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# Tools and Techniques for Decision Making in Healthcare Facilities in Tanzania: Usage, Challenges and Resolutions

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## Abstract

**Background**: Decision making in healthcare involves the use of different tools and techniques which can either be manual or electronic. Despite the efforts by the government and healthcare institutions in the middle- and low-income countries in implementing various technologies including several Health Information Systems, healthcare facilities have been facing several challenges when it comes to decision making by the health workers. The study underlines the landscape of tools and techniques for decision making in the healthcare.

**Methods**: The study was carried out in the Dar Es Salam city of Tanzania. An interpretive qualitative study design was used. In-depth interviews were conducted among healthcare stakeholders including, pharmacists, medical doctors, clinical officers, nurses, managers and receptionists. The interviews targeted to gain a deeper understanding from stakeholders regarding tools and techniques used by healthcare workers for decision making.

**Results**: Many among the tools that many healthcare workers in Tanzania use are manual tools that include clinical guidelines, ICD, HMIS (MTUHA) and some computerized HMIS. Moreover, it has been noted that healthcare workers face a number of challenges when using the tools. Despite the resolutions that clinicians have as solutions to the existing disturbances, challenges still existed.

**Conclusion**: There are several implications that can be drawn from this study to be of interest to the practitioners and researcher communities towards improving decision-making practices in healthcare. Further research may be required to examine antecedents of adopting modern tools and techniques for decision making in healthcare, and this would be helpful in providing novel insights to the concerned stakeholders.

**Keywords:** Decision Support; Decision making; Decision making Tools; Healthcare Facilities.

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## 1. Introduction

Tanzania is among the low- and middle-income countries that make efforts in the use of Information and Communication Technologies (ICT) in transforming the provision of healthcare services. A number of efforts have been done in the improvement of healthcare sector through the use of ICT [1], including the implementation of Health Information Systems (HIS) such as Electronic Health Record Systems (EHRS),Vaccine Information Management System (VIMS), Human Resources for Health Information System (HRHIS) and so many other digital solutions [2]. The use of these digital solution is meant to facilitate the healthcare stakeholders in delivering improved healthcare services and decision making[3] among many other reasons. With evidence-based decisions the healthcare systems performance and quality will be improved [2]. Besides, among the strategic goals guiding the implementation of digital health strategy in Tanzania is to empower healthcare providers and managers to take evidence-based actions [2].

Despite the great success in the implementation and use of HIS in Tanzania, the realisation of the benefits that HIS could offer to the healthcare stakeholders in the healthcare facilities still lags behind expectations. Decision making challenges still exist in the healthcare facilities in Tanzania despite the wide adoption of HIS in the facilities. Challenges such as misdiagnosis [4] for clinical practices, inefficient allocation of resources, failure to adhere to professionalism by the healthcare workers and inefficiency in health service delivery [2] are the result of poor decisions.

Decision making is the process where choices are made through a number of steps that include identification of a decision, gathering information and assessment of alternative solutions. Decision making is very crucial in the delivery and management of health, where patients' needs and expectations are met as well as health management processes are being improved [5]. In the healthcare sector both the medical practitioners and the managers are involved in decision making. However, decision making practice requires healthcare organizations to use tools and techniques capable of improving healthcare delivery. Decision making tools refer to utilities that help decision makers to map out the possible alternatives to making a choice for a number of options. Better tools for decision making in the healthcare settings are the ones that are able to provide right information to the right healthcare workers, through right channels, in the right intervention format and at the right points for decision making or action. Therefore, healthcare facilities in the low- and middle-income countries like Tanzania have to equip themselves with right tools and techniques that will enable them in transforming the raw data collected from various sources into informed actions during healthcare delivery and management.

The tools for decision making in healthcare can either be manual or electronic. Manual tools do

not use computers, but they are tools such as regulations, protocols, policies and procedures, knowledge sources as well as guidelines to support health workers in their decision-making practices. However, with advancement of ICT, electronic computerized tools for decision making are available, and the use is growing with a wide range of applications. The tools can be embedded as a sub system in a HIS or can be standalone.

There are limited studies on tools and techniques for decision making in the healthcare sector in the low- and middle-income countries, specifically, in Tanzania where very little is known on what tools healthcare workers use, the challenges they face on using such tools and their resolutions. Therefore, the aim of this study is to explore the tools and techniques use by healthcare stakeholders in health facilities in Tanzania focusing on the use of such tools, challenges and resolutions. Understanding the tools and techniques might lead to find better ways of improving decision making in the healthcare facilities in Tanzania.

