96.04/1260)]

Sample size=96.04/[1+(0.0813)]

Sample size=96.04/1.0813

Sample size=89

Below is the table shows the number of students by institute and discipline according to the sample size.

Table 4.7 Sample size calculation of students' survey by institute and discipline

Department	GIHS final year students	Student No. to be interview	Institute "A" final year students	Student No. to be interview	Institute "E" final year students	Student No. to be interview	Institute "D" final year students	Student No. to be interview	Institute "C" final year students	Student No. to be interview	Institute "B" final year students	Student No. to be interview	Total of students to be interview
Nursing	27	2	14	1	0	-		-		-	40	3	6
Midwifery	51	4	86	6	48	4	69	5	50	4	135	10	33
Lab.tech	48	4	19	1	0	-	13	1	27	2	73	6	14
X-ray. Tech	22	2	0	-	0	-		-	0	-	0	-	2
Dental prothes	39	3	0	-	0	-		-	15	1	78	6	10
Pharmacy	40	3	48	4	42	3	17	1	43	3	122	9	24
Physiotherapy	15	1	0	-	0	-		-	0	-	0	-	1
Anesthesia	0	-	0	-	0	-		-	0	-	0	-	-
Total Student	242		167		90		99		135		448		1181
Sample size for interview		18		13		7		7		10		34	89

The table above indicates the distribution of student sample size by institutions and disciplines. The total target population of graduate students in year 2012-2013 is collected from GIHS and 5 private institutes which are 1181. After calculation, based on the above manual sample size calculation method the sample size is calculated to be 89. In order to identify the distribution of students according to the sample size we identify the % of each institute as of total graduate students then based on that we distribute the 89 student sample size for each department. The next step is the distribution of sample size students among disciplines; this is also done based on the percentage of graduate students from each discipline. This means disciplines with high number of graduate students' assign higher number of students for sample size. The individual students for this study are the graduate student of 2012-2013 from GIHS and private institutes various disciplines. At the final stage, the student selection was not based on the random sampling method due to inaccessibility of students caused by the term break and lack of time. Therefore, students had to be selected based on their accessibility to the researcher. The students were directly asked to answer the survey questionnaire in GIHS and private institutes.

However the sample size calculates to be 89 but in order to be safe and exceed the minimum sample size the number of students who are asked to involve in the survey study increased to 110. It means a total of 21 more students are interviewed extra.

CHAPTER V
RESULTS

This chapter contains two parts. The first part discusses the result of the cost analysis. The results part of cost analysis contains tables and their description about the GIHS cost analysis in detail including average unit cost and the private institutes' average unit cost and the comparison of GIHS and private institutes' average unit cost. The second part discusses more on the quality assessment of education in GIHS and private institutes in general through in-depth interviews and students' survey and the findings conducted in GIHS and 5 private institutes.

5.1 GIHS and Private Health Science Institutes Cost Analysis

5.1.1 Total GIHS Cost

To recall the main objectives of this study, we want to identify the total cost of GIHS by year, its breakdown by cost center and training departments. The total cost of GIHS is calculated based on fiscal year. This means cost of each year is identified separately. GIHS total Cost and cost by training departments after calculating total cost from general and ancillary department to main objective cost center (training departments) are showed in tables 5.11 to 5.13. This includes all capital and recurrent costs of GIHS including donor support for midwifery program and male and female hostels.

Table 5.1 GIHS total cost by year for the period of March 2009 to March 2012 in US$

Total cost of GIHS by year	**2009-2010**	**2010-2011**	**2011-2012**
including hostel cost	1,698,837	2,139,923	1,682,722

The results in table 5.1 are the total cost of GIHS by year after calculating the direct and indirect costs by STCA method from the column of GIHS total cost after allocation in the tables 5.11, 5.12 and 5.13. It shows that total GIHS cost is the highest during 2010-2011 fiscal year while it is the lowest during 2011-2012. The reason for the high cost of GIHS during 2010-2011 is due to Agha Khan University (AKU) support to midwifery department of GIHS that was around US$162,302 while this donation support is around US$24,605 during the period of 2011-2012. Meanwhile the other reason for high cost of GIHS during 2010-2011 period is due to the high donation from other donor support to GIHS hostels as table 5.2 indicates the hostel cost in 2010-2011 period is the highest than other years.

5.1.2 GIHS Direct Cost by Cost Center

Identification of cost by cost center can help GIHS and MOPH for better management of their budget in the future. There for one of the study sub objective is to identify cost of GIHS by different cost centers. As shown in table 4.2, there are altogether 14 cost centers. All direct costs including labor, material and capital costs are included for the cost centers are identified as shows in table 5.3. Demonstration of direct cost of cost centers can help us to compare which cost center has the highest cost.

Table 5.2 GIHS total direct cost by cost center for different fiscal year in US$

Cost Centers		**2009-2010**	**2010-2011**	**2011-2012**
(A) General	Total General direct cost	**601,409**	**632,984**	**719,457**
	(1) Admin and services	405,690	430,576	510,839
	(2) Transportation	82,239	83,537	87,873
	(3) Maintenance	102,239	102,536	112,189
	(4) Printing and publishing	11,241	16,335	8,558

(B) Ancillary	Total Hostel direct cost	**716,950**	**1,049,802**	**653,475**
	(5) Male hostel	499,379	793,246	450,744
	(6) Female hostel	217,571	256,556	202,731
(C) Training departments	Total Training dep. direct cost	**380,478**	**457,137**	**309,787**
	(7) Nursing	31,462	57,553	62,110
	(8) Midwifery	182,031	212,460	69,069
	(9) Technology	25,869	30,080	27,742
	(10) Radiology	33,050	40,176	42,663
	(11) Dentistry	18,907	22,994	23,134
	(12) Pharmacy	27,089	28,602	25,889
	(13) Physiotherapy	44,422	46,520	41,118
	(14) Anesthesia	17,648	18,752	18,063
Total Cost = (A)+(B)+(C)		**1,698,837**	**2,139,923**	**1,682,722**

The numbers in table above are the sum of direct cost of each department of cost center in table 5.3 which shows below. Meanwhile the table above not only represents the cost of GIHS by cost center and its department but also the direct cost of GIHS cost center.

According to table 5.2 above the highest cost among the above 3 cost center is from the ancillary cost in first two years. This means GIHS major cost driver is ancillary cost. Ancillary cost center departments are male and female hostel costs consisting of labor, material and capital cost. The lowest cost belongs to training department. This is because training departments cost center includes only direct labor, material and capital costs while the other GIHS capital cost is grouped under general and ancillary cost centers.

Below are the table of direct cost for each cost center in detail of capital, labor and recurrent costs in US$.

Table 5.3 GIHS direct cost by cost centers during 3 fiscal years in US$

Direct costs			
Admin and services direct cost			
	2009-2010	**2010-2011**	**2011-2012**
Cleaning materials (recurrent cost)	1,031	1,031	1,064
Electricity cost (recurrent cost)	10,495	22,268	22,979
Office Furniture (capital cost)	-	-	11,272
Line Phone (recurrent cost)	196	157	166
Postal (recurrent cost)	79	59	49
Mobile phone (recurrent cost)	782	-	-
Building rent cost (capital cost)	240,000	240,000	240,000
Chair (capital cost)	5,478	5,478	5,478
Sofa (capital cost)	1,378	1,378	1,378
Office table (capital cost)	1,134	1,134	1,134
Metallic cabinet (capital cost)	714	714	714
Cabinet (capital cost)	462	462	462
Refrigerator (capital cost)	78	78	78
Computer (capital cost)	576	576	576

Admin and services staff salary (recurrent cost)	143,287	157,241	225,489
(1) Total of Admin and services direct cost	**405,690**	**430,576**	**510,838**
Transportation direct cost			
Vehicles' Fuel (recurrent cost)	16,082	16,082	16,596
Bus (capital cost)	44,682	44,682	44,682
Mini bus (capital cost)	6,383	6,383	6,383
Small car (capital cost)	4,255	4,255	4,255
Transportation staff (recurrent cost)	10,837	12,135	15,957
(2) Total of transportation direct cost	**82,239**	**83,537**	**87,872**
Maintenance direct cost			
Maintenance (recurrent cost)	82,474	82,474	85,106
Municipality fee (recurrent cost)	1,126	1,126	1,162
Maintenance staff (recurrent cost)	18,639	18,936	25,921
(3) Total of maintenance direct cost	**102,239**	**102,536**	**112,189**
Printing and Publishing direct cost			
Printing and Publishing (recurrent cost)	686	4,912	108
Photocopy machine (capital cost)	1,200	1,200	1,200
Printer (capital cost)	1,250	1,250	1,250
Printing and Publishing staff (recurrent cost)	8,105	8,973	6,001
(4) Total of printing and publish direct cost	**11,241**	**16,335**	**8,558**
(A) General = sum of (1) to (4)	**601,409**	**632,984**	**719,459**

Male hostel direct cost			
bed sheet (male hostel) (recurrent cost)	6,433	6,433	664
Gas and wood for cooking (male hostel) (recurrent cost)	1,163	162	1,986
Gas and fuel for warming (male hostel) (recurrent cost)	1,856	1,856	1,915
Food (male hostel) (recurrent cost)	152,264	29,897	15,301
Stationery (male hostel) (recurrent cost)	52	52	53
electricity and other material (male hostel) (recurrent cost)	1,237	1,237	1,277
jam and bread (male hostel) (recurrent cost)	3,695	3,695	3,813
Cost of male hostel building (capital cost)	84,000	84,000	60,000
Blanket (male hostel) (capital cost)	14,581	13,123	11,811
Bed (male hostel) (capital cost)	23,882	21,494	19,345
Shelf and other furniture (male hostel) (capital cost)	57,897	52,107	46,896
mattress (male hostel) (capital cost)	1,876	1,689	1,520
Pillow (male hostel) (capital cost)	1,876	1,689	1,520
External donation (male hostel) (recurrent cost)	130,531	557,191	262,218
male hostel staff salary (recurrent cost)	18,036	18,621	22,425
(5) Total of male hostel direct cost	**499,379**	**793,246**	**450,744**
Female hostel direct cost			
bed sheet (female hostel) (recurrent cost)	1,485	1,485	1,532

Gas and wood for cooking (female hostel) (recurrent cost)	304	356	421
Female hostel direct cost			
Gas and fuel for warming (female hostel) (recurrent cost)	2,268	2,268	2,340
Food (female hostel) (recurrent cost)	35,138	6,899	3,531
Stationery (female hostel) (recurrent cost)	41	41	43
electricity and other material (female hostel) (recurrent cost)	825	825	851
jam and bread (female hostel) (recurrent cost)	1,124	1,124	1,160
Cost of female hostel building (capital cost)	84,000	84,000	60,000
Blanket (female hostel) (capital cost)	3,414	3,073	2,766
Bed (female hostel) (capital cost)	5,511	4,960	4,464
Shelf and other furniture (female hostel) (capital cost)	57,897	52,107	46,896
mattress (female hostel) (capital cost)	433	390	351
Pillow (female hostel) (capital cost)	433	390	351
External donation (female hostel) (recurrent cost)	9,504	81,001	60,512
female hostel staff salary (recurrent cost)	15,194	17,636	17,512
(6) Total of female hostel direct cost	**217,571**	**256,556**	**202,731**
(B) Ancillary = sum of (5) and (6)	**716,950**	**1,049,802**	**653,475**
Nursing direct cost			
Office table (capital cost)	105	105	105
Cabinet/metal cabinet	210	210	210

(capital cost)			
Sofa (capital cost)	106	106	106
Nursing direct cost			
Computer (capital cost)	64	64	64
Refrigerator (capital cost)	26	26	26
Nursing Staff (recurrent cost)	30951	57042	61599
(7) Total of nursing direct cost	**31,462**	**57,553**	**62,110**
Midwifery direct cost			
Midwifery other donor (AKU) expenditure (recurrent cost)	102037	160643	22178
AKU (capital cost)	3318	6512	2427
Office table (capital cost)	294	294	294
Cabinet/metal cabinet (capital cost)	126	126	126
Sofa (capital cost)	106	106	106
Computer (capital cost)	64	64	64
Refrigerator (capital cost)	26	26	26
Midwifery staff (recurrent cost)	76060	44689	43848
(8) Total of midwifery direct cost	**182,031**	**212,460**	**69,069**
Lab. Technology direct cost			
Office table (capital cost)	84	84	84
Cabinet/metal cabinet (capital cost)	147	147	147
Sofa (capital cost)	106	106	106
Computer (capital cost)	64	64	64
Lab. Technology staff (recurrent cost)	25468	29679	27341
(9) Total of lab. Technology direct cost	**25,869**	**30,080**	**27,742**
Radiology direct cost			
Office table (capital cost)	189	189	189
Cabinet/metal cabinet	147	147	147

(capital cost)			
Sofa (capital cost)	106	106	106
Radiology direct cost			
Computer (capital cost)	64	64	64
Radiology staff (recurrent cost)	32544	39670	42157
(10) Total of radiology direct cost	**33,050**	**40,176**	**42,663**
Dentistry direct cost			
Office table (capital cost)	168	168	168
Cabinet/metal cabinet (capital cost)	84	84	84
Sofa (capital cost)	106	106	106
Computer (capital cost)	64	64	64
Dentistry staff (recurrent cost)	18485	22572	22712
(11) Total of dentistry direct cost	**18,907**	**22,994**	**23,134**
Pharmacy direct cost			
Office table (capital cost)	210	210	210
Cabinet/metal cabinet (capital cost)	126	126	126
Sofa (capital cost)	106	106	106
Computer (capital cost)	64	64	64
Pharmacy staff (recurrent cost)	26583	28096	25383
(12) Total of pharmacy direct cost	**27,089**	**28,602**	**25,889**
Physiotherapy direct cost			
Physiotherapy other cost (rent of building) (capital cost)	36000	36000	30000
Office table (capital cost)	126	126	126
Cabinet/metal cabinet (capital cost)	126	126	126
Sofa (capital cost)	106	106	106

Computer (capital cost)	64	64	64
Physiotherapy staff (recurrent cost)	8000	10098	10696
(13) Total of physiotherapy direct cost	**44,422**	**46,520**	**41,118**
Anesthesia direct cost			
Office table (capital cost)	63	63	63
Cabinet/metal cabinet (capital cost)	42	42	42
Sofa (capital cost)	106	106	106
Computer (capital cost)	64	64	64
Anesthesia staff (recurrent cost)	17373	18477	17788
(14) Total of anesthesia direct cost	**17,648**	**18,752**	**18,063**
(C) Training departments = sum of (7) to (14)	**380,478**	**457,137**	**309,788**
Total cost = sum of (A)+ (B) +(C)	**1,698,837**	**2,139,923**	**1,682,722**

The table above indicates the direct cost of cost centers and their relevant departments. When to compare the cost of general, ancillary and training departments in table 5.3 it is the same as shown in table 5.2. All amount for direct costs are provided by the finance department of GIHS through the data collection forms shown in appendix A, including the capital assets of each department. The costs are grouped and assigned under each cost center and the relevant departments based on the type of cost and its relevance by the researcher for example the cost of fuel for vehicles grouped under transportation because all the vehicle fuel expenses was for the transportation purposes and used for the GIHS vehicles, there for all vehicles' cost and fuel cost are grouped under the transportation.

