

Sudan National Health Information System: Assessment of Resources at Federal Level-2014

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Abstract

Background: Health information system (HIS) is an integral part of the national health system and an important tool of management and a key input for evidence based decision making. Improvement in health information system cannot be achieved unless there are sound policies, legislations and regulations to govern its function. Attention to capacity building and emerging technologies is also essential. This paper aims to investigate the health information resources at the national level; it focus on the information policies, human resources and communication infrastructures.

Methods: This was a descriptive cross sectional study covering the Federal Ministry of Health (FMOH) directorates. Desk review of relevant government documents was carried out using a standard checklist for existence, endorsement and implementation. A pre-tested questionnaire was used and in-depth interviews were conducted. Collected data was analyzed using Statistical Package for Social Sciences (SPSS) version 20 and the evaluation matrix.

Results: The HIS strategic plan of 2012-2016 was found to be endorsed and implementation moving according to plan. HIS units were available in 89.5% of the directorates .Assessment of infrastructure for HIS showed the availability of furnished offices to be just 63.2% with 15.8%

having a good working environment. Federal information units suffer from lack of statisticians and information technicians and a serious shortage of demographers and only 57% of the workforce received the basic statistical training.

Conclusion: The system has no written regulations to ensure the perfect functioning of HIS and the integrity of national statistical services. Federal unit have shortage in demographer and statisticians. Continuous and refreshing training program are not adequate at all, little attention is given to systematic training on ICD-10 usage. The level of using computers for information analysis is good.

Keywords :Health Information System (HIS), Health Information; Research & Evidence center (HIRE), Federal Ministry Of Health (FMOH).

INTRODUCTION:

Health information is an integral part of the national health system. It is a basic tool of management and a key input for the progress of any society. A health information system (HIS) is defined as : “ a mechanism for the collection, processing, analysis and transmission of information required for organizing and operating health services, and also for research and training”⁽¹⁾

HIS can also be defined as a set of elements (resources, technology, organization and processes) aimed at producing information on health and the health Sector , or a set of uses, standards , responsibilities, procedures, resources , and purposes that have been determined legally, normatively, or administratively to produce information. Health information systems are increasingly recognized as the central nervous system of the health sector. Information use in decision making is essential to improve health system performance, accountability and health outcomes. Certain prerequisites need to be in place as resources for a well- functioning HIS; these include: coordination and leadership, information policies, financial resources, human resources and communications infrastructures.

Availability and training of the HIS staff is the key factor for productive efficiency⁽²⁾.

The Sudan HIS is one of the first information systems established in the region. It has a bottom-up approach where data collected from facilities is compiled at locality/district level and relayed to State Ministry of Health where it is consolidated for transmission to Federal Ministry of Health (FMOH). The process is almost entirely manual, and the filled forms are used to produce periodic and annual reports.

The Health Information System (HIS) Assessment carried out in 2007 under the Health Metric Network (HMN) project found the existing system being too fragmented and deficient to support management functions and informing the planning and policy making in a meaningful way⁽²⁾.

The HIS in Sudan is characterized by being facility based system and moreover largely fragmented, due to parallel reporting structures and information sub-systems implemented by vertical disease-specific programs, which seldom get consolidated due to the poor coordination mechanisms. Moreover the community information is not targeted in the system. Community level information are pooled or not collected in the health information system. However some vertical programs collect data for their own activities at the community level but stop short of disseminating their findings to other programs or the information center. In addition information from the private health facilities are still not covered by the National Health Information System (NHIS).

A well functioning HIS that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status, all of these components contribute to a better health policy and planning, health resources allocation, health service delivery and finally, health outcome.

Effective plans need to be supported by a coherent background, a refined NHIS design, clear goals and objectives, estimates of the required resource, timetable and the steps of the implementation process.

Policies are embodied in a variety of instruments whether these are legal (laws, regulations) professional (ethics, codes of conduct) or cultural (customs, social values). Policy deals with a variety of aspects including privacy, security, confidentiality and reliability. This latter policy should be compatible with the general framework of the national information policy⁽³⁾.

There should be an institutional policy defining the respective roles of health and statistics institutions to ensure the independence of data from external influences, and to facilitate accountability.