## 2. Subjects and Methods

The study adopted an interpretive qualitative research approach to gain a deeper understanding of the tools and techniques used by healthcare workers for decision making. Hence using this approach researcher was able to understand people's behaviours, attitudes and perceptions towards the use of tools and techniques for decision making in the healthcare facilities in Tanzania.

The study was conducted in Dar Es Salaam region in Tanzania where four healthcare facilities were randomly selected each to represent a level of health system that is dispensary, health centre, district and regional hospitals in order to get a wider picture from all levels of health systems. Healthcare facilities that were studied included Tabata Kisiwani Dispensary, Mburahati Health Center, Vijibweni District Hospital and Mwananyamala Regional Referral Hospital. The study included healthcare stakeholders from the selected healthcare facilities, where nurses, clinical officers, pharmacists, medical doctors and facility managers were involved. The choice of the participants aimed at their understanding of the tools and techniques used by these stakeholders in decision making. A total of 25 respondents were involved in the study as shown in Table 1.

**Table (1) Number of participants in the study**

| Cadre | Frequency |
|---|---|
| Pharmacists | 1 |
| Medical Doctors | 2 |
| Clinical officers | 8 |
| Nurses | 8 |
| Managers | 2 |
| Receptionists | 4 |
| Total | 25 |

Data were collected from the study areas from June to July 2018 and again in March to April 2021. The study employed document review and interview as tools for data collection. The study employed semi-structured and unstructured interviews. Interviews were conducted for the health practitioners from the selected health facilities to get their views on decisions they make during clinical practices and the tools for decision making to achieve desired medical care to their patients. They were also asked about the challenges they face during decision making practices and how they solve them to ensure quality medical care delivery.

Furthermore, the analysis of information available in policies, guidelines, strategies and healthcare programs documents in Tanzania was done. This analysis aimed at supporting the key informants' interviews. Besides, review of other available literatures such as journals, proceedings and books were done.

Moreover, a literature survey was carried to obtain information about decision making tools and techniques that could be employed in healthcare to improve decision making`. The survey of literatures was done using scientific electronic databases.

## 3. Results

The results of this study identify the tools that are used in mediating decision making practices, the challenges that face the health practitioners when using the tools in Tanzania as well as resolutions taken.

### 3.1. TOOLS AND TECHNIQUES USED FOR DECISION MAKING IN HEALTH FACILITIES IN TANZANIA

The study found out that health practitioners use manual tools for decision making even in the facilities that were found to be using computerized Health Information Systems (HIS). Such tools used by health practitioners include guidelines, International Classification of Diseases, books and relevant documents, MTUHA. Besides, there were some electronic tools that were used.

#### *3.1.1. GUIDELINES*

Guidelines are systematically clear statements that are used in assisting health workers to provide health services in accordance with set norms. In Tanzania the healthcare practitioners use these guidelines as tools to guide them in making decision about healthcare. There are a number of guidelines that guide the delivery of healthcare in Tanzania, that include Standard Treatment Guidelines (STGs) that based on the best evidence available in helping healthcare professionals in their practices, without replacing their knowledge and skills. Others include National guidelines for the management of HIV and AIDs, National Guideline for comprehensive care of prevention of mother to child transmission of HIV services and

Antenatal Care guideline (ANC). The Table (2 shows a list of guidelines used by healthcare workers as tools for decision making.

**Table (2) List of guidelines used as tools for decision making by healthcare workers**

| Guideline | Purpose | Practitioner |
|---|---|---|
| Standard treatment guidelines (STG) and essential medicines list (NEMLIT) | The main purpose is to provide standardized healthcare guidance to healthcare practitioners in making decision about appropriate healthcare for specific conditions in Tanzania | Clinicians (Clinical officers, Medical Doctors) |
| National guidelines for the management of HIV and AIDs | The purpose is to "provide details on antiretroviral therapy for adults, Children and pregnant and breastfeeding women". Also, to "provide details on the use of ARV drugs and operational aspects along the cascade of HIV-care related services". | Clinicians and Nurses |
| National Guideline for comprehensive care of prevention of mother to child transmission of HIV services | Purpose is to provide guidance to improve maternal health and prevent Mother to child transmission. | Clinicians and Nurses |
| | Provide guidance for those who care for chronically ill patients at home including people living with HIV and AIDS | Managers, Nurses and clinicians |
| Antenatal Care guideline (ANC) | Purpose is to provide high quality antenatal care to women and their families based on human rights and equity approaches | Supervisors, managers, nurses, clinicians and all staffs taking care of pregnant women |