The reason for inclusion of donation cost is because donation makes a big part of the expenditure in GIHS and beside that it is direct cost relates to the training of students in the GIHS and it is being count as expenditure for the government and MoPH however this is out of the government budget. In order to see the role and

effect of donation we also consider calculating the cost excluding the donor support however the donor support is only for hostels and midwifery program.

5.1.3 GIHS Total Cost by Training Departments

Training department is the objective cost center for GIHS cost estimation. As mentioned above in the methodology part about the allocation method, for this study all indirect cost from general and ancillary cost centers after identification of cost center are assigned in to the training departments based on percentage of students as of total number of GIHS students as shows in appendix C3. For example the allocation of cost from general cost center to nursing department for the period of 2009-2010 is 22% of the total general cost center cost, after allocation of cost from general to ancillary which is based on 5% and 3% of total general cost to male and female hostels which is mentioned in the step down calculation part. This means that of total GIHS students 22% of them are nursing students, therefore 22% of general cost center is allocated to nursing department for the period of 2009-2010. Respectively all direct and indirect cost of general and ancillary cost centers are allocated to training departments using the SDCA method.

Table 5.4 GIHS total cost by training department in US$

Total cost of GIHS by training department	**2009-2010**	**2010-2011**	**2011-2012**
Nursing	382,319	416,008	270,733
Midwifery	351,748	431,549	301,883
Technology	264,750	261,209	206,903
Radiology	196,841	253,105	260,834
Dentistry	162,655	272,783	199,870
Pharmacy	200,807	342,686	259,465
Physiotherapy	90,516	127,130	147,606
Anesthesia	49,200	35,452	35,428

The numbers in table above are calculated based on the SDCA method after direct and indirect cost allocation to objective cost center (training departments) .The numbers are according to the GIHS total cost after allocation column of table 5.11, 5.12 and 5.13 of step down calculation.

According to the table above, the highest cost occurs in 2010-2011 period for midwifery program and the second highest cost is for nursing department. The same case is in the period of 2011-2012 but for the period of 2009-2010 the highest cost is from the nursing program while the second highest is from midwifery program. The costs for other programs are various, in different fiscal year while the lowest cost is from Anesthesia program in all 3 years of the study. The reason for high cost of midwifery discipline is due to external donation. A very big amount of money is expensed by AKU funded by USAID for the midwifery program in order to ensure the better quality of education in this discipline. However in 2009-2010 period the nursing cost looks to be high which is due to high expenditure of accommodation since the percentage of nursing students in hostels are more than other disciplines due to existence of higher number of nursing students in both male and female hostel as shown in appendix C4. The reason for low cost of anesthesia program is due to low direct cost of the discipline and there is no accommodation cost for the anesthesia discipline since students of this discipline are not having hostel accommodation for further detail about the percentage of student by discipline in hostels see appendix C4.

5.1.4 GIHS Capital and Recurrent Cost

Identification of cost as capital and recurrent can help institute to better manage institute’s future need in terms of budget and financing. These studies also identify the cost of GIHS in terms of capital and recurrent cost.

Table 5.5 The cost of GIHS as capital and recurrent cost in US$

GIHS cost by capital and recurrent	**2009-2010**	**2010-2011**	**2011-2012**
Total Capital costs from table 5.3	686,369	672,783	610,868
Total recurrent costs from table 5.3	1,012,468	1,467,140	1,071,854
Sum of Capital and recurrent costs= GIHS total cost	1,698,837	2,139,923	1,682,722

The numbers in the table above are the sum of total capital and recurrent costs from the GIHS direct cost table 5.3. The table above is classification of GIHS total cost by capital and recurrent as specified in table 5.3. As an example if we calculate all capital cost of 2009-2010 in table 5.3 is equal to US$686,369 as shown in table 5.5 while the same if we calculate all recurrent cost of the same period in table 5.3 is equal to US$1,012,468.

The table above also indicates that recurrent cost in GIHS is higher than capital costs in all fiscal years. The reason behind this is high recurrent cost of general cost center and ancillary (male and female hostels cost) that includes labor and material costs excluding the capital cost. Referring to table 5.2 it shows that the highest cost belongs to ancillary department which most of this cost center is including the recurrent cost.

A- GIHS Capital Cost Calculation

GIHS capital cost in this study includes the capital assets of GIHS main building including lecture rooms, library and administrative offices. Since some of the capital

assets in GIHS are donation and some others are very old that are financially their values are zero considering depreciation table of assets by MoF and on the other hand there is no data about purchase date and life of assets. There for in this study all capital assets including chair, table, cabinet, computers, sofa, printer, photo copy machine and vehicles are listed by services and finance department of GIHS and the relevant year's market value of the assets are identified.

Table 5.6 Capital assets of GIHS excluding ancillary cost center in US$

			Cost center				
No	Item name	Unit cost	General	Training department	Capital cost of 2009-2010	Capital cost of 2010-2011	Capital cost of 2011-2012
1	Chair	6	913	0	5478	5478	5478
2	Sofa	106	13	8	2226	2226	2226
3	Office table	21	54	59	2373	2373	2373
4	Metal cabinet	21	34	15	1029	1029	1029
5	Cabinet	21	22	33	1155	1155	1155
6	Refrigerator	26	3	2	130	130	130
7	Computer	64	9	8	1088	1088	1088
8	Photocopy machine	600	2	0	1200	1200	1200
9	Printer	250	5	0	1250	1250	1250
10	Bus	14894	3	0	44682	44682	44682
11	Mini Bus	6383	1	0	6383	6383	6383
12	Small car	4255	1	0	4255	4255	4255
	Grand total				71249	71249	71249

The table above shows the capital assets of GIHS during three different years of the study period for general and training departments cost centers. The capital assets information is provided by the finance department of GIHS separately for each year as listed above in the table. Total numbers of chairs are all assigned to general since

the chairs are not specified for each program and the class rooms are used between departments. Other capital assets which are used by departments are assigned to their relevant department as direct cost. The capital cost of general cost center is allocated to training department based on the allocation factor which is total number of students in GIHS.

The capital assets of ancillary cost center (male and female hostel) are including office furniture, blanket, Cabinet, mattress and pillow. Information about capital assets is collected by data collection form as shown in appendix A5.

Table 5 7 GIHS ancillary (hostel) capital assets depreciation calculation method in US$

Ancillary Capital cost	**2009-2010**		**2010-2011**		**2011-2012**
Item name	Total	10% depreciation	Total	10% depreciation	Total
Blanket	17,996	1,800	16,196	1,620	14,577
Bed	29,394	2,939	26,454	2,645	23,809
Shelf and other furniture	115,794	11,579	104,214	10,421	93,793
Mattress	2,309	231	2,078	208	1,871
Pillow	2,309	231	2,078	208	1,871
Sum	167,802		151,020		135,921

The table above calculation method is according to the income tax manual depreciation table of MoF. According to the table 4.1 of MoF in the methodology chapter the assets listed above are all under the line item 4 (Machinery and equipment not otherwise specified below) of it. All the capital assets which are depreciated using direct depreciation method by dividing the total capital cost by useful year life of assets (10 years) and that amount is deducted for the next year.

The building rent that is used as proxy indicator for building cost due to lack of data, in order to compensate the capital cost of building the rent cost of building is included as capital cost in this study.

B- GIHS Recurrent Cost Calculation

All durable costs of GIHS or costs that are not lasts more than a year are included as recurrent cost except building rent cost since that is used as proxy for cost of buildings. The recurrent cost for this study includes the labor cost, material costs and donations that are made to GIHS excluding the capital assets in the donations. Tables 5.8, 5.9 and 5.10 below shows the labor, recurrent material and donation cost of GIHS for the 3 years of study period. All labor cost are collected by GIHS data collection form that are shown in appendix A3.

Table 5.8 GIHS labor/staff cost in US$

Staff Cost	**2009-2010**	**2010-2011**	**2011-2012**
Total Staffing cost = sum of all GIHS staff cost from table 5.3	449,560	483,864	564,829

The table above indicates that labor cost share as of recurrent cost in percentage is 44.4%, 32.98% and 52.7% respectively for each year. While as of total GIHS it is 26.46%, 22.61% and 33.57% respectively.

Material cost in this study is classified in to two parts, the routine material cost of GIHS and donation by different donors for hostel recurrent expenses and USAID donation for midwifery program through AKU. Material cost is collected by GIHS data collection forms that are shown in appendix A4.

Table 5.9 GIHS routine material (government on-budget) cost in US$

Material costs	Period		
Items name	2009-2010	2010-2011	2011-2012
General costs			
Stationary	686	4912	108
Cleaning material	1031	1031	1064
Electricity cost	10495	22268	22979
Fuel (vehicle)	16082	16082	16596
Maintenance	82474	82474	85106
Municipality fee	1126	1126	1162
Line phone	196	157	166
Postal	79	59	49
Mobile phone	782	0	0
Hostel costs			
bed sheet (male hostel)	6433	6433	664
bed sheet (female hostel)	1485	1485	1532
Gas and wood for cooking (male hostel)	1163	162	1986
Gas and wood for cooking (female hostel)	304	356	421
Gas and fuel for warming (male hostel)	1856	1856	1915
Gas and fuel for warming (female hostel)	2268	2268	2340
Food (male hostel)	152264	29897	15301
Food (female hostel)	35138	6899	3531
Stationery (male hostel)	52	52	53
Stationery (female hostel)	41	41	43
electricity and other material (male hostel)	1237	1237	1277
electricity and other material (female hostel)	825	825	851
jam and bread (male hostel)	3695	3695	3813
jam and bread (female hostel)	1124	1124	1160
Total of GIHS routine material cost	**320836**	**184439**	**162117**

The numbers in the table above is from table 5.3 which are specified as recurrent cost. The table above shows material cost of GIHS for 3 years including the hostel material cost. The total number of GIHS students who stay at the hostel during the study period is shown in appendix C5.

The other part of material cost is the donors' donation. This includes the donation for hostels and donation to midwifery program. Table below is the demonstration of material cost belongs to donors and the percentage as of GIHS total

cost. The donors cost are collected by GIHS data collection form shown in appendix A5 and C6, AKU list of expenditure.

Table 5.10 GIHS material (donors support) cost in US$

Donors support	**2009-2010**	**2010-2011**	**2011-2012**
External donation (male hostel)	130,531	557,191	262,218
External donation (female hostel)	9,504	81,001	60,512
Donor support (for Midwifery program)	105,355	167,155	24,605
Total donor support	245,390	805,347	347,335
% of donation material cost as of total GIHS cost	14.44%	37.63%	20.64%
% of total material cost (GIHS plus donation) as of total GIHS cost	33.33%	46.25%	30.28%

The donor support of material cost for hostels are generally provided by GIHS finance department despite the detailed information is not provided. While the material cost donation for midwifery program was provided by AKU. The donor support material costs are also specified as recurrent cost in table 5.3.

The table above shows that the highest recurrent cost occurs in 2010-2011 this is due to high donation support which shows to be around 37.63% of total GIHS expenditure on the same year. The table also indicates that the donation support role is significant in terms of total GIHS expenditure.

5.1.5 GIHS Step Down Cost Calculation

The main part of cost calculation is the method. The method for cost calculation of GIHS in this study is designed to be step down cost allocation from the two supportive cost centers of general and ancillary to the objective cost center of training departments. As mentioned above in the methodology part after direct cost identification of all cost centers the costs are allocated from general to ancillary and training departments. The allocation criteria for step down from general to ancillary is based on the percentage of general cost center share of work that belongs to ancillary. The percentage of cost allocation from general cost center to ancillary is advised by the finance department of GIHS according to their experience. The allocation criterion from general to training departments was the total number of students in GIHS in the specific year. Since most of the resources like classrooms, library, halls and administrative departments work is based on the load of the students in the GIHS. The cost allocation for this study is done separately for each fiscal year.

The allocation factor for cost distribution from general cost center departments to ancillary cost center is 5% and 3% from admin and services, 13% and 6% from transportation, 10% and 4% from maintenance to male and female hostel respectively. While for training departments cost allocation is based on the total number of students in GIHS by percentage of each discipline, this mean the allocation from general cost center to nursing department is based on 22% of total general cost center for the period of 2009-2010 because 22% of all GIHS student in 2009-2010 period is from nursing department. This applies for other discipline respectively.

The allocation factor from ancillary cost (male and female hostels) is selected based on the total number of students in both hostels. The percentages of total number of GIHS students and students in both hostels are shown in appendices C3 and C4.