Human resources are the national technical expertise and leadership, sub national expertise to ensure observation of data- quality standards and data use. Improvement in health information system cannot be achieved unless attention is paid to the training, deployment, remuneration and career development of human resources at all levels. At national level, skilled epidemiologists, statisticians and demographers are needed to oversee data quality and standards for collection, and to ensure the appropriate analysis and utilization of information.

Information and Communication Technology (ICT) has an ever going impact on health information system "technological innovations are opening new opportunities for improving availability of real-time data managing, huge data based and linking systems for sharing data"⁽⁴⁾.

Emerging technologies can help countries to dramatically increase their storage and performance capacities and accelerate the processing timeframes previously required. It greatly reduces the time required for processing data at the district, regional, and national levels, as well as the number of errors inherent in a manual process⁽⁵⁾.

Ideally, at both national and subnational levels, health managers should have access to an information infrastructure that includes computers, e-mail and Internet access. All facilities should have such connectivity, but this is a long-term objective in most developing countries.

An assessment for the Health Information System was conducted in 2007 using HMN tool. The overall result of the assessment was : not adequate , accordingly a strategy was developed in 2007 - 2011. Achievement and progress in implementation have been judged to be minimal. This condition has raised a crucial question to find out the causes that are pulling back the system. Also HIS must be evaluated regularly to guarantee the development of an effective HIS that produces nationwide , integrated and needed health information.

This paper aims to investigate the health information resources at the national level, it focus on the information policies, human resources and communication infrastructures.

METHODOLOGY:

This is was a descriptive cross sectional institutional based study. It was conducted in the FMOH Directorates and the Health Information; Research and Evidence center (HIRE) which recently replaced the National Health Information Centre (NHIS). HIRE comprises five units: Statistical Department, Information Technology Department, Sudan Health Observatory, Monitoring and Evaluation Department and Research Unit. The study population was covered totally and included: Managers of units at FMOH, Directorate of Planning and Statisticians plus all the available governing documents (policies, strategy, reports and guidelines. Data on regulation; legislation were acquired through a standardized administered questionnaire with close and open questions that was pretested; Desk review of official documents related to the policy, strategy and guidelines was conducted through a checklist including existence, endorsement and implementation of the documents; In depth interview with both the Director of Health Information, Research and Evidence (HIRE), and the deputy director of HIC, Health Information managers and Directorate of planning; for in-depth interview guidance The data were collected by the researcher and well trained 7 statisticians. Data were then analyzed by computer using SPSS version 20.

Ethical clearance was obtained from the Institutional Review Board at Al-Neelain University and the National Research Ethics Committee (RECS) at the Federal Ministry of health. Permissions were obtained from the concerned departments and an informed consent was obtained from each study participant prior to the interview.

RESULTS:

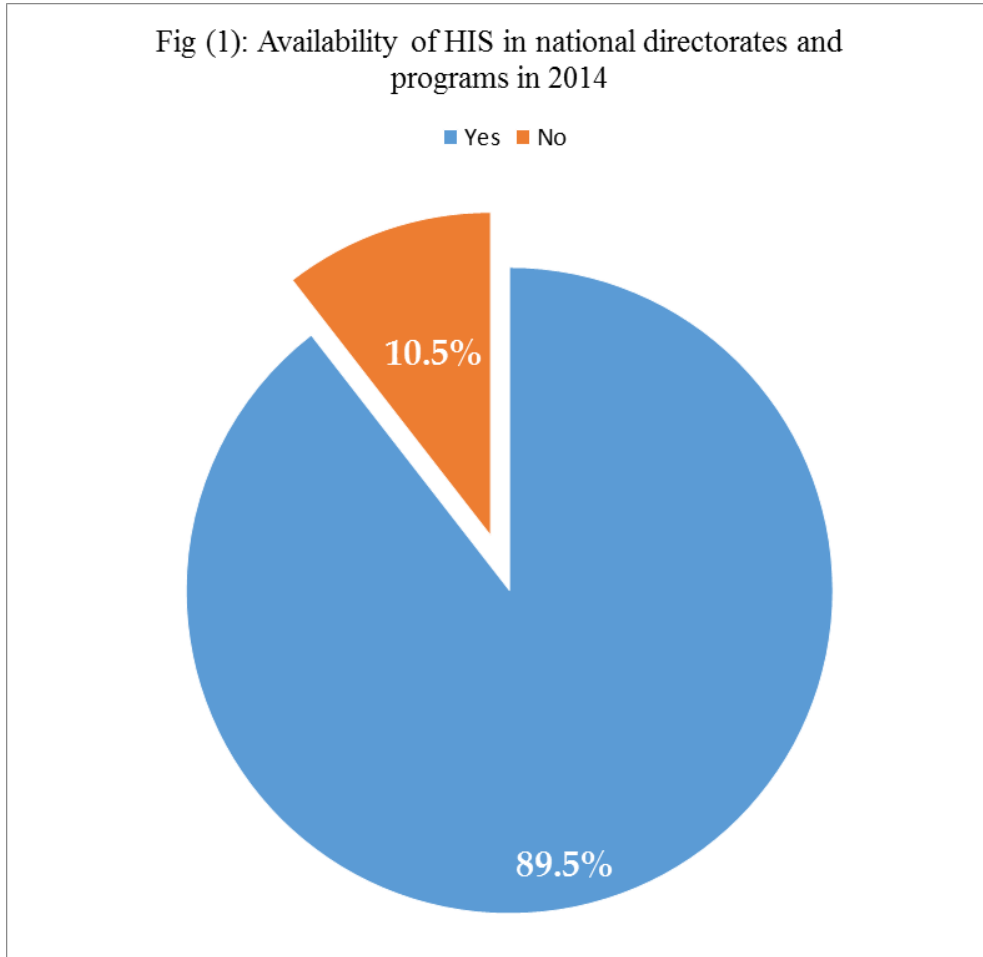
Table (1) shows the availability and status of HIS documents; since 2007 all the health policies have address the HIS but unfortunately only the strategic plan of 2012-2016 was endorsed and implemented moving according to plan; And according to the scoring system used the coordination mechanism had only 50% just like the policy of 2012-2016 which were not indorsed and not implemented at all, both of the policy and the strategic of 2007-2011 were Partially implemented 75%.Table (2) shows the availability of health laws related to HIS at the National laws and policies. Fig (1) shows the availability of HIS in national directorates and programs; but the availability of furnished offices in them were just 63.2%; the status of HIS working environment in them were just above the average 47.4% and 5.3% were below the average and just 15.8% were in a good working environment; only 63.2% of localities information units are available in national directorates and programs, and just 15.8% have workforce more than ten while 42.1% have less than five; the availability of technical staff cover about 68.4% .