All clinical officers who were interviewed mentioned about the use of clinical guidelines. The excerpt below was extracted from interview field notes when one clinical officer was interviewed and asked about tools supporting clinical decision making. He spoke

*"Mhhh, in Tanzania I cannot say for sure that there are special tools or algorithms we, doctors use, we just use clinical guidelines that are being prepared by the government of Tanzania through MoHCDGEC" (Clinical Officer)*

The excerpt above acts as an evidence of tools used for decision making used by healthcare practitioners in Tanzania. The researcher was shown STG/NEMLIT by one of clinical officers during the interview. The STG/NEMLIT was of 2013 which was first published in 1991. The edition shown to the researcher was an updated version, which includes new sections on symptoms and syndrome. These STGs have been updated are in consistency with the existing national guidelines for diagnosis and management of common diseases. The STG and NEMLIT have a great purpose of providing health practitioners with standardized guidance in making decisions about appropriate healthcare for specific conditions that are found in Tanzania. Therefore, using STGs, the prescribing practices are rationalized and hence patient

outcomes will be improved while making effective use of the limited resources for medicine. In addition, the NEMLIT to the STG is meant to identify essential medicines for the treatment of common disease conditions in Tanzania.

This means the STG/NEMLIT are very important decision-making tools in Tanzania. It is a set of tools which is meant for quick reference and recommendations for most presentations of the conditions covered. The public and private health workers are thus required to adhere to these Standard Treatment Guidelines, and the document is a very useful tool in management of patient illness.

### *3.1.2 INTERNATIONAL CLASSIFICATION OF DISEASES (ICD)*

These are tools that are maintained by the World Health Organization (WHO) for epidemiology, health management and clinical purposes. These are decision making tools designed as classification system for healthcare where they provide systems of diagnostic codes for disease classifications. ICD "defines the universe of diseases, disorders, injuries and other related health conditions, listed in a comprehensive, hierarchical fashion that allows for easy storage, retrieval and analysis of health information for evidenced-based decision-making, sharing and comparing health information between hospitals, regions, settings and countries and data comparisons in the same location across different time periods"[6]. ICD is a tool for many uses in healthcare decision making, where tools such as codes for full documentation of patient safety that follow the WHO patient framework, the dual coding that is used for diagnosis in traditional medicine and many other suitable uses.

These tools are now available as mobile applications for both android and apple users . With the availability of mobile applications, the physicians are able to find the information they need quickly and hence enable the busy health professionals in decision making.

### *3.1.3 BOOKS AND OTHER RELEVANT MEDICAL DOCUMENTS*

Apart from the intuitive decisions made by health practitioners in normal situations when making clinical judgements they also draw from many sources that include medical documents. Majority of clinicians interviewed admitted to be using books as sources of knowledge.

*"Generally, in clinical practice we rely on medical skills to make clinical decisions such as diagnosis, we got from school and in some cases when we face tricky decisions; we consult books"*

*(Clinical officer)*

The excerpt above indicates that there is a need for assistance when making medical decisions by clinicians. It shows that being a clinician is not an end there are some situations that a health practitioner would require assistance and books might be used as tools to support clinical decision-making practice.

### *3.1.4 HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS)*

HISs are one among the six building blocks of a health system[7-9]. HIS enables decision makers at the health system levels make identification of progress, problems and needs in each level, through making evidence-based decisions on the health policies and programs as well as making optimal allocation of resources in order to improve healthcare. In the healthcare facilities there is the use of either manual or electronic HMIS or combination of both[10].

#### 3.1.4.1 MANUAL HIS (MTUHA)

HMIS in Tanzania in Kiswahili is called MTUHA which is an acronym for "Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya". MTUHA is also a decision-making tool used in Tanzania ,designed to collect facility-based healthcare data, compile ,store and retrieve and produce report which in turn informs healthcare service providers, healthcare managers, policy/decision makers and the public in order to make informed decision on health planning, monitoring and evaluation [11].

The main purpose of MTUHA is to provide each facility with information that allows the healthcare workers to make accurate evaluation and then appropriately make modifications of activities so as the health facility can provide optimal healthcare and prevention for the community. MTUHA assists the management of the health facility by the in-charge and staffs in the healthcare facility.