Table 5.11 GIHS step down cost allocation for the period of 2009-2010 in US$

Cost Centers	**2009-2010**							
General	**Total direct cost from table 5.2**	**Allocation of admin and services**	**Allocation of printing and publishing**	**Allocation of transportation**	**Allocation of maintenance**	**Allocation of male Hostel**	**Allocation of female Hostel**	**GIHS total cost after allocation**
Admin and services	405,690	373,233						
Printing and publishing	11,241	0						
Transportation	82,239	0	0	66,614				
Maintenance	102,239	0	0	0	87,926			
Ancillary								
Male Hostel	499,379	20,284	0	10,691	10,224	540,578		
Female Hostel	217,571	12,171	0	4,934	4,090	0	238,766	
Training department								
Nursing	31,462	81,929	2,468	14,623	19,301	155,190	77,347	**382,319**
Midwifery	182,031	26,703	804	4,766	6,291	0	131,153	**351,748**
Technology	25,869	75,860	2,285	13,539	17871	129,325	0	**264,750**

Radiology	33,050	50,371	1,517	8,990	11,866	77,595	13,452	**196,841**
Dentistry	18,907	33,985	1,024	6,066	8,006	87,941	6,726	**162,655**
Pharmacy	27,089	61,902	1,864	11,048	14,583	77,595	6,726	**200,807**
Physiotherapy	44,422	20,634	621	3,683	4,861	12,932	3,363	**90,516**
Anesthesia	17,648	21,848	658	3,899	5,147	0	0	**49,200**
Sum	**1,698,837**							**1,698,837**

Table 5.12 GIHS step down cost allocation for the period of 2010-2011 in US$

Cost Centers	**2010-2011**							
General	**Total direct cost from table 5.2**	**Allocation of admin and services**	**Allocation of print and publishing**	**Allocation of transportation**	**Allocation of maintenance**	**Allocation of male hostel**	**Allocation of female hostel**	**GIHS total cost after allocation**
Admin and services	430,576	396,129						
Printing and publishing	16,335	0						
Transportation	83,537	0	0	67,665				
Maintenance	102,536	0	0	0	88,182			

Ancillary								
Male Hostel	793,246	21,529	0	10,860	10,254	835,888		
Female Hostel	256,556	12,917	0	5,012	4,101	0	278,586	
Training department								
Nursing	57,553	55,733	2,298	9,520	12,407	203,875	74,621	**416,008**
Midwifery	212,460	69,490	2,866	11,870	15,469	0	119,394	**431,549**
Technology	30,080	75,840	3,127	12,955	16,882	122,325	0	**261,209**
Radiology	40,176	51,500	2,124	8,797	11,464	114,170	24,874	**253,105**
Dentistry	22,994	37,743	1,556	6,447	8,402	150,868	44,773	**272,783**
Pharmacy	28,602	64,199	2,647	10,966	14,291	212,030	9,950	**342,686**
Physiotherapy	46,520	29,983	1,236	5,122	6,674	32,620	4,975	**127,130**
Anesthesia	18,752	11,640	480	1,988	2,591	0	0	**35,452**
Sum	**2,139,923**							**2,139,923**

Table 5.13 GIHS step down cost allocation for the period of 2011-2012 in US$

Cost Centers	**2011-2012**							
General	**Total direct cost from table 5.2**	**Allocation of admin and services**	**Allocation of print and publishing**	**Allocation of transportation**	**Allocation of maintenance**	**Allocation of male hostel**	**Allocation of female hostel**	**GIHS total cost after allocation**
Admin and services	510,839	469,971						
Printing and publishing	8,558	0						
Transportation	87,873	0	0	71,177				
Maintenance	112,189	0	0	0	96,483			
Ancillary								
Male Hostel	450,744	25,542	0	11,423	11,219	498,928		
Female Hostel	202,731	15,325	0	5,272	4,488	0	227,816	
Training department								
Nursing	62,110	53,963	983	8,173	11,078	57,202	77,226	**270,733**
Midwifery	69,069	107,542	1,958	16,287	22,078	0	84,948	**301,883**

Technology	27,742	70,036	1,275	10,607	14,378	63,558	19,306	**206,903**
Radiology	42,663	73,481	1,338	11,129	15,085	101,692	15,445	**260,834**
Dentistry	23,134	45,160	822	6,839	9,271	95,337	19,306	**199,870**
Pharmacy	25,889	58,938	1,073	8,926	12,100	152,539	0	**259,465**
Physiotherapy	41,118	48,222	878	7,303	9,900	28,601	11,584	**147,606**
Anesthesia	18,063	12,630	230	1,913	2,593	0	0	**35,428**
Sum	**1,682,722**							**1,682,722**

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As we see in the tables above 5.13, the sum of direct cost of each cost center departments are the same as the sum of total GIHS cost after calculation. This shows that all the costs are allocated correctly from the general and ancillary cost centers to the objective cost center which is training departments. To have a better understanding about the cost allocation and step down method, here is an example of table 5.13 calculation for the period of 2009-2010. As mentions above also the cost from general cost center sub departments are allocated differently, for example from the total admin and services cost 5% of it is allocated to male hostel and 3% to female hostel while from the rest of the admin and services cost 22% is allocated to nursing department, 7.2% to midwifery, 20.3% to technology, 13.5% to radiology, 9.1% to dentistry, 16.6% to pharmacy, 5.5% to physiotherapy and 5.9% to anesthesia departments. This is while the cost of ancillary (male and female hostels) is allocated based on percentage of students of each department who live in hostel as shown in appendix C4.

5.1.6 GIHS Cost per Training Department and Student of each Year

The cost per graduate student of each discipline of GIHS is calculated after the step down cost calculation. Unit cost calculation is carried out based on cost per training department per year. Since GIHS has 8 disciplines of 3 years, 2 years and 1 year period, therefor cost of each training department is divided for 1th year, 2nd year and 3rd year respectively for each discipline. The division of cost for each year student is based on the total number of students' percentage in each discipline in the specific year because there is no difference between cost of each year student and all theoretical and practical lectures time are divided equally.

To identify cost of 1th, 2nd and 3rd year students of each department, the total cost of each training department is divided by percentage of each year student in that specific year.

The total number of students in GIHS and percentage by different disciplines distribution between 1th, 2nd and 3rd year classes are shown in Appendix C3.

Table 5.14 Distribution of nursing discipline cost for 3 years of 2009 to 2012 in US$

Year	2009-2010		2010-2011		2011-2012
Cost of 1st year students	77135	Cost of 1th year students	151828	Cost of 1th year students	106,037
Cost per students of 1th year	3354	Cost per students of 1th year	3037	Cost per students of 1th year	2,256
Cost of 2nd year students	214635	Cost of 2nd year students	69841	Cost of 2nd year students	112,806
Cost per students of 2nd year	3354	Cost per students of 2nd year	3037	Cost per students of 2nd year	2,256
Cost of 3rd year students	90549	Cost of 3rd year students	194339	Cost of 3rd year students	51,891
Cost per students of 3rd year	3354	Cost per students of 3rd year	3037	Cost per students of 3rd year	2,256

Table 5.15 Distribution of radiology discipline cost for 3 years of 2009 to 2012 in US$

Year	2009-2010		2010-2011		2011-2012
Cost of 1th year students	45,060	Cost of 1th year students	143,889	Cost of 1th year students	122,266
Cost per students of 1th year	2,372	Cost per students of 1th year	1,734	Cost per students of 1th year	1,359
Cost of 2nd year students	104,350	Cost of 2nd year students	32,938	Cost of 2nd year students	112,756
Cost per students of 2nd year	2,372	Cost per students of 2nd year	1,734	Cost per students of 2nd year	1,359
Cost of 3rd year	47,432	Cost of 3rd year	76,278	Cost of 3rd	25,812

students		students		year students	
Cost per students of 3rd year	2,372	Cost per students of 3rd year	1,734	Cost per students of 3rd year	1,359

Table 5.16 Distribution of physiotherapy discipline cost for 3 years of 2009 to 2012 in US$

Year	2009-2010		2010-2011		2011-2012
Cost of 1st year students	47,920	Cost of 1st year students	76,279	Cost of 1st year students	66,774
Cost per students of 1st year	2,662	Cost per students of 1st year	1,495	Cost per students of 1st year	1,172
Cost of 2nd year students	42,596	Cost of 2nd year students	26,922	Cost of 2nd year students	59,745
Cost per students of 2nd year	2,662	Cost per students of 2nd year	1,495	Cost per students of 2nd year	1,172
Cost of 3rd year students	-	Cost of 3rd year students	23,930	Cost of 3rd year students	21,087
Cost per students of 3rd year	-	Cost per students of 3rd year	1,495	Cost per students of 3rd year	1,172

In 2009-2010 there are not students of 3rd year due to newly start of the program, there for all cost of that year is distributed to 1st and 2nd year students.

Table 5.17 Distribution of midwifery discipline cost for 2 years of 2010 to 2012 in US$

Year	2010-2011		2011-2012
Cost of 1st year students	335,162	Cost of 1st year students	137,512
Cost per student of 1st year	2,191	Cost per student of 1st year	1,074
Cost of 2nd year students	96,387	Cost of 2nd year students	164,370
Cost per student of 2nd	2,191	Cost per student of 2nd	1,074

year	year

Table 5.18 Distribution of pharmacy discipline cost for 2 years of 2010 to 2012 in US$

Year	2010-2011		2011-2012
Cost per student of 1st year	1,883	Cost per student of 1st year	1,685
Cost of 2nd year students	192,055	Cost of 2nd year students	134,787
Cost per student of 2nd year	1,883	Cost per student of 2nd year	1,685

Table 5 19 Distribution of dentistry cost for 2 years of 2010 to 2012 in US$

Year	2010-2011		2011-2012
Cost of 1st year students	130,018	Cost of 1st year students	113,486
Cost per student of 1st year	2,549	Cost per student of 1st year	1,694
Cost of 2nd year students	142,765	Cost of 2nd year students	86,385
Cost per student of 2nd year	2,549	Cost per student of 2nd year	1,694

Table 5.20 Distribution of technology cost for 2 years of 2010 to 2012 in US$

Year	2010-2011		2011-2012
Cost of 1st year students	109,343	Cost of 1st year students	105,148
Cost per student of 1st year	1,215	Cost per student of 1st year	1,131
Cost of 2nd year students	151,866	Cost of 2nd year students	101,756
Cost per student of 2nd year	1,215	Cost per student of 2nd year	1,131

The four disciplines of midwifery, pharmacy, dentistry and technology period of study is 2 years there for the costs of two years period (2010-2011 and 2011-2012) is included in this study.

Table 5.21 Distribution of anesthesia cost for 1 year of 2011-2012 in US$

Cost of 1st year students in 2010-2011	35,428
Cost per student	1,074

The Anesthesia discipline in GIHS is only for one year and trained nurses are selected for this program.

The mentioned above, the distribution of total cost is based on the student percentage of 1st, 2nd and 3th year for each discipline on the same year and there is no information and evidence provided by GIHS departments to show if the distribution is different between 1st, 2nd and 3th year and according to them, therefore the best criteria for cost distribution is the percentage of each year student.

To have a better picture of the tables above, here is an example of table 5.14 which is the calculation of nursing department cost per student per year and based on that the cost per batch of nursing students from 2009-2012 is specified. For example the cost of nursing department for the period of 2009-2010 is US$382,319 according to table 5.4 which this cost is divided between 1th, 2nd and 3rd year students based on the percentage of student which for 1st year is 20.2%, 56.1% for 2nd year and 23.7% for 3rd year student. This is while if we add up again the cost of 1st, 2nd and 3rd year of 2009-2010 is equal to US$382,319. The number of GIHS students by discipline and their percentage by 1st, 2nd and 3rd year table which used for this calculation is shown in appendix C6.

5.1.7 GIHS Unit Cost

The main objective of this study is to identify unit cost or cost per graduate student in GIHS and private institute considering the quality. The unit cost of each

discipline is calculated by summing up the total cost of 1st, 2nd and 3rd years for disciplines with study period of 3 years while for disciplines with 2 years period of study it is summed up the total cost of 1st and 2nd years in two different years by dividing to the number of students graduated in the period of 2011-2012 or the output of GIHS. This is while, for Anesthesia discipline since the program is only for one year, therefor cost per student of one year is calculated as unit cost.

Below is the table of GIHS unit cost for 8 different disciplines.

Table 5.22 GIHS unit cost/cost per graduate student in US$

Discipline name	output/graduated student[4]	Cost by department per batch[5]	Unit cost
Nursing	47	198,866	4,231
Radiology	17	103,810	6,106
Physiotherapy	18	95,929	5,329
Midwifery	78	499,533	6,404
Pharmacy	42	285,418	6,796
Dentistry	27	216,403	8,015
Technology	37	211,099	5,705
Anesthesia	33	35,428	1,074

The number of graduate student in the table above is based on the information provided by GIHS as shown in appendix C1 while the cost of department is the sum of cost of different years from tables 5.14 to 5.21 for each discipline, for example cost of nursing department in batch (US$198,866) is the sum of 1st year student cost of 2009-2010, 2nd year student cost of 2010-2011 and 3rd year students cost of 2011-2012 from table 5.14 and it is divided by 47 to get unit cost of US$4,231.

[4] A graduate student is called for a student that have completed the full study period of 3 years, 2 years and or 1 year respectively for each discipline.

[5] Cost by department in batch is the cost of 1st, 2nd and 3rd year for disciplines with 3 years period and cost of 1st and 2nd for disciplines with 2 years period is summed up and for anesthesia cost of one year is summed up. This cost is the actual cost of a batch of graduate students.

As we see in table above, the highest cost in GIHS belongs to dentistry discipline however the study period is 2 years while the lowest cost in the table belongs to Anesthesia program. This is while despite the highest cost by department belongs to the Midwifery discipline but since the output or number of graduated students are the highest therefor the unit cost is not the highest.

5.1.8 Private Institutes Unit Cost Calculation

Calculating unit cost of different disciplines in private institutes who provide the same type of programs as GIHS from the purchaser perspective is a part of the study main objective.

In this study the 5 private institutes in Kabul province are purposefully selected according to the criteria of being registered with GIHS and MoPH as institute of health science, graduating major part of students, being eligible for government exam. The cost of tuition and other fees like registration, exam and printing of chapters' fee are collected as cost for purchaser in this study.

Below is the table of 5 private institutes' average cost that was estimated from the purchaser's perspective.

Table 5.23 Private institutes average cost for different available disciplines in Kabul province in US$

Institute	Annual tuition fee	Other fee	Total cost	Annual tuition fee	Other fee	Total cost	Annual tuition fee	Other fee	Total cost	Annual tuition fee	Other fee	Total cost	Annual tuition fee	Other fee	Total cost
	Nursing			Midwifery			Technology			Pharmacy			Dentistry		
A	480	80	560	640	80	720	640	80	720	640	80	720	640	80	720
B	0	0	0	680	42	722	600	42	642	600	42	642	600	42	642
C	480	20	500	480	20	500	480	20	500	600	20	620	480	20	500
D	0	0	0	560	10	570	560	10	570	560	10	570	560	10	570
E	0	0	0	960	50	1010	0	0	0	960	50	1010	0	0	0
Average cost per year			530			704.4			608			712.4			608
Cost per graduate student			1,590			1,409			1,216			1,425			1,216

As shows in the table above, the unit cost or cost per graduate student is the average or mean of five private institute average cost per year multiplied by 3 and 2 based on the period of study. For example the nursing average cost per year is the average sum of annual tuition fee and other fee from two institute of health science (A and C) which is US$530, then the amount US$530 is multiplied by 3 since the study period for nursing is 3 years and finally the average unit cost of nursing department is calculated to be US$1,590. This is while for other 4 disciplines the average cost per year is multiplied by 2 since the study period for them are 2 years. According to the table above the highest cost is from the institute "A" while the lowest belongs to "C" however the private institutes do not provide all 8 disciplines that GIHS provide. The reason is less demand for some of the disciplines like; Radiology, Physiotherapy and Anesthesia and lack of students to enroll for these disciplines in private health science institutes.

5.1.9 Unit Cost Comparison of GIHS and Private Institutes

Since the objective of this study is to identify the unit cost and quality of education in GIHS and private institutes in Kabul province and the study identifies the unit cost at GIHS for various discipline and meanwhile of the private institutes. To compare the unit cost, it is worthwhile to compare the unit cost of GIHS also without the accommodation and donation as well. This is because the unit cost of GIHS contains not only financial cost including the accommodation cost but also the donor support for disciplines and hostels. There for in order to compare the same cost of tuition in both GIHS and private institutes, it has to calculate the cost of GIHS excluding the accommodation cost and donor support. Therefor the study considers two scenarios of unit cost comparison in addition to the full GIHS cost consideration, the first excluding the accommodation cost (hostels cost) and second, in addition to the exclusion of accommodation costs to exclude the donor support of AKU for GIHS.

Below is GIHS unit cost calculation excluding Ancillary cost center (hostels cost).

Table 5.24 GIHS unit cost/cost per graduate student excluding the Ancillary (hostels cost) in US$

Discipline name	output/graduated student	Cost by department per batch	Unit cost
Nursing	47	85,334	1,816
Radiology	17	57,437	3,379
Physiotherapy	18	77,536	4,308
Midwifery	78	378,492	4,852
Pharmacy	42	117,984	2,809
Dentistry	27	79,585	2,948
Technology	37	129,693	3,505
Anesthesia	33	37,397	1,133

The table above explains when ancillary cost is excluded for GIHS unit cost calculation, the cost decreases sensibly.

In the next scenario or the third scenario the AKU donor support is excluded from the GIHS. Since the AKU support is only for midwifery program directly so the only change with the table above is with the unit cost of midwifery program that changes from US$ 4,852 to US$ 3,016. While all other cost are the same as table 5.24.

Below is the comparative table of GIHS average unit cost including accommodation and donor, excluding accommodation and excluding accommodation and donor support with private institute average unit cost.

Table 5.25 Comparative average unit cost of disciplines among GIHS and private institutes in US$

Discipline	GIHS average unit cost including hostel and donor	GIHS average unit cost excluding hostel cost	GIHS average unit cost excluding hostel and donor cost	Private institutes average unit cost
nursing	4,231	1,816	1,816	1,590
radiology	6,106	3,379	3,379	N/A
physiotherapy	5,329	4,308	4,308	N/A
midwifery	6,404	4,852	3,016	1,409
pharmacy	6,796	2,809	2,809	1,425
dentistry	8,015	2,948	2,948	1,216
technology	5,705	3,505	3,505	1,216
anesthesia	1,074	1,133	1,133	N/A

As the table above shows the cost of GIHS is higher in all three scenarios than the private institutes of health science. The main reason behind high cost of GIHS could be lower number of graduate students or output, considering the enrolled students in appendix C6 and graduated students which the cost by department in batch is divided on that shows a big difference. The other factor for high cost of GIHS average unit cost is the accommodation cost and donor support which after exclusion of them the cost decreases almost two times of more for example the cost of nursing is decreased from US$4,231 to US$1,816. Still comparing the cost of GIHS excluding accommodation and donor support with private institutes' average unit cost, the cost is higher. This could be also due to higher number of students in private health science institutes and efficient use of resources by them.

5.2 Quality of Education in GIHS and Private Institutes

One of the specific objectives of this study is to identify the quality of education in GIHS and 5 private institutes. As described in the literature review chapter, the study evaluate the quality of education in two methods, the students' survey through selecting a sample size of the students as mentioned in the methodology chapter and in-depth interview with MoPH and lecturers from GIHS and private institutes.

5.2.1 Student Survey Results

The sample size calculated for this study is 89 graduate students of GIHS and 5 private institutes. Students are selected in proportion to the total number of graduate students from each discipline. To be on the safe side regarding the sample size we include around 110 students for this survey of which 27 from GIHS including 3 students of Anesthesia discipline, since there is no graduate student from this discipline in our sample size due to not graduation from this discipline in the period of 2012-2013, there for 3 graduate students of 2011-2012 are asked to participate in this study, and 83 students from the 5 private institutes.

Around 20 questions are asked through a survey questionnaire through scaling method under different categories regarding the curriculum and its completion, semester time for theoretical lectures and practical works, institute's credibility, lecturers' quality of education and library and other facilities. The students' response from GIHS and 5 private institutes to the questions by scale point in percentage are shown as below. The English and Dari questionnaires can be found in appendix D1 and D2.

Questions in the survey are categorized based on the objectives set in methodology. As mentioned in the methodology the students' survey score average is measured in general to compare the average of response rate between GIHS and private health institutes students' response. The response percentage by score from 1 to 5 is also analyzed to find out the percentage of highest and lowest response rate. It is shown separately for GIHS and private institutes' response in table 5.26 and 5.27.

The survey finding shows that the overall average of responses by scale among GIHS students is 4.1 while for private institutes it is 4.4. However the response shows the satisfaction is better in both since the average score is higher than scale 4 which is a good score.

To better analyze the students response by scale point it is worthwhile to have a look at the students' response rate by scaling point. Below are the tables for students overall response by scoring point.

Table 5.26 GIHS students' response to the survey questions by scale in percentage

GIHS	Number of response by scale	Score	%
	46	1	8.5
	27	2	5.0
	71	3	13.1
	102	4	18.9
	294	5	54.4
Total response	540		100.0
Number of questions	20		
Students interviewed	27		

According to the table above 54.4% of GIHS responses are selected to be score point 5 regarding the quality of education and less than 50% selected score 4 to 1. This means that more than half of the GIHS students believe that the quality of education in GIHS is quite good since score point 5 means the quality of education is between 80 to 100%.

Table 5.27 Private institute's response to the survey questions by scale in percentage

Private Institutes	Number of response by scale	Score	%
	36	1	2.2
	29	2	1.7
	136	3	8.2
	508	4	30.6
	951	5	57.3
Total response	1660		100.0
Number of questions	20		
Students interviewed	83		

As per the results in the table above, around 57.3% of the private institutes' responses are selected to be score point 5 and less than 45% of the responses are scored from 4 to 1. This means more than 55% of the private institutes students are satisfied with the quality of education in their institutes because score point 5 means the quality of education to be between 80 to 100%.

To conclude in general the private institutes quality of education is assessed to be better according to the survey result because the percentage of response for score point 5 is higher in private institutes than GIHS, however when look at the discipline level response rate some of GIHS discipline quality of education are assess to be better than private institutes disciplines such as midwifery discipline which has the highest response rate of scale point 5.

Average scale of students' survey response by categories of questions

Since the questions in the survey questionnaire are focused on 6 categories about curriculum and it's completion, module or semester time for theoretical lectures, module or semester time for practical works, overall institute's educational background and credibility, lecturers educational background and quality of education and library and other facilities, there for it is better to find the average students response by each categories. It should be mentioned that each category contain several questions which are related to the relevant category and average of all questions in categorizes are calculated as shown in table 5.28.

Below is the GIHS and private institutes' students' average of responses for each category.

Table 5.28 Students response to the categories of questions by score

Category of question	**GIHS**	**Private institutes**
	Average score	**Average score**
Curriculum and it's completion	4,2	4,6
Module or semester time for theoretical lectures	4,2	4,6
Module or semester time for practical works	4,1	4,4
Overall institute's educational background and credibility	4	4,1
Lecturers educational background and quality of education	4,1	4,4
Library and other facilities	3,3	3,9

According to the table above the highest score of response of 4.6 by category of question is 4.6 which belongs to private institutes regarding the curriculum completion and time for theoretical lectures. The lowest score is 3.3 that belong to GIHS about the accessibility of library and other facilities. The table of students'

survey response of GIHS and private health institutes by individual questions is showed in appendix D5.

In order to better understand the results, the survey questionnaire responses are analyzed by disciplines as well.

GIHS students' survey results by discipline

The results of the survey by discipline shows that quality of education seems to be better in some disciplines of GIHS such as anesthesia, midwifery and physiotherapy, because the students' response rate was better and more than half of responses are rated the quality of education to be grade scale 5, means between 80 to 100 percentages. The highest percentage of scale 5 was given to anesthesia department which is around 83.3%. This means of the total questions was asked from the anesthesia department students, 83.3% of them are graded the quality of education as scale point 5 by the students. The second highest response rate is for midwifery program. Of the total questions that are asked, 72% of them are given scale point 5 regarding the quality of education in the department. The third highest rate is from the physiotherapy. 62.5% of the responses from this discipline are graded scale point 5. Some other disciplines such as dentistry and nursing the quality of education is assess to be middle since in the nursing department quality of education in GIHS is evaluated to be good as near 50% of the responses are graded scale of 5 and more than 31% of the responses are selected to be grade scale of 4 while for dentistry 55% of the responses are selected to be grade scale 5 in terms of the quality of education. the rest of disciplines such as radiology, pharmacy and technology scaling points was not good since less than 50% of responses are selected to be grade scale of 5 which means more than 50% of the responses regarding the quality of education is not as good as satisfactory to be between 80 to 100%.

Private institutes students survey result by discipline

The private institutes' survey results shows of the five available disciplines in the private institutes during the study in all disciplines more than half of the responses are selected to be graded as scale point 5. The percentage of grade scale point 5 was different from 51.9% lower for pharmacy to 72.7 for dentistry. However when compare the percentage of grade scale of point 5 the GIHS midwifery percentage of grade scale point 5 is higher 72% than private institutes 62.2%. This is while the quality of education for dentistry, nursing, pharmacy and technology seems to be better in private institutes than GIHS since the percentage of grade scale point 5 is higher for private institutes.

According to the above table, in general the highest scale 5 responded by GIHS students is given to the questions 2.3, 3.1 and 4.2 which are about the time allocation for overall lectures and according to the curriculum, the time allocation for theoretical lectures and covering of all topics stated in the syllabi and the role of practical works in terms of quality of education to be important. The highest scale point 5 rate among private students is high for the questions 2.1, 3.3 and 4.2 which are about the overall quality of the curriculum used in the institute is according to students' future career, the role of theoretical lectures in terms of having better quality of education to be important and last one is the same as GIHS the role of practical works to be important in terms of quality of education.

Among the four issues that is asked in terms of role importance of theoretical lectures, practical lectures, teaching method and the role of facilities such as library, access to internet and other teaching resources for having better quality of education, the students gave the highest score of 5 first to the practical work, their second choice in terms of importance is the role of theoretical lectures the third one is given to the teaching method and the last is the role of library and other resources. This means that the most important issue for students in terms of quality of education is the practical works which is also identified by the in-depth interview to be one of the major factors in terms of quality of education in the institutes.

The survey questionnaire of students' surveys showed in Appendix D1.

5.2.2 In-depth Interviews Finding

According to the plan in the methodology part, beside students survey for quality of education in order to deeply understand about the quality of education in GIHS and 5 private institutes as sample of all, in-depth interviews are conducted with 4 lecturers from GIHS an private institutes and 2 MoPH stakeholder who are direct or indirectly are involved with the recruitment and assessment of institutes. The lecturers are selected to be from different disciplines to understand about most of disciplines. The interviews are transcribed from local Dari language in to English. The method of coding and theme is used and questions are coded and finding form each questions are concluded referring to the quotation of interviewee.

There are 4 categories or themes of questions and each category contained several questions which are coded respectively. The categories and codes are developed by the researcher to better manage the information and respondents point of view.

Questions category or theme

1- Working experience of lecturers and MoPH.
2- Students' quality of education
3- Lecturers' quality of education
4- Institute quality of education

Beside the above categories questions that are asked about the success rate of GISH and private institutes' students in terms of job recruitment and passing government exam since private institutes graduate students need to pass a government exam in order to verify their graduation by MoPH.

Each question under different categories is coded to identify respondents' idea specifically about that issue as below.

Codes

- lecturers' years of teaching
- Teaching hours
- Students' level of knowledge

- Students' selection transparency
- Students success rate in semester exam
- Lecturers' level of knowledge
- Lecturers experience and credibility
- Overall quality of education in institute
- Facilities like library and resources
- Difference between disciplines
- Factors affecting quality of education
- Practical work
- Practical works difference between GIHS and Private
- Criteria's for quality of education

The codes are all related to the categories. As mentioned above, each categories contain several questions while each question and for some parts several questions are coded under one code which relates to a category. This means codes which are related to lecturers' years of experience of teaching and teaching hours belongs to the theme of working experience of lecturers, codes which are related to the student are all belongs to the students' quality of education theme, the lecturers' related codes belongs to the theme of lecturers' quality of education and the codes relates to institutes and quality of education belongs to the theme of institute quality of education.

Findings

The overall response from lecturers and MoPH regarding the quality of education in GIHS and private indicate that the quality of education in GIHS is perceived to be better however most of the respondents believe that the quality of education in theoretical lectures section are the same since the curriculum, hours of lectures time and teaching materials that are used in the private institutes are the same as GIHS and it is prepared by GIHS to them which is contrary of students' perceptions. But the difference the respondents mention is about the practical works in GIHS and private institutes.

Below is the detail of findings by some of the main codes of guiding questionnaire.

Regarding the lecturers teaching experience and teaching hours

Most of the GIHS lecturers are having experience of more than 10 years while in private sector however that some of the their lecturers are the same GIHS lecturers but there are some newly graduate and lecturers that their teaching experience are not more than 2 to 3 years.

The lectures hours in private institutes are according to the curriculum of GIHS since they follow the same curriculum even in terms of class time it is 90 minutes one class hour. Regarding the subject hours per week it is also according to GIHS in private institutes, it is different from 2 hours to 4 hours per week, while each subject lecture hours are different by discipline. The only difference is with Midwifery program that in second semester the midwifery program time for study starts from 8:15 am to 1:15 pm with a break of 30 minutes. This means the teaching hours in midwifery program is full time while in other departments it is 90 minutes which shows a difference in method and time of lectures in midwifery program in GIHS with other disciplines.

Regarding the students' quality of education

All of the respondents are agree that Cacour exam which is the overall country level government exam for entrance of students is a transparent and systematic way of students' selection through MoHE and most of the students' level of knowledge that comes through Cancour exam is higher than others in the private institutes. All the students who are coming through this process are having the same level of knowledge.

However some of the respondents from the MoPH believed that still the process is not 100% transparent due to some technical problems during the exam since the exam is once in all over the country each year. The local institutes' entrance exam is based on the requirement of individual institutes, however all of the private institutes' students are also not those with lower level of knowledge but due to inappropriate selection of field of study such as medical, nursing, pharmacy and the rest, they are not able to pass the Cancour exam. The entrance exams in private institutes are being observed by the MoPH/GIHS delegations to assure the transparency of the exam. Generally private institutes' entrance exam is not as good as Cancour exam since it is under the control of the institute and a very small number of students' participate in the exam and the private institutes want to have more students because they are receiving money from the students.