MTUHA is a manual system that comprise five sets of tools arranged in fifteen books (Book 1 to 15) within the five sets of MTUHA tools and four types of tally sheets and eight different reports (F001 to F008) for facility level as well as district/regional levels. The table below shows MTUHA tools that support decision making.

**Table (3) MTUHA tools that support decision making in health facilities in Tanzania**

| MTUHA tool | Tool Description |
|---|---|
| Set 3: Tally Sheets | Consist of four forms(F201-F204) used at the facility level to summarize health data from the specific service area in a period of time |
| Set 4: Summary Book | It is for compilation of data from different service departments |
| Set 5: Reporting Forms | They are facilities and district report form for providing daily, monthly and annual report. Reports include staff list reports, equipment inventory reports, management reports, maintenance and rehabilitation reports, equipment breakdown reports and notifiable diseases/outbreak(emergency) reports |

3.1.4.2 COMPUTER BASED HMIS

It was found that, some of the facilities use a computerized HMIS called Government of Tanzania Hospital Management Information System (GoTHoMIS) was found to be used in the facility. GoTHoMIS aims at collecting and reporting clinical information (basic patient level) at facility level and support the health facilities in the management of delivery of services. The system incorporates various decision-making functionalities that include tracking inventory of medical supplies, performance of practitioners and reporting MTUHA forms.

### *3.1.5 EXPERIENCE*

Decision making done by health practitioners can either be intuitive or analytical. Sometimes health practitioners require no any tools in decision making, they rely on their intuition in making decision making. For instance, there are decisions that need a short time to be reached or a kind of problem tough and confusing and lack some scientific evidence which will require practitioners to use their intuition. This was revealed by medical doctors and clinical officers. The excerpt below extracted from field notes.

*".....sometimes you need just to trust your clinical judgement, you may be faced with a complex problem and you fail to know where to start, you then decide to do something that you intuitively thought would save your patient……..it is risk but sometimes we better do it because staying without doing anything would be riskier…" (Clinical officer)*

By looking at the excerpt above, its shows that in some cases health practitioners rely not on any tools but just their intuitions in making clinical decisions, especially when they are faced with complex situations. Besides, it indicates the need for having tools that will assistance for clinical decision making in some complex situations such as in the emergency department.

### *3.1.6 CONSULTATIONS WITH COLLEAGUES*

In some situations, a medical practitioner may encounter a patient that may present with unfamiliar problems have not seen for a number of years by a practitioner or not it is not presented in medical documents or even having as very short time to study. Such situations may make health practitioners ask for opinions from their colleagues that differ from their intuition.

*"In some situations, we use techniques such as consulting our fellows and ask them for their opinion in case of complex or unfamiliar problems and together we work out on the problem and we save life…" (Clinical officer)*

## 3.2 CHALLENGES WITH THE CURRENT TOOLS AND TECHNIQUES FOR DECISION MAKING IN THE HEALTHCARE FACILITIES IN TANZANIA

### *3.2.1 CHALLENGES WITH STGS/ NEMLIT*

The STGs offer a number of potential benefits to the patients, healthcare providers, supply managers and the health policy makers. However, disadvantages also do exist that include inaccurate guidelines that may provide wrong information for clinicians and hence may do more harm than good.

Another problem with STGs is on updating the guidelines, where it is time consuming and it must be done frequently on regular schedule, but in Tanzania the updated copies take a very long time to reach the health practitioners hence brings about several disturbances. The use of outdated STG may cause harm to patients as the health practitioners make misdiagnosis and as a result may cause managers in healthcare facilities to unfairly judge the practitioners. In addition, the STGs are produced as hardcopies and only few copies become available. Although softcopies are available on the internet still among the eight (8) clinical officers interviewed five (5) admitted not to have copies of their own.

The following excerpt was extracted from interview field notes asking interviewees about challenges they face when using the current tools for clinical decision-making practices.

*"Yes, they are available in hard copies and are few, for example the one that was released last year still MSD don't have that yet….". (Clinical officer)*

Having few of those guidelines might lead to more challenges where clinicians might find other means when performing their work.

### *3.2.2 CHALLENGES WITH HMIS*

Weak HMIS hinders the possibility of reaching the health-related sustainable development goals especially goal number 3 that ensures health and wellbeing for all, at every stage of life. The HMIS has a number of challenges that need to be addressed so as to improve healthcare management including decision making.