The success rate of students in both Public and private institutes are reported to be good, this is because the theoretical lectures and subjects are similar in both sector and private sector is being evaluated by MoPH. However private institutes lecturers believe that success rate of students in their semester exam is better than GIHS due to several reasons like; loss of students if they fail, use of different method of communication and facilities by private sector and competition among private institutes which some of them are good point regarding students success rate like method of communications and facilities, existence of new and modern equipment while others such as competition among institutes may cause to pass some students who should not be passed due to loss of students. One of the lecturers from the private sector believes that the students success rate is even better than government while GIHS lecturers believe that the success rate in GIHS is better specially in midwifery program which the students success score in theoretical part is 70 of the total 100 and for practical work or practical lectures, the students should pass 100% the practical test.

Regarding the students success rate in theoretical part is almost the same between the GIHS and private institutes students which is around 60% but in practical area the percentage is higher for government students that is why the same stakeholders from MoPH believe that in general the students from government institute (GIHS) can pass and get the job more than private institutes however MoPH

exam process is competitive and the recruitment process is according to the civil service rules.

Regarding lecturers' level of knowledge

Almost all of the respondent are agree that GIHS lecturers academic level of knowledge are better in terms of being experienced and some of GIHS lecturers are teaching in the private institutes as part time. Meanwhile there is a criterion for lecturers' selection to have at least 85% score during their study period and 2 years of practical work experience. This criterion is applicable for private institutes but it seems that is not being obey by them since there are such lecturers from private institutes who are graduated the same year and teaching in the institutes. But there are some lecturers in private institutes whose level of knowledge is higher for example there are some medical doctors who teach in private institutes but in terms of criteria and experience they are not competent. In general the lecturers level of theoretical knowledge are almost the same since some of the same lecturers are teaching in both public and private sector, but in terms of method of teaching the GIHS midwifery lectures are more expert since they have been trained regularly according to the effective teaching skills.

In terms of lecturers' credibility and experience, GIHS lecturers believe that all of them are experienced and in terms of credibility their privilege is higher than private sector since they are attending regular workshops regarding the curriculum. Meanwhile the private institutes' lecturers thought that GIHS lecturers are using old curriculum and methods while they are aligned with current technology and curriculum. But according to the interview the GIHS lecturers who are interviewed had teaching experience of more than 10 years at least while the private institutes lecturers teaching experience are few year or even they are newly graduate students of the University and need more experience on teaching techniques. in terms of practical works, the GIHS teachers who help students are having special skill and experience in

terms of patient management and work in the hospital while the private institutes' major problem is the practical work which most of them do not have access to adequate and satisfactory practical works or not well trained.

The MoPH stakeholder idea regarding the lecturers level of knowledge was such that, the lecturers level of knowledge is better in GIHS due to experience, selection process however there have not been investment in this regard in the past and the level of lecturers who teaches in the GIHS are not improved and the institutes level of knowledge need to be increase. In private sector there is flexibility in terms of time of study and benefit is better in private sector since most of their lecturers get higher salary than GIHS that is why the same lecturers from GIHS teach in the private institutes as well.

In terms of lecturers' knowledge level it is according to students need as the respondents mentioned that, "the level of lecturers' knowledge is according to the students' need in the GIHS but from the private it is not satisfactory" direct quote from one of the MoPH employee that was interviewed. While another stakeholder still is not satisfied with the knowledge of lecturers since there are no lecturers with bachelor, Master or Ph.D. knowledge level in this area and most of the lecturers are diploma graduates or bachelor graduate of health science institutes, pharmacy or other medical schools which the qualification is not higher than bachelor. The good points of GIHS lecturers are indicated to be, experience, familiarity with new methods and materials. This is while that not all of the GIHS disciplines lecturers have the above criteria and regarding the private institutes those lecturers who are teaching in GIHS and private have these criteria specially the midwifery and nursing program but regarding the other disciplines it is not as good as them.

Regarding the overall quality of education in institutes

The overall quality of institutes is evaluated to be good by respondents. However GIHS lecturers believe that their institute is the one and only institutes in the country whose quality of education is better than all other institutes in the country including the public and private institutes due to many years of experience, lecturers'

credibility, curriculum, location and MOPH focus. Both public and private institutes theoretical quality of education seems to be almost the same due to share of the same lecturers and curriculum but regarding the practical work there is a huge difference between GIHS and private institutes since GIHS access to practical work in all aspects are reported to be higher than private institutes even the private institutes lecturers confirmed this.

Regarding the quality of education the stakeholders from MoPH believed that in GIHS which is a public institute the quality of education is satisfactory since it is based on a standard curriculum and it is under the MoPH observation while in private institutes the theoretical lecturers are not bad in some institutes it is the same as GIHS, while in some others it is not as good as GIHS. But in practical area the GIHS students are better since they have access to practice in the public hospitals while private institutes do not have such facilities even if there is the chance of practical work is low due to less experienced lecturers and high load of students. however when the private institutes establish they are committed to provide practical environment for students but still they ask MoPH to provide their students the facility of practical work in the public hospitals which is not possible due to existence of students from GIHS and medical university.

Regarding the facilities like library and resources

About the facilities like library, internet and updated materials both GIHS and private sector have access to the facilities and have libraries, however private sector lecturers believe that their facilities are more updated and better than GIHS and they use from the recent teaching materials and all of their students have access to library and internet. The skill labs are equipped in both sectors and according to the curriculum need. In general access to facilities and updated materials except the midwifery program are similar even better in private institutes.

Regarding differences between disciplines

Half of the respondents from the institutes believed that there is difference between discipline in terms of quality for example all of them are agreed that the quality of education in both practical and theoretical sections of GIHS midwifery program are higher than other disciplines. This is due to the accreditation board certification that currently Midwifery and nursing programs are being accredited and the role of donation to the programs is reported to be vital since the programs will not be able to continue without the donations from external sources according to one of the interviewee, specially the midwifery program that the quality of education is the best among all GIHS disciplines. But in terms of students' selection and other facilities there is not much differences among other disciplines.

Respondents from MoPH were also agree that there are differences among disciplines as the midwifery discipline students are stronger than other disciplines due to evaluation by accreditation board, donor support, workshops for lecturers to update them. Recently the nursing program has also got the accreditation board certificate but for other programs it is under process in GIHS.

Regarding factors affecting quality of education

The respondents are also asked to have their opinion about the factors affecting the quality of education. Their ideas regarding factors that can affect the quality of education are different except the practical works that all of them are agree that practical work is essential in terms of quality of education. Some of them identified security, good teaching environment, existence of skill labs, building, teaching materials, good management, standard students selection, while others also added transparent students' selection, the recruitment of young and updated lecturers according to the criteria and update of curriculum as factors that can affect quality of education. Some of the respondent also believe that beside the mentioned factors the students' interest, appraisal of lecturers from the management side and access to facilities like transportation can cause the quality of education.

Regarding practical works

Respondents' ideas about practical work which is the practical lectures of the students' in the hospitals and clinics during the study period are almost the same that it is better in GIHS than private institutes however the private lecturers mentioned about the practical work availability for pharmacy and technology disciplines, but most of the private institutes do not have hospitals for private works and if there would be hospitals there is no patient for practice. The private lecturers believe if government do not support them in terms of practical works it would be hard for them to make sure the practical work section of most of disciplines that need to be done in hospitals are carried out satisfactory. The practical work of GIHS students are based on the agreement between GIHS and the central hospitals in Kabul province. They identify the hospital based on their discipline need and regularly send their students to the hospitals.

In terms of opportunity for practical works, it is not the same in GIHS and private institutes. "Practical work has a significant role in each discipline" quote from one of the MoPH interviewees. It is not only interviewees from MoPH but respondents' from GIHS also believe that there are differences between practical works in GIHS and private institutes since access to public hospitals are only for GIHS and MoPH do not allow private institutes students to have their practice in public hospitals since they have to provide them practical environment in the private hospitals and this what most of the private institutes do not have hospitals and just few of them might have contracts with private hospitals where the patient is less since most of the people prefer public hospitals than private. This difference is more sensible in the 3rd and 4th semester of discipline while in terms of skill labs there is no difference between GIHS and private institutes since both have the same skill labs and model for practical works. In terms of lecturers to students' ratio the midwifery program in GIHS has its standard which is set by the accreditation board and other donors who support the program. This ratio in midwifery program is good and considered but in private due to high number of students the ratio is not standard.

Regarding criteria for quality of education

In order to have good quality of education the lecturers point out some issue that if would be considered can increase the quality of education. The entire respondent mentioned the role of qualified and experienced lecturers and practical works to be the most important. The other criteria are standard students' selection, good environment for education, practical works, good administration and management, implementation of standard curriculum, existence of rooms and skill labs.

Regarding strong and weak points of institutes

Based on the interviews from the stakeholders, they point out the following points as strong/ good and bad points of both GIHS and private institutes according to their perceptions.

The strong point of GIHS:

1- Existence of experienced lecturers
2- Education according to the exact criteria and curriculum
3- Assessment by various stakeholders
4- Lecturers selection process is transparent and there is specific criteria
5- The students selection process is transparent
6- GIHS is an experienced institute since many years than private institutes

The weak points about GIHS

1- Less flexibility of time and location of institute
2- Existence of some force and relation in government system
3- Bureaucracy in the government system

The good points of private institutes

1- Flexibility of time for study
2- Location of institutes that is accessible in different locations
3- Less bureaucratic process.

At the end of interviews there are some recommendations that are identified by lecturers and MoPH stakeholders as below:

1- Coordination among GIHS and private institutes through seminars, workshops and sharing of ideas in terms of curriculum and new teaching methods
2- Establishment of seminars among students and disciplines through focus group discussions and class competitions
3- Upgrade of mid-level education from 2 and 3 years to 4 years and at least bachelor degree
4- Transparent evaluation of private institutes by MoPH and government relevant departments in order to increase the quality of education meanwhile upgrade of GIHS current curriculum especially in other discipline rather than midwifery and nursing.
5- Private institutes to hire more experienced lecturers
6- Private institutes to get more equipment for practical works
7- Private institutes to decrease the fee according to the economic situation of the society
8- Improving the level of disciplines, setting criteria for students and lecturers selection process.

The in-depth interview questionnaires guidelines are shown in appendix D3 and D4.

CHAPTER VI
DISCUSSION, CONCLUSION AND SUGGESTIONS

This chapter contains two parts. The first part discusses and has conclusion and some suggestions about the cost and unit cost of GIHS and private institutes and the results findings about the unit cost. The second part discusses about the findings of the quality of education assessment between GIHS and private institutes in general and provides some suggestions based on the interviews conducted among lecturers and MoPH stakeholders and students survey.

6.1 GIHS and Private Institutes Unit Cost

The main reason for comparison of average unit cost of GIHS from provider perspective and private institutes' average unit cost from the purchaser in this study is to evaluate cost of producing a mid-level health worker and consider the option of contracting out the same type of service. The reason for analyzing GIHS cost from the provider perspective is due to existence of this institute as public institute under the MoPH structure meanwhile the budget for this institute is allocated by MoPH and it is not an autonomous institute and all services including the accommodation is free for students. While analyzing the private institute cost from provider perspective is not possible since it is a private entity and not willing to release detailed cost data. Besides, for MoPH as a purchaser it is not necessary to know about the detailed cost of a private institute. The only cost which is necessary to know about it is the tuition fee and other fees which is included in this study. The Private institutes of health science were also asked about the accommodation and transportation cost and according to them there is not accommodation for students and also students pay for their transportation out of their pocket and it is not included.

6.1.1 Discussion and Conclusion about the Unit Cost

The cost analysis part findings shows that the average unit cost in GIHS all disciplines are as high as twice in all three scenarios of including accommodation and donation, without accommodation and without accommodation and donation than the average unit cost in the 5 available discipline in the private institutes. For midwifery discipline if we do not exclude the external support even the cost is three times more than private while excluding the accommodation and donation still the cost of producing a midwife is higher than private institutes. The finding shows that the result of the study is opposite of the hypothesis which discusses that the cost of producing a mid-level health worker in GIHS is lower due to the existence of many disciplines in one institute and lower staff and lecturer's salary payment. This is due to higher cost of GIHS in all disciplines and low output in terms of the number of graduate students by discipline.

Meanwhile when considering the unit cost of the midwifery program from the literature studies in Afghanistan that is done by HSSP it is calculated to be US$5, 474 for IHSs and the UNFPA study shows the cost of midwifery student per year is US$8,000- 9,000 which means it should be multiplied by 2 since the duration of study is two years then it is around US$16,000- 18,000. This is while the current study finding shows the cost of graduating a midwife during the years of 2009 to 2012 including accommodation and donation is US$6,404 in GIHS. It shows that the HSSP study cost of one graduate midwife and the current study unit cost has just a difference of US$930 while the UNFPA study cost per one year of midwifery program is even higher than the current study, however the UNFPA study about the midwifery program cost shows that Afghanistan cost of midwifery program is the second highest among the countries included in the study after Sudan.

To conclude the results and findings of the study about the unit cost in GIHS and private institutes it shows that the assumptions under the hypothesis is not true which indicates that the cost of producing a mid-level health worker in GIHS is not lower than the private institutes. The only discipline the cost difference is not much between GIHS and private institutes excluding the accommodation cost is the nursing discipline since the cost per graduate student in GIHS is 1816 US$ while it is

calculated to be 1590 US$ in private institutes. One of the other reasons behind the low cost of nursing discipline is the total number of graduate students from this discipline for the period of 2009-2012.

For the rest of the program such as pharmacy, technology and dentistry it looks the cost is higher in GIHS due to low output or perhaps inefficient use of resources in GIHS. Meanwhile there is not the similar type of study in Afghanistan or other country with the same economic growth or situation to compare the unit cost of other disciplines like nursing, pharmacy, radiology and other disciplines.

6.1.2 Suggestions and Policy implications

Considering the result of the study about unit cost of mid-level health worker in GIHS and private institutes the following points are suggested by the respondents during the interviews and author's perceptions.

- In order to minimize the cost of producing mid-level health workers it is suggested minimizing the accommodation cost at GIHS since the accommodation cost makes around 30 to 50 of the GIHS costs.
- To minimize the cost of GIHS it is also recommended to decrease drop out since the study shows that the enrollment rate is higher while at the end of the program the total number of graduate students are lower than the number of enrolled students.
- For some of the disciplines that the numbers of enrolled students are lower, it is suggested to increase the enrollment rate and meanwhile the output or the number of graduate students.
- To improve the capacity of GIHS administrative and finance staff in order to better plan the institute annual budget and efficient use of the resources.
- It is necessary for MoPH to have regular observation on the private institutes regarding the fee and a standard fee regulation need to be improved by MoPH for better regulation of private institute beside provision of a competitive environment among them.

6.2 Quality of Education in GIHS and Private Institutes

6.2.1 Discussion and Conclusion about Quality of Education

Quality of education in GIHS and 5 private institutes are assessed in general focusing on institute quality of education, lecturers' quality of knowledge, students level of knowledge, theoretical and practical work and facilities like library and resources.