### *3.2.3 CHALLENGES WITH MTUHA*

During discussions with some participants in the study it was clear to the researcher that the healthcare facilities staffs were not aware of MTUHA being a tool for decision making, so staffs fail to appreciate the importance of information in decision making and that MTUHA could be a good source of information. Healthcare workers describe MTUHA as just being a routine system for mere data collection. Besides, the healthcare facilities management had poor knowledge concern MTUHA particularly the books. They are unaware of the fact that MTUHA is also designed for use as hospital management tool to help in decision making.

Another problem with MTUHA is the collection of enormous amounts of data, which is taken as a burden which is unnecessary for people who collect data, this results to a lot of calculation mistakes example lots of calculation mistakes in the monthly tally sheets. The reason for this burden was because the MTUHA system was manual and the filling in of information is not done in real time during healthcare delivery.

Besides, some recent studies conducted in Tanzania have indicated that MTUHA has not been able to help decision makers since MTUHA does not provide reliable data [12]. The issue of quality data hinders MTUHA to be taken as a better tool for decision making. The reasons for such poor-quality data according to these studies include lack of knowledge and skills for data analysis by the healthcare workers responsible for MTUHA and inadequate staff to record medical information.

### *3.2.4 CHALLENGES WITH COMPUTERISED HMIS*

Despite the promising results of using computerized systems in healthcare delivery in Tanzania, still there are challenges that are brought by the use of the systems. Leaving aside the inadequate skills of healthcare workers another challenge is that of increasing workload by these personal that in the end slows down the process. For instance, the study Fritz, Tilahun, & Dugas [13] found out that healthcare workers (clinicians) do not use computerized medical records systems which are essential part of HIS because of the increasing workload where clinician would key in information in the computer system and again produce a physical report.

## 3.3 RESOLUTIONS FOR THE EXISTING CHALLENGES

To resolve challenges that occur when health practitioners engage themselves in decision making practices using the current tools, they use a number of techniques.

### *3.3.1 USE OF MOBILE PHONES*

In resolving the issue of few STGs health practitioners in Tanzania, clinicians have found a way to share the guidelines in PDF files using their mobile phones and they use these guidelines as soft copies when they need and at any time. As he was explaining on the use of CDS tools, one clinical officer said

*".....although these guidelines are few, because of technology we have them in our mobile phones as PDF file". (Clinical officer)*

Here the excerpt shows that to resolve the problem of having few guidelines some doctors with capability to have mobile phones that can hold PDF files can have. This leaves aside those that do not possess mobile phones with the required features.

This excerpt explains the resolution of the problems of few guidelines in the healthcare facilities. It shows that the medical practitioners who have mobile phones that support the capability of storing and

viewing PDF formats. However, this leaves aside those practitioners that do not possess such phones.

### *3.3.2 ONLINE ELECTRONIC DECISION SUPPORT TOOLS*

All other tools mentioned in this study lack automation, therefore health practitioners opt to find some electronic tools to support them in decision making. For instance, the study found out that some practitioners used online electronic sources to support their clinical decision-making practices. During the interviews with health practitioners, it was found that some medical doctors that were interviewed used a website for doctors called Medscape found under the URL https://reference.medscape.com/ as a support tool for decision making. A medical doctor from one of the health facilities was asked about decision making tools he used, he mentioned about Medscape.

*"..... for instance, in some cases I decide to use some information from websites for medical doctors such as Medscape". (Medical Doctor)*

Tools such as Drug interaction checker, pill identifier, calculators, diagnostic support and so many others are provided by the online tool called Medscape. These tools are very essential for medical practitioners, for instance drug interaction check helps practitioner to check for drug interactions since the interactions can affect how medication prescribed by a clinician works by changing levels of the drug in blood. Besides, drug interactions can put a patient at risks for side effects and toxicity. Therefore, such benefits provide by the online tools are the ones that force these practitioners to use online decision tools as resolution to the challenges they face.

## 3.4 LIMITATIONS ON THE RESOLUTIONS BY THE HEALTHCARE WORKERS

In the process of resolving the challenge healthcare workers take different measures as shown in the study. However, the resolutions taken do not real solve the existing challenges but add some additional problems in the decision-making practices. For example, using smartphones for storage and viewing of the clinical guideline cannot be a solution for the guidelines that are out of date. Besides, apart from the fact that not all clinician can have their phones during medical practices, also using smartphone during practices may create a sense of mistrust between clinician and patients.

In addition to that, relying on the use of Medscape website can results into more challenges too. For instance, the fact that Medscape website is not officially recognized tool by the government of Tanzania for clinical decision making is also a challenge. Also, there are so many diseases that are contextual, therefore relying on global tools in facilitating decision making in healthcare sector is a bad idea. There is a need to have a contextual implementation of decision support tools so as to provide effective solution.

## 4. Discussion

This study focused on decision making in healthcare sector where researchers explored tools and techniques used to support decision making in healthcare facilities in Tanzania. The findings of the study found that most of the tools and techniques for decision making in Tanzania to be mainly manual. Health practitioners use manual tools such as clinical guidelines and ICD codes, books, manual HIS, some use their experiences or even consulting their fellow workers while making clinical decision-making practise. Health care managers also rely on the use of a manual HIS called MTUHA. This is in contrast with the countries in the developed world where there are lots of computerised decision support tools that some exists as standalone while others are incorporated in the electronic HIS. The computerised decision-making tools in healthcare provide lots of benefits that include increasing patient safety where medication errors are reduced and other benefits such as computerised alerts and reminders to care providers and patients, electronic clinical guidelines, computerised condition-specific order sets, focused patient data reports and summaries, documentation templates and diagnostic support which cannot be provided by the manual decision tools. Therefore, the use of such computerised decision support tools has great potential to improve patient outcomes that include care and safety as well as to increase efficiency that result in improving health care.

The argument in this study is that in the low and middle income countries the use of computerised HIS is increasing [12], [14] but much is seen on supporting data collection to submit to the higher authorities from the healthcare facilities and not for supporting decision making [15]. The study, extends the understanding of decision making in healthcare in Tanzania, by looking into the tools used by healthcare workers in supporting them in decision making and goes further by looking at the challenges that are caused by the use of such tools in Tanzania. This study has in particular shown the challenges that frontline health workers face as they use existing decision-making tools and techniques that were categorised as manual and electronic. Health practitioners in Tanzania are overburdened by manual tools for clinical decision-making practices despite having computerised HISs. The health facilities that have computerised HISs in Tanzania are many but the computerised HISs in Tanzania do not have full featured and integrated systems to support decision making practices. The implemented HISs in Tanzania collect vast amounts of data [16] . However, collecting valuable information by health facilities does not provide any benefits for decision making unless when leveraged to drive decision making [17] in the healthcare sector. Therefore, for healthcare facilities to benefit from the valuable information collected by these systems, they have to turn such data into meaningful information using techniques that would support healthcare functions such as clinical decision making. Decision making practices in Tanzania, requires

improvement through the use of analytical techniques. To improve decision making practices, the healthcare facilities have to take advantage of the large amounts of data collected by the HISs. The health data that are collected by several of HISs might be subjected to the use of some advanced techniques to discover knowledge and hence enable evidence-based decision making. Such techniques which are known as data analytics techniques, are capable of analysing and interpreting large scale and complex data for a number of applications such as decision support[18]. Despite the fact that there are many HISs that have been implemented in Tanzania, like in many other LMICs, the utilization of such data for improving decision making in healthcare has been weak, [19] because of the fact that medical data are more complex and difficult to analyse [14]. Data analytics techniques might be used to improve the less sophisticated, HISs in the health facilities in Tanzania, by making use of health data collected.

Therefore, this study is useful to the policy makers and information system developers in the health sector to devise effective considerations on policies related to HISs so as to benefit from the availability of advanced techniques that can be used to improve health care. The study also creates awareness on the importance of having better tools that ensure adequate use of data collected in the healthcare facilities to support decision making.

The study might be constrained by inadequacy of fund to cover a larger sample in the region. However, there was a systematic and careful selection of the participants that enabled researchers to collect sufficient data for the study. Another issue was the fact that some respondents were reluctant to provide information during the study as they feared their positions. However , ethical issues were taken into consideration including informing the informants on the purpose of the study and in the study no real names of participants were revealed instead terms such as clinical officer, nurse or doctor were used.

## 5. Conclusion

The findings from this study have revealed that tools and techniques for decision making have not been adopted widely in healthcare. Healthcare practitioners are still maneuvering decision-making practices through their experience and non-computerized techniques. This could be an implication that the importance and awareness of best practices for decision-making processes are greatly undermined. We argue that such notions pose a very real threat to the quality of healthcare decision making. It is imperative for future work to examine the antecedents of the healthcare practitioners on adoption and continuing using computerized tools to support the decision-making process.

## 6. Declarations

### 6.1 Conflict of Interest Statement

The authors have no conflict of interests to declare.

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