In terms of the students' survey, it shows that the private institutes' students have scored better the quality of education in their institutes since the overall average of students response to the survey questionnaire is 4.4 while the GIHS student average of response is 4.1. Meanwhile the result shows a small percentage difference in terms of responding the high scale of 5. The percentage of scale 5 by GIHS is 54.4% while for private institutes it is 57.3%. However the responses is different among different discipline since the responses for some of the GIHS shows that anesthesia and midwifery program of GIHS response is better than private institutes which shows that the quality of education might be better in these disciplines.

This is while the quality assessment through in-depth interviews with MoPH stakeholders and lecturers from GIHS and private institutes' general idea are such that the quality of education in GIHS is better than private due to better chance of practical works, experienced lecturers existence, better knowledge of students who are selected through the Cancour exam. But specifically in terms of theoretical lectures the respondents believed that the quality of education in the same in GIHS and private institutes since most of the GIHS lecturers are teaching in private institutes as part time and they follow the same curriculum of GIHS under their regulation. The only difference is the practical works. In general the practical work environment, chance and availability are better in GIHS than private institutes especially in midwifery program of GIHS.

To conclude in general, the quality of education seems to be better in GIHS specially the midwifery, anesthesia and physiotherapy disciplines. This is due to the credibility, experience, access to public hospitals for practical works and the students level of knowledge since the students are being select through the general Cancour

exam which is a transparent and accepted and country level entrance exam to the Universities and Institutes. However quality improvement in private sector still may need time and experience in order to compete with GIHS since the private sector is newly established in Afghanistan and need at least couple of years to become mature and the private institutes need to focus more on improving the quality of education in practical area.

6.2.2 Suggestions and Policy Implications

According to the study findings, there are different suggestions for MoPH, GIHS and private institutes in order to improve the quality of education.

A- Suggestions for MoPH

Since the MoPH role in terms of medical institutes of health sciences who are responsible for training of mid-level health workers is a role of stewardship, it is necessary for MoPH to strengthen its role. Based on the interviews conducted among MoPH and lecturers from GIHS and private institutes, below are some suggestions for MoPH based on the study findings:

1- To provide a clear policy and strategic plan for training of mid-level health worker.
2- To enhance the regulatory role of assessment of private institutes who train mid-level health workers and the provision of positive competitive environment among the institutes through accreditation and other processes.
3- To improve the role of accreditation board in terms of accrediting private institutes' quality of education in addition to GIHS disciplines.
4- To upgrade the qualification level of mid-level health workers especially the lecturers from both GIHS and private through the establishment of bachelor, Master and Ph.D programs.

B- Suggestions for GIHS

GIHS is the largest public institutes in Kabul province for training of mid-level health worker. The 8 institutes in the provinces under the name of Institute of Health Sciences (HIS) are being supported technically from one of the GIHS departments called provincial relations department in terms of curriculum, administration and development. Beside that all private institutes' regulation and permit for activity are being processed through GIHS. In order to improve the managerial and observatory role of GIHS the following suggestions are recommended:

1- To improve the observatory and monitoring role of GIHS on improving the quality of education in the private institutes.
2- To improve the quality of education in other disciplines the same as Midwifery and Anesthesia that contain better quality of education.
3- To expand the process of accreditation in other disciplines such as Pharmacy, Technology, dentistry, Physiotherapy and Radiology.
4- To improve the lecturers level of knowledge through conducting short courses, seminars and workshops within the country and outside the country specially in pharmacy, technology, dentistry , physiotherapy and radiology fields.
5- For some disciplines which the cost per graduate student are higher and the quality of education is the same as private institutes , such as pharmacy, technology and radiology, they can be contracted out with private institutes and instead to improve new specially disciplines such as psychiatric nursing, Ultrasound, Echo and CT scan and MRI technician.
6- Standardization of curriculum and the ratio of students to lecturers according to the international standards.

C- Suggestions for private institutes

According to the interviews finding there are a couple of suggestions for private institutes that need to be considered.

1. To focus more on the practical works, accessibility of students in terms of providing hospitals, drug laboratories and other laboratories for better practical works.
2. Lecturer's selection process need to be transparent by involving MoPH/GIHS delegations and ensuring the required documentation of lecturers are according to the requirement of MoPH/GIHS.
3. Conduct short term courses, seminars and workshops for lecturers' improvement of knowledge in coordination with GIHS and accreditation board.
4. To improve the students' selection process through transparent and competitive selection exam at the institute level by involving MoPH/GIHS and MoHE delegations and other stakeholders.
5. Standardization of curriculum and the ratio of students to lecturers according to the international standards.

In terms of policy implications of this study since the study is the first of its type for MoPH to understand the actual cost of training not only Nurses and Midwives but all other paramedical practitioners at GIHS and a clear picture of the private institutes cost of training the same type of health worker from a purchaser's perspective, since the cost of training medical practitioner have not yet been identified. This study can be a base for the future studies of cost effectiveness analysis of each discipline in Afghanistan.

By having the actual cost of nurses, midwives and other paramedics, MoPH will be able to better manage the future budget for GIHS and upgrade other public institutes at the regional and province level not only for Institutes of health sciences (IHS) but for the current CME and CHNE programs that are being implemented through contracts with NGOs.

The study also provides a clear picture about the cost of purchasing services from the private Institute situation. This can help not only MoPH but other stakeholders for future regulation of private Institutes and competitions between public and private Institutes.

The study also help the Ministry of Higher Education (MoHE) to use the same experience and analyze the cost of training medical doctor, Pharmacists and other mid-level Institutes under their coverage.

6.3 Limitations of the Study

Each research study will have its own limitation. This might be due to several factors such as financial limitation, time, unavailability of data and other resources. There are also some limitations in this study. One of the limitations in this study is lack of access to detailed information about the capital cost of GIHS. Since some of GIHS capital assets like vehicles, tables, cabinets are donated before the period of this study and there was no exact data about the purchase cost of them. Meanwhile some of other asset costs like chairs and cabinets that were used during the study period were financially zero considering the depreciation period of their usage, there for the current market value of them was identified by the GIHS finance and admin department in order to include the capital assets. Also the cost of the provincial relation department which is a small supportive department for technical support of the IHSs in the 8 provinces is not excluded in this study due to lack of information, however this cost is very small and includes only few staff salary and is not as significant to have impact on average unit cost of each discipline.

The other limitation of this study is not inclusion of hospital cost in GIHS where the students' execute their practical works and students traveling cost. This was due to lack of enough time and identification of share of the hospital cost for practical work of students within that hospital however the cost of instructors who are guiding the students from GIHS is included. Regarding the traveling cost of students, it is not included for both GIHS and private institutes except the midwifery program cost of traveling for practical works which is paid by AKU however the cost was excluded for the third scenario of GIHS cost excluding the accommodation and donor support, rest of the GIHS students stay at hostels which are on the same campus of the GIHS and there is no traveling cost, therefore the difference among two perspectives for the costing should be considered.

One of the other limitation of this study is in the sampling method, It is worth mentioning that the sample selection is not based on probability sampling method but it is a convenience sampling method due to lack of access to all graduate students and time constrains for the study and there is no information about the percentage of gender of students who are interviewed. It is also important to mention that the assessment of quality of education is based on the students and interviewees subjective perception rather than objective criteria.

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APPENDICES

Appendix A: GIHS cost data collection forms

A1: GIHS general information form

Costing Study of Ghazanfar Institute of Health Science (GIHS)				
General information about GIHS for years 2009- 2012				
No	**General Information**			**Remarks**
A	Name of Institute			
B	Name of Training Department	**yes**	**No**	**Responsilble person**
1				
2				
3				
4				
5				
6				
7				
8				
10				
C	**Other Departments**	**yes**	**No**	
19				
20				
21				
22				
23				
24				
25				

A2: GIHS teachers and students statistical information form

Costing Study of GIHS														
Statistical information about student enrollment and graduation from GIHS for years 2009-2010, 2010-2011 and 2011-2012														
			Student enrolled						Graduate student					
			2009-2010		20010-2011		2011-2012		2009-2010		2010-2011		2011-2012	
No	**Department**	**No. teachers**	**No. male student**	**No. female student**	**No. male student**	**No. female student**	**No. male student**	**No. female student**	**No. male student**	**No. female student**	**No. male student**	**No. female student**	**No. male student**	**No. female student**
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

A3: GIHS staff time allocation data collection form

Costing Study of GIHS																			
Staff time allocationInformation																			
No	Name	Father name	Grade	Department	% of time in department									Monthly Income					
					Midwifery	Nursing	Anesthesia	Pharmacy	Dentestry	Radiology	Technology	Physiotherapy	Hostel	Base sallary	Over time	Allowance	Risk allowance	Professional allowance	Other allowance
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

A4: GIHS expenditure form

Costing study of GIHS					
GIHS expenditure for the period of 2009-2012					
No	Item Name	Expenditure			Remarks
		2009-2010	2010-2011	2011-2012	
		Amount of expenditure	Amount of expenditure	Amount of expenditure	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

A5: GIHS hostel expenditure information form

Costing study of GIHS

Hostel expenditure of years 2007, 2008 and 2009

No	Hostel Expenditure Item	2009-2010			2010-2011			2011-2012			remarks
		male hostel	female hostel	Total	Male hostel	Female hostel	Total	Male hostel	female hostel	Total	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Appendix B: Private health science institutes' data collection form

B1: Private Institutes data collection form English.

Questionnaire to ask fee and other relevant information about Private Institute of Health Science

1. When does your Institute have been established?
Answer:

2. Which majors (disciplines) does your Institute have?
Answer:

3. What is the duration of each major?
Answer:

4. How much is monthly tuition fee for each major?
Answer:

5. How much does a student pay (monthly) in a year?
Answer:

6. How much will it cost (by different major) to graduate from the institute?
Answer:

7. Is there any other cost on student during the study period?
Answer:

8. Does your Institute/school provide hostel for students? If yes how is the cost monthly/annually for a student?
Answer:

B2: Private Institutes data collection form Dari.

سوالنامه جهت اخذ معلومات درباره قیمت فیس رشته های مختلف تحصیلی در انستیتوت های خصوصی

1. انستیتوت شما در کدام سال تاسیس گردیده است؟
جواب:
2. انستیتوت شما کدام رشته ها را تدریس مینماید؟
جواب:
3. هر رشته چند سال تحصیلی را در بر میگیرد؟
جواب:
4. فیس هر رشته تحصیلی به اساس هر ماه چند میباشد؟
جواب:
5. در یک سال تحصیلی یک محصل چند ماه باید فیس پرداخت نماید؟
جواب:

6. مجموع فیس برای فراغت از هر رشته (نظر به هر رشته) چند میباشد؟

جواب:

7. آیا محصل در جریان تحصیل علاوه بر فیس کدام مصرف دیگر را نیز متقبل میشود یا خیر، اگر بلی کدام مصارف؟

جواب:

8. آیا انستیتوت شما لیلیه برای محصلین فراهم مینماید؟ اگر بلی مصارف آن در یک ماه/سال بالای یک محصل چند میباشد؟

جواب:

Appendix C: GIHS data analyses sheets

C1 : GIHS general statistics for the period of 2009-2012

General Statistics

Departments	Number of Students enrolled			Number of graduate student	Number of teachers			Duration of study	Remarks
	2009-2010	2010-2011	2011-2012		2009-2010	2010-2011	2011-2012		
Nursing	50	55	110	47	19	19	21	3 years	
Midwifery	31	31	49	78	17	18	16	2 years	
Technology	32	40	14	37	14	14	12	2 years	
Radiology	20	46	61	17	11	12	15	3 years	
Dental prothes	26	25	50	27	8	8	8	2 years	
Pharmacy	44	40	59	42	10	9	6	2 years	
Physiotherapy	20	26	21	18	3	3	3	3 years	
Anesthesia	36	33	33	33	4	4	4	1 year	
Other Sub departments									
Islamic Studies					2	2	2		
Science					2	2	1		
Essentials of Diseases					7	7	5		
Public Health					4	4	4		
Computer					1	1	1		
Language					4	4	3		
Total	259	296	397	299	106	107	101		

C2: GIHS cost calculation by cost center

Cost Centers		2009-2010	2010-2011	2011-2012
General	Total General cost	**601409**	**632984**	**719458**
	Admin and services	405688	430575	510838
	Printing and publishing	11241	16335	8558
	Maintenance	102239	102537	112189
	Transportation	82240	83537	87872
Training departments	Total Training cost	**380478**	**457137**	**309788**
	Nursing	31462	57553	62110
	Midwifery	182031	212460	69068
	Technology	25869	30080	27742
	Radiology	33050	40176	42663
	Dental prothes	18907	22994	23134
	Pharmacy	27089	28602	25889
	Physiotherapy	44422	46520	41118
	Anesthesia	17648	18752	18063

C3: Percentage of GIHS students by department in different study period

Total of 2009-2010 students	615		
Total of 2010-2011 students	1123		
Total of 2011-2012 students	1228		
Total of students in 3 years	2966		
Department percentage of student as of total	**year**	**year**	**year**
Department	**2009-2010**	**2010-2011**	**2011-2012**
Nursing	22.0	14.1	11.5
Radiology	13.5	13.0	15.6
Physiotherapy	5.5	7.6	10.3
Midwifery	7.2	17.5	22.9
Pharmacy	16.6	16.2	12.5
Dentistery	9.1	9.5	9.6
Technology	20.3	19.1	14.9
Anesthesia	5.9	2.9	2.7
Total in percentage	100	100	100

C4 : GIHS hostel percentage of students by discipline

Percentage of femal hostel student by training department				Percentage of Male hostel stdent by training department			
Department	**2009-2010**	**2010-2011**	**2011-2012**	**Department**	**2009-20**	**2010-2011**	**2011-2012**
Nursing	32.4	26.8	33.9	Nursing	28.7	24.4	11.5
Radiology	5.6	8.9	6.8	Radiology	14.4	13.7	20.4
Physiotherapy	1.4	1.8	5.1	Physiotherapy	2.4	3.9	5.7
Midwifery	54.9	42.9	37.3	Midwifery	0.0	0.0	0.0
Pharmacy	2.8	3.6	0.0	Pharmacy	14.4	25.4	30.6
Dentestary	2.8	16.1	8.5	Dentestary	16.3	18.0	19.1
Technology	0.0	0.0	8.5	Technology	23.9	14.6	12.7
Anesthesia	0.0	0.0	0.0	Anesthesia	0.0	0.0	0.0

C5: Number of GIHS students who live in hostels during 2009-2012 by department

Detail of students who live in hostels by main training department								
		female Hostel				Male Hostel		
No	Department	2009-2010	2010-201	2011-2012		2009-201	2010-2011	2011-2012
1	Nursing	23	15	20		60	50	18
2	Radiology	4	5	4		30	28	32
3	Physiotherapy	1	1	3		5	8	9
4	Midwifery	39	24	22		0	0	0
5	Pharmacy	2	2	0		30	52	48
6	Dentestary	2	9	5		34	37	30
7	Technology	0	0	5		50	30	20
8	Anesthesia	0	0	0		0	0	0
	Total	**71**	**56**	**59**		**209**	**205**	**157**

C6: GIHS number of students of disciplines by 1st,2nd and 3rd year and their percentage.

Discipline name	No. of student	% of student		Discipline name	No. of student	% of student
Nursing				**Midwifery**		
Total number of students in 2009-2010	114			Total number of students in 2010-2011	197	77.4
1th year student	23	20.2		1th year student	153	22.3
2nd year student	64	56.1		2nd year student	44	
3rd year student	27	23.7		Total number of students in 2011-2012	281	
Total number of students in 2010-2011	137			1th year student	128	45.6
1th year student	50	36.5		2nd year student	153	54.4
2nd year student	23	16.8		**Pharmacy**		
3rd year student	64	46.7		Total number of students in 2010-2011	182	
Total number of students in 2011-2012	120			1th year student	80	44
1th year student	47	39.2		2nd year student	102	56
2nd year student	50	41.6		Total number of students in 2011-2012	154	
3rd year student	23	19.2		1th year student	74	48.1
Radiology				2nd year student	80	51.9
Total number of students in 2009-2010	83			**Dentistry**		
1th year student	19	22.9		Total number of students in 2010-2011	107	
2nd year student	44	53		1th year student	51	47.7
3rd year student	20	24.1		2nd year student	56	52.3
Total number of students in 2010-2011	146			Total number of students in 2011-2012	118	
1th year student	83	56.8		1th year student	67	56.8
2nd year student	19	13		2nd year student	51	43.2
3rd year student	44	30.2		**Lab. Technology**		
Total number of students in 2011-2012	194			Total number of students in 2010-2011	215	
1th year student	90	46.9		1th year student	90	41.9
2nd year student	83	43.2		2nd year student	125	58.1
3rd year student	19	9.9		Total number of students in 2011-2012	183	
Physiotherapy				1th year student	93	50.8
Total number of students in 2009-2010	34			2nd year student	90	49.2
1th year student	18	52.9		**Anesthesia**		
2nd year student	16	47.1		Total number of students in 2011-2012	33	100
3rd year student	0	0		1th year student		
Total number of students in 2010-2011	85					
1th year student	51	60				
2nd year student	18	21.2				
3rd year student	16	18.8				
Total number of students in 2011-2012	126					
1th year student	57	45.2				
2nd year student	51	40.5				
3rd year student	18	14.3				

C7: GIHS step down cost allocation excluding hostel cost and donor support for midwifery discipline for the period of 2009-2010

Cost Centers	2009-2010							
General	**Total direct cost**	**Allocation of admin and services**	**Allocation of printing and publishing**	**Allocation of transportation**	**Allocation of maintainance**	**Allocation of male Hostel**	**Allocation of female Hostel**	**GIHS total cost after allocation**
Admin and services	405688							
Printing and publishir	11241	0						
Transportation	82240	0	0					
Maintainance	102239	0	0	0				
Training department								
Nursing	31462	89054	2468	18053	22443	0	0	**163479**
Midwifery	76676	29025	804	5884	7315	0	0	**119704**
Technology	25869	82457	2285	16715	20780	0	0	**148107**
Radiology	33050	54751	1517	11099	13798	0	0	**114215**
Dental prothes	18907	36941	1024	7489	9310	0	0	**73669**
Pharmacy	27089	67285	1864	13640	16957	0	0	**126835**
Physiotherapy	44422	22428	621	4547	5652	0	0	**77670**
Anesthesia	17648	23748	658	4814	5985	0	0	**52852**

C8: GIHS step down cost allocation excluding hostel cost and donor support for midwifery discipline for the period of 2010-2011

Cost Centers	2010-2011					
General	**Total direct cost**	**Allocation of admin and services**	**Allocation of print and publishing**	**Allocation of transportation**	**Allocation of maintainance**	**GIHS total cost after allocation**
Admin and services	430575					
Printing and publishir	16335	0				
Transportation	83537	0	0			
Maintainance	102537	0	0	0		
Training department						
Nursing	57553	60580	2298	11753	14426	**146610**
Midwifery	45305	75533	2866	14654	17987	**156345**
Technology	30080	82434	3127	15993	19631	**151266**
Radiology	40176	55979	2124	10861	13331	**122470**
Dental prothes	22994	41025	1556	7959	9770	**83305**
Pharmacy	28602	69782	2647	13539	16618	**131187**
Physiotherapy	46520	32590	1236	6323	7761	**94430**
Anesthesia	18752	12653	480	2455	3013	**37353**

C9: GIHS step down cost allocation excluding hostel cost and donor support for midwifery discipline for the period of 2011-2012

Cost Centers	**2011-2012**					
General	**Total direct cost**	**Allocation of admin and services**	**Allocation of print and publishing**	**Allocation of transportation**	**Allocation of maintainance**	**GIHS total cost after allocation**
Admin and services	510838					
Printing and publishir	8558	0				
Transportation	87872	0	0			
Maintainance	112189	0	0	0		
Training department						
Nursing	62110	58655	983	10090	12882	**144,718**
Midwifery	44464	116894	1958	20108	25672	**209,096**
Technology	27742	76127	1275	13095	16719	**134,958**
Radiology	42663	79870	1338	13739	17541	**155,152**
Dental prothes	23134	49087	822	8444	10780	**92,268**
Pharmacy	25889	64063	1073	11020	14069	**116,115**
Physiotherapy	41118	52415	878	9016	11511	**114,939**
Anesthesia	18063	13728	230	2361	3015	**37,397**

C10: AKU list of expenditure for midwifery discipline of GIHS for the period of 2009-2012

Costing study of GIHS					
AKU expenditure for GIHS Midwifery program for the period of 21 March 2009 to 20 March 2012					
No	**Item Name / Description**	**Expenditure**			**Remarks**
		(21 March 2009 to 20 March 2010)	**(21 March 2010 to 20 March 2011**	**(21 March 2011 to 20 March 2012)***	
		Amount of expenditure in US$	Amount of expenditure in US$	Amount of expenditure in US$	
1	Office supplies (stationary, printing, food supplies, maintenance supplies, IT supplies etc. furniture, supplies)	$16,684	$21,884	$3,685	
2	Medical and skills supplies for students to practice in skills lab and clinical sites	$14,511	$18,411		
3	Utilities expense (gas, fuel for generator, communication cost)	$1,910	$1,827	$203	
4	Transportation for students, teachers and clinical preceptors to visit clinical sites and GIHS	$54,934	$91,143	$15,293	
5	Vehicle running cost (fuel, maintenance) for official vehicles for monitoring of the program	$4,578	$5,256	$679	
6	Internet connection (ISP charges)	$4,274	$7,103	$2,252	
7	Repair and maintenance of GIHS offices, hostel, skills lab etc required for accreditation	$3,796	$722		
8	Capital expenditure (printer, laptops, multimedia etc)	$3,318	$4,853		
9	Incentive to janitorial staff for ongoing support at GIHS and clinical sites	$1,350	$1,558	$66	
10	Accreditation fees		$2,000		
11	Graduation ceremony cost		$5,886		
	Total	**$105,355**	**$160,643**	**$22,178**	

Appendix D: Questionnaires for Assessment of Quality of Education in GIHS and Private Health Science Institutes

D1: Students assessment survey consent form and questionnaire in English

Questionnaire for assessment of quality of medical education

Participant information Consent Form
(Students)

Purpose of the study

You are invited to take part in a research study conducted in partial fulfillment of the requirements for an MSc degree in Health Economics and Health Care Management to inter alia assess and evaluate the overall quality of education of Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician for better quality provision of medical education in Kabul Province.

Procedures

To answer the survey questionnaire it will take about 4 to 5 minutes of your time. During the interview, you will be asked questions about the quality of education in your institute that offers (Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician) training programs in Kabul province. Your experience of learning regarding the quality of education can help us to better assess the quality of education in your institute.

Risks/Discomforts

Being a part of this study will pose minimal risk for you. Your anonymity will be maintained in this interview. We will not ask you for your name and will not record it.

Should you feel uncomfortable at any time during the interview, do not want to answer a specific question, and/or decide you no longer want to participate, just let us know and we will skip the question or end the interview.

Benefit

With your help, we hope that the study will improve the quality of education of Nurses, Midwives and other paramedics programs in public and private institutes in the future to better decide on future training of health work force.

Voluntary participation

You do not have to agree to participate in this study, and you may change your mind at any time.

If you have any questions or problems, please contact the Master program of health economics and health care management chulalongkorn University Mrs. Kingthong Gonganoi (Kingthong.G@chula.ac.th) for further information.

Permission to proceed

Is it okay to precede with the interview questions?

Questions

The questions below are based on scaling method of scoring started from grade 1 fully disagree while grade 5 stands for fully agree.

Disagree	1	2	3	4	5	Fully agree

Please check or circle one option for each relevant question.

1 Participant general information

1.1	Which institute are you from?	GIHS	Institute "**A**"	Institute "**B**"	Institute "**C**"	Institute "**D**"	Institute "**E**"

1.2	You are student of final year	Yes	No	Graduate

1.3	Which discipline are you from?	Nursing	Midwifery	Technology	X-ray tech.
		Dentistry	Pharmacy tech.	Physiotherapy	Anesthesia

2	**Curriculum and its completion**					
2.1	The overall quality of the curriculum used in the institute is according to students' future career.	1	2	3	4	5
2.2	The institute fully completes all topics according to the curriculum in each semester.	1	2	3	4	5
2.3	The time allocated for all lectures are enough and set according to the curriculum.	1	2	3	4	5
2.4	The Institute curriculum is updated and according to the students' future career.	1	2	3	4	5
3	**Module/semester time for theoretical lectures**					
3.1	The time specified for theoretical lectures is enough to cover all topics stated in the syllabi.	1	2	3	4	5
3.2	The teaching method of theoretical lectures is according to students' future career.					
3.3	The role of theoretical lectures in terms of having better quality of education is important.	1	2	3	4	5
4	**Module/semester time for practical works**					
4.1	The time specified for practical works during the educational program are according to students future career.	1	2	3	4	5
4.2	The role of practical works in terms of having better quality of education is important.	1	2	3	4	5
4.3	The guidance of lecturers during practical works is satisfactory.	1	2	3	4	5
4.4	The Facility environment for students' practical work is satisfactory.	1	2	3	4	5
4.5	The ratio of teacher to student for practical work is satisfactory.	1	2	3	4	5
5	**Credibility of institute**					
5.1	The level of educating students in my institute is satisfactory for passing the government exam.	1	2	3	4	5
5.2	The institute level of education is satisfactory for job recruitment.	1	2	3	4	5
6	**Quality of teaching staff**					

6.1	The role of teaching method in terms of having better quality of education is important.	1	2	3	4	5
6.2	The teaching method used in the institute is interactive.	1	2	3	4	5
6.3	The teachers' academic knowledge in my institute is according to students' future career.	1	2	3	4	5
6.4	The teaching method of teachers in my institute is according to students' future career.	1	2	3	4	5
7	**Library and other facilities**					
7.1	The facilities like library, access to internet and other academic related documents the institute provided for students during the study period is according to students' future career.	1	2	3	4	5
7.2	The role of facilities such as library, access to internet and other teaching resources for having better quality of education is important.	1	2	3	4	5

D2: Students assessment survey consent form and questionnaire in Dari

موافقه شفاهی برای اشتراک در مصاحبه

(محصلین)

مقصد

از شما دعوت میشود تا در مصاحبه ای سهم بگیرید که بمقصد بخشی از نیازمندی های برنامه ماستری در اقتصاد صحت و مدیریت صحی جهت بررسی و ارزیابی کلی کیفیت آموزش برنامه ها برای نرس ها، قابله ها، فزیوتراپست ها، تکنالوژیست های فارمسی، دندان، تکنالوژیست لابراتوار، نرس انستیزی و تکنالوژیست اکسری) و بهتر شدن کیفیت و ارائه خدمات بهتر صحی در ولایت کابل راه اندازی میگردد.

طرزالعمل

مصاحبه حدود 4 الی5 دقیقه وقت شما را خواهد گرفت. در جریان مصاحبه، نظر شما را درباره کیفیت آموزش در انستیتیوت علوم صحی شما که برنامه های (نرسنگ، قابلگی، فزیوتراپی، دواسازی، پروتیز دندان، تکنالوژی لابراتوار، انستیزی و تکنالوژی اکسری) در ولایت کابل تدریس مینمایند، خواهیم پرسید. تجارب شما در قسمت کیفیت آموزش و ارزیابی کیفیت میتواند ما را در قسمت ارزیابی مقایسوی کیفیت دانش افرادی که از این انستیوت فارغ تحصیل میگردند، کمک نماید.

خطرات و ناراحتی

شرکت در این مصاحبه هیچگونه خطری را متوجه شما نمیسازد. ما راجع به اسم شما سوال نخواهیم کرد و نه اسم شما را ثبت خواهیم نمود. همچنان ما تلاش میکنیم تا مصاحبه شما گمنام باشد.

اگر شما در هر زمانی در جریان مصاحبه احساس ناراحتی میکنید، یا نمیخواهید تا به کدام سوال مشخص جواب بدهید، و یا تصمیم میگیرید که دیگر نمیخواهید به مصاحبه دوام بدهید، لطفاً ما را در جریان بگذرید؛ ما از سوال گذشته یا مصاحبه را قطع خواهیم کرد.

فایده

با کمک شما، ما امیدوار هستیم که این مطالعه در قسمت بهبود کیفیت آموزش برنامه ها برای نرس ها، قابله ها و سایر کارمندان مسلکی طب متوسط در سکتور دولتی و خصوصی ما را در آینده کمک نموده و در قسمت آموزش بهتر کارمندان این رشته ها موثر باشد.

اشتراک دواطلبانه

شما مجبور نیستید تا در این برنامه شرکت کنید، و شما میتوانید که تصمیم خود را هر لحظه که خواسته باشید تغییر بدهید.

در صورت موجودیت کدام سوال یا مشکلی و یا برای معلومات بیشتر در مورد این تحقیق، لطفاً با مسئولین برنامه ماستری اقتصاد صحت پوهنتون چولالونکورن خانم کنگتون گنگانوی و یا ایمیل آدرس (Kingthong.G@chula.ac.th) به تماس شوید.

اجازه برای اجرای مصاحبه

آیا شما موافق هستید تا در مصاحبه اشتراک کنید؟

فورم ارزیابی کیفیت تدریس در انستیتیوت های علوم صحی

سوالات

1 معلومات عمومی راجع به مصاحبه شونده

1.1 شما محصل کدام انستیتیوت میباشید؟

انستیتیوت علوم صحی غضنفر	انستیتیوت علوم صحی **"الف"**	انستیتیوت علوم صحی **"ب"**	انستیتیوت علوم صحی **"ج"**	انستیتیوت علوم صحی **"د"**	انستیتیوت علوم صحی **"ه"**

1.2 شما محصل سال اخیر میباشید؟

بلی	نخیر	فارغ التحصیل

1.3 شما محصل کدام رشته میباشید؟	نرسنگ	قابلگی عالی	تکنالوژی	اکسری
	پروتیز دندان	دواسازی	فزیوتراپی	انستیزی

سوالات طرح شده در ذیل به شیوه مقیاسی/پیمایشی بوده که نمره 1 بیانگر کاملاً عدم موافقه بوده در حالی که نمره 5 نمایانگر کاملاً موافق بودن میباشد.

کاملاً نا موافق	1	2	3	4	5	کاملاً موافق

لطفاً یکی از گزینه ها را برای هر سوال نظر به درجه موافقت خویش با آن را انتخاب و یا حلقه نمایید.

2	**در مورد کوریکولم و تکمیل نمودن آن**					
2.1	کیفیت کوریکولم که در انستیتیوت شما مورد استفاده قرار میگیرد به طور کلی مطابق به نیازمندی های آینده کاری محصلین میباشد.	1	2	3	4	5
2.2	انستیتیوت کاملاً تمام مواد درسی ذکر شده در کوریکولم را در هر سمستر تکمیل میکند.	1	2	3	4	5
2.3	وقت معین شده برای تمام دروس لکچر کافی بوده و مطابق به کوریکولم عیار گردیده است.	1	2	3	4	5
2.4	کوریکولم انستیتیوت تجدید شده (آپدیت) و مطابق به نیازمندی های آینده محصلین میباشد.	1	2	3	4	5
3	**در مورد وقت سمستر برای دروس تیوریک**					
3.1	وقت معین شده برای دروس تیوریک کافی بوده و تمام عناوین مشخص شده در تقسیم اوقات را شامل میباشد.	1	2	3	4	5
3.2	شیوه دروس تیوریک مطابق به نیازمندی های آینده شاگردان میباشد.	1	2	3	4	5
3.3	نقش دروس تیوریک در قسمت داشتن کیفیت خوب دروس با اهمیت میباشد.	1	2	3	4	5
4	**در مورد وقت سمستر برای دروس/کارهای عملی**					
4.1	وقت معین شده برای کار های عملی در جریان برنامه آموزشی مطابق به نیازمندی های آینده محصلین میباشد.	1	2	3	4	5
4.2	نقش کار های عملی در قسمت داشتن کیفیت خوب دروس با اهمیت میباشد.	1	2	3	4	5
4.3	رهنمایی استادان در جریان کار های عملی قناعت بخش میباشد.	1	2	3	4	5
4.4	محیط کاری موجود در شفاخانه/کلینیک برای کار عملی محصلین قناعت بخش میباشد.	1	2	3	4	5
4.5	تناسب استاد با محصل در جریان کار های عملی معیاری و قناعت بخش میباشد.	1	2	3	4	5

5	**در مورد اعتبار/کریدت انستیتیوت**					
5.1	سطح تعلیمی و آموزشی برای محصلین در انستیتیوت برای کامیاب شدن در امتحان دولتی قناعت بخش میباشد.	1	2	3	4	5
5.2	سطح تعلیمی و آموزشی انستیتیوت برای استخدام و دریافت وظیفه قناعت بخش میباشد.	1	2	3	4	5
6	**در مورد کیفیت استادان**					
6.1	نقش شیوه تدریس استادان در قسمت داشتن کیفیت خوب دروس با اهمیت میباشد.	1	2	3	4	5
6.2	شیوه تدریس در انستیتیوت به گونه دو جانبه میان استاد و محصل میباشد.	1	2	3	4	5
6.3	سطح دانش استادان در انستیتوت بنده مطابق به نیازمندی آینده محصلین میباشد.	1	2	3	4	5
6.4	شیوه تدریس استادان در انستیتیوت مطابق به نیازمندی های آینده محصلین میباشد.	1	2	3	4	5
7	**در مورد کتابخانه و سایر تسهیلات**					
7.1	تسهیلات مانند کتابخانه، دسترسی به انترنت وسایر مواد و اسناد اکادمیک که برای محصلین در جریان دوره آموزشی در انستیتیوت فراهم گردیده مطابق به نیازمندی های آینده محصلین میباشد.	1	2	3	4	5
7.2	نقش تسهیلات مانند کتابخانه، انترنت و سایر منابع درسی برای داشتن کیفیت خوب دروس با اهمیت میباشد.	1	2	3	4	5

D3 : Lecturers' consent forme and interview guide questionnaire

ORAL AGREEMENT TO PARTICIPATION

(Instructors)

PURPOSE

You are invited to take part in a research study conducted in partial fulfillment of the requirements for an MSc degree in Health Economics and Health Care Management to inter alia assess and evaluate the overall quality of education of Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician for better quality provision of medical education in Kabul Province.

PROCEDURES

The interview will take about 45 minutes to 1 hour of your time. During the interview, you will be asked questions about your thoughts and experiences on the quality of education in Ghazanfar Institute of health science (GIHS) and 5 private Institutes who offer (Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician) medical training in Kabul province. Your experience regarding the quality assessment of staff that are graduated from GIHS and private institutes from the field and during studies can help us to evaluate the quality of students who graduated from GIHS versus the quality of those who graduated from private institutes.

With your permission, we will record the interview with a digital recorder. You do not have to answer any question that you feel uncomfortable with and you are free to stop the interview at any time.

RISKS/DISCOMFORTS

Being a part of this study will pose minimal risk for you. Your anonymity will be maintained in this interview. We will only ask you for your first name and will not record it in the transcription. The digital recording and transcript of the interview will be stored on a password-protected computer, and only the researcher will have access to this information.

Should you feel uncomfortable at any time during the interview, do not want to answer a specific question, and/or decide you no longer want to participate, just let us know and we will skip the question or end the interview.

BENEFITS

With your help, we hope that the study will assess and evaluate the quality of education of Nurses, Midwives and other paramedics programs in GIHS and private institutes in the future and help to improve the quality of education if them in the future.

VOLUNTARY PARTICIPATION

You do not have to agree to participate in this study, and you may change your mind at any time.

If you have any questions or problems, please contact the Master program of health economics and health care management chulalongkorn University Mrs. Kingthong Gonganoi (Kingthong.G@chula.ac.th) for further information.

PERMISSION TO PROCEED

Is it okay to proceed with the interview?

Can we start recording the interview?

Questions

1	**Information about respondent**	**Remarks**
1.1	Can you tell me about yourself?	
1.2	Which institute and which program are you teaching?	
1.3	Tell me about your qualifications and educational background?	
1.4	Can you tell me how long you have been teaching here?	
1.5	How many hours are you teaching per week?	
2	**Student's quality of education**	
2.1	Do you think students who enter public and private institutes have the same level of knowledge and ability to continue education?	
2.2	What is your idea about the selection process of students in public and private institutes is it transparent and are you satisfied?	
2.3	Can you tell me about the success rate of students in terms of passing the semester professional exam in GIHS/private institutes?	
3	**Teachers' quality of education**	

3.1	Do you think the teachers' level of knowledge in public/private institutes are the same and satisfactory for having good quality of education?
3.2	Tell me, what is your opinion about teachers' experience and credibility in public versus private institutes?
4	**Institute quality of education**
4.1	How do you evaluate the quality of education in your institute?
4.2	Do you think the facilities like the library; access to update resources and other essential materials in your institute is according to students need?
4.3	Can you tell me if there are some differences between various departments of your institute in terms of quality of education and why?
4.4	Can you tell us what factors can affect the quality of education. Please explain?
4.5	Tell me your idea about practical work of students during their study period; does it adequately prepare students for their future careers?
4.6	Are there any differences between the public and the private institutes in terms of practical work and access to facility for practical work?
4.7	From your point of view what are the important Criteria/standards for having a better quality education system in the institute?
4.8	What are your recommendations for better quality of education in both public and private institutes?

D4: MoPH stakeholders consent form and interview guide questionnaire in English.

ORAL AGREEMENT TO PARTICIPATION

(MoPH staff)

PURPOSE

You are invited to take part in a research study conducted in partial fulfillment of the requirements for an MSc degree in Health Economics and Health Care Management

to inter alia assess and evaluate the overall quality of education of Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician for better quality provision of medical education in Kabul Province.

PROCEDURES

The interview will take about 45 minutes to 1 hour of your time. During the interview, you will be asked questions about your thoughts and experiences on the quality of education in Ghazanfar Institute of health science (GIHS) and private who offer (Nurse, Midwife, Physiotherapist, Pharmacy technicians, Dental technician, Lab. Technician, Anesthesia nurse and X-ray technician) medical training in Kabul province. Your experience regarding the quality assessment of staff that are graduated from GIHS and private institutes from the field and during studies can help us to evaluate the quality of students who graduated from GIHS versus the quality of those who graduated from private institutes.

With your permission, we will record the interview with a digital recorder. You do not have to answer any question that you feel uncomfortable with and you are free to stop the interview at any time.

RISKS/DISCOMFORTS

Being a part of this study will pose minimal risk for you. Your anonymity will be maintained in this interview. We will only ask you for your first name and will not record it in the transcription. The digital recording and transcript of the interview will be stored on a password-protected computer, and only the researcher will have access to this information.

Should you feel uncomfortable at any time during the interview, do not want to answer a specific question, and/or decide you no longer want to participate, just let us know and we will skip the question or end the interview.

BENEFITS

With your help, we hope that the study will assess and evaluate the quality of education of Nurses, Midwives and other paramedics programs in GIHS and private institutes in the future and help to improve the quality of education if them in the future.

VOLUNTARY PARTICIPATION

You do not have to agree to participate in this study, and you may change your mind at any time.

If you have any questions or problems, please contact the Master program of health economics and health care management chulalongkorn University Mrs. Kingthong Gonganoi (Kingthong.G@chula.ac.th) for further information.

PERMISSION TO PROCEED

Is it okay to proceed with the interview?

Can we start recording the interview?

Questions

1	**Participant information**	**Remarks**
1.1	Can you tell me about yourself?	
1.2	Can you tell me which department of MoPH are you working for?	
1.3	How long have you been working in this department of MoPH?	
2	**Quality of education in the institutes**	
2.1	Can you tell me how much are you satisfied with the quality of education in the public and private institutes?	
2.2	Do you think the quality of education in the public/private institutes are the same or different? If yes why?	

2.3	From your point of view what are the important points for having a better quality education system in both public (GIHS) and private institutes?
2.4	Do you think the environment for student's theoretical and practical work is satisfactory and adequately prepares students for their future careers?
2.5	From your point of view، the opportunity to access practical work is the same in public and private institutes?
2.6	What are the strong and the weak points of private versus public institutions?
3	**Teachers' quality of knowledge**
3.1	How do you evaluate the knowledge of lecturers in public (GIHS) and private institutes?
3.2	Is the level of their knowledge according to the students' future career?
3.3	From your point of view what are the good and bad points of teachers in terms of their teaching method in public (GIHS) versus private institutes?
4	**Students' quality of education**
4.1	What is your idea about the selection process of students in public (GIHS) and private institutes, which of their selection process is better and why?
4.2	How is the success rate of private institute students, in terms of passing the government exam?
4.3	Tell me about the success rate of students from public versus private institutes in terms of job recruitment.
4.4	Can you tell us about the strength and weakness of each discipline graduate student?
4.5	Do you think the students' level of theoretical and practical knowledge is the same as public (GIHS)?
4.6	What is your recommendation regarding better quality of education in both public and private institutes?

D5: Table of GIHS and privte health Scinence Institutes students response to the questions by scale.

Question	GIHS					Private				
	Scale point					Scale point				
	Scale 5	**Scale 4**	**Scale 3**	**Scale 2**	**Scale 1**	**Scale 5**	**Scale 4**	**Scale 3**	**Scale 2**	**Scale 1**
Q 2.1. The overall quality of the curriculum used in the institute is according to students' future career.	15	5	4	2	1	67	17	1	2	0
Q 2.2. The institute fully completes all topics according to the curriculum in each semester.	14	5	2	3	3	59	23	2	2	1
Q 2.3. The time allocated for all lectures are enough and set according to the curriculum.	20	4	2	0	1	62	19	5	1	0
Q 2.4. The Institute curriculum is updated and according to the students' future career.	17	5	1	1	3	45	33	6	1	3
Q 3.1. The time specified for theoretical lectures is enough to cover all topics stated in the syllabi.	20	1	2	2	2	57	24	4	1	1
Q 3.2. The teaching method of theoretical lectures is according to students' future career.	14	6	4	2	1	52	30	3	0	2
Q 3.3. The role of theoretical lectures in terms of having better quality of education is important.	16	6	3	1	1	67	16	3	0	1
Q 4.1. The time specified for practical works during the educational program are according to students future career.	16	4	5	0	2	50	24	9	1	3
Q 4.2. The role of practical works in terms of having better quality of education is important.	19	3	3	1	1	68	16	2	0	1
Q 4.3. The guidance of lecturers during practical works is satisfactory.	10	11	6	0	0	45	36	5	1	0
Q 4.4. The Facility environment for students' practical work is satisfactory.	12	8	3	0	4	33	31	19	4	0
Q 4.5. The ratio of teacher to student for practical work is satisfactory.	11	9	2	2	3	42	35	9	0	1
Q 5.1. The level of educating students in my institute is satisfactory for passing the government exam.	15	4	6	1	1	46	24	15	1	1
Q5.2. The institute level of education is satisfactory for job recruitment.	15	2	7	1	2	36	27	14	7	3
Q6.1. The role of teaching method in terms of having better quality of education is important.	13	7	4	1	2	57	27	3	0	1
Q6.2. The teaching method used in the institute is interactive.	16	6	1	2	2	61	22	3	0	1
Q 6.3. The teachers' academic knowledge in my institute is according to students' future career.	12	8	1	3	3	52	27	7	0	1
Q 6.4. The teaching method of teachers in my institute is according to students' future career.	15	5	5	0	2	23	41	20	2	1
Q 7.1. The facilities like library, access to internet and other academic related documents the institute provided for students during the study period is according to students' future career.	9	2	5	5	6	22	39	12	5	9
Q 7.2. The role of facilities such as library, access to internet and other teaching resources for having better quality of education is important.	13	3	3	1	7	50	26	12	3	6

BIOGRAPHY

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