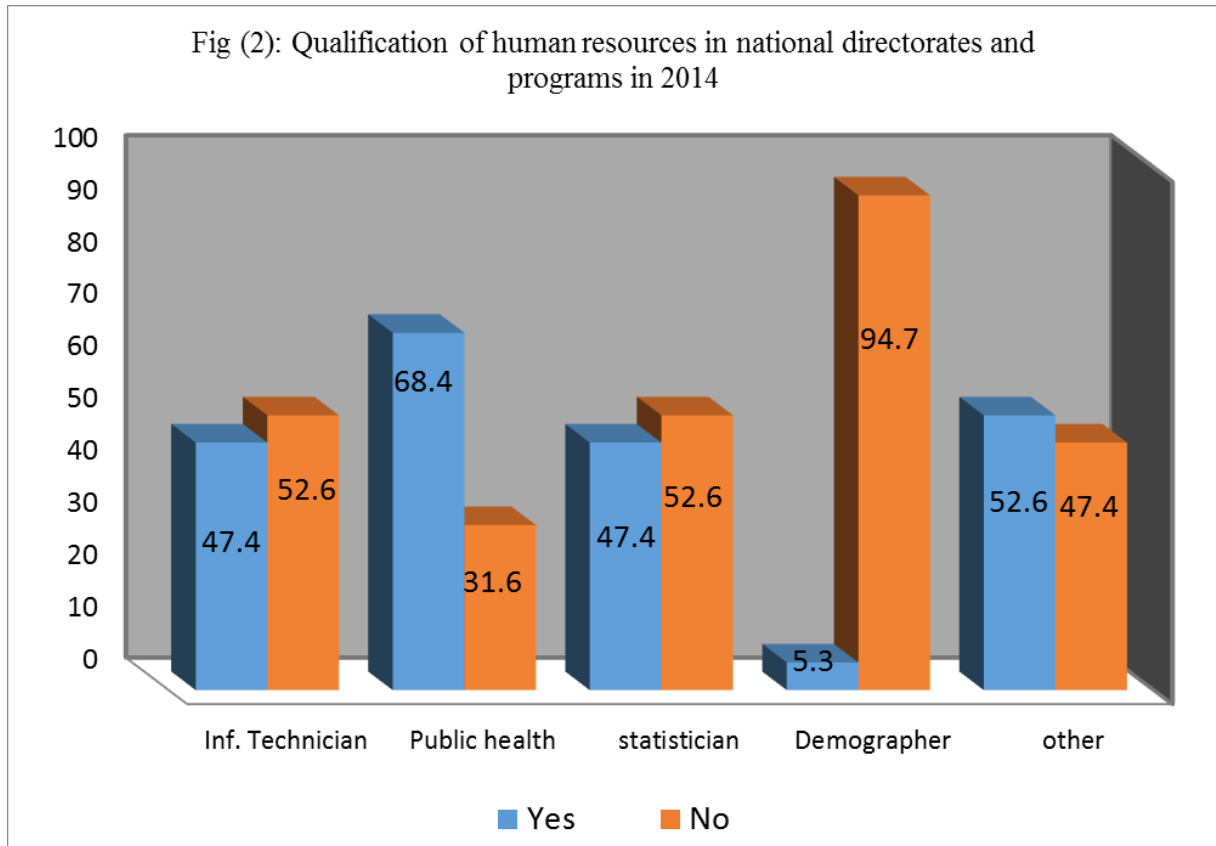
Regarding available human resources, the qualification of health information system staff in national directorates and programs is shown in fig (2) while fig (3) shows years of experience. It was also found that 57% of the workers received basic statistical training and courses like basic computer, Excel and SPSS with a 63.2% coverage; but only 10.2% received training about the ICD-10 coding. Table (3) shows the availability of information communication infrastructure in national directorates and programs. The summary of the In-depth interview with director of HIRE as follow: At present, HIRE Directorate represents the functional NHIC in ministry of health to design, develop and support health – information collection, management, analysis, dissemination and use for planning and management. Availability of computers and ICD infrastructure in HIRE directorate is quite adequate. Both paper based and electronic based data storage are used. The HIRE is responsible for training information Statistical staff. This was done by a training center (Health statistical technicians training center (HSTTC)) established in 1976 in collaboration with WHO. In 2013, all training courses at HSTTC were stopped, and it was suggested to transfer all training courses with their modules to the health training institution: continuous professional development (CPD), the Public Health Institutes (PHI) and the intermediate diploma (3years) to the Health Science Academy. Communications with training institutions are going on so as to adopt the health statistical and information technicians training. DHIS-2 was customized to the Sudanese needs and context. It was decided that implementation should cover all the states. The core team of trainers and operators was trained (basic and advanced) abroad and through TOT and building capacity workshops locally.

Table (1) Availability and status of HIS documents				
HIS Documents	Availability	Endorsement	implementation	Comments
Policy 2007 -2011				Partially implemented
Policy 2012 -2016				Nether indorsed or implemented
Strategies plan 2007-2011				Partially implemented
Strategies plan 2012-2016				Up to plan
Coordination mechanism				Nether indorsed or implemented
Green= fully functioning Yellow= partially functioning Red= not functioning				

Table (2): Availability of health laws related to HIS

No.	Laws	Very strongly related to HIS	strongly related to HIS	HIS not mentioned
1	The Public Health Act. – 2008	√		
2	The Civil Registration Act.- 2011		√	
3	Statistics Law – 2003		√	
4	National Information Centre Law -1999		√	
5	National Information Centre Law -1999		√	
6	The National Environmental Health Law – 2009		√	
7	Public health Protection law - Khartoum State			√
8	Prohibition of the use of Potassium Bromide Law - 2004			√
9	The Medical Council Law 1992			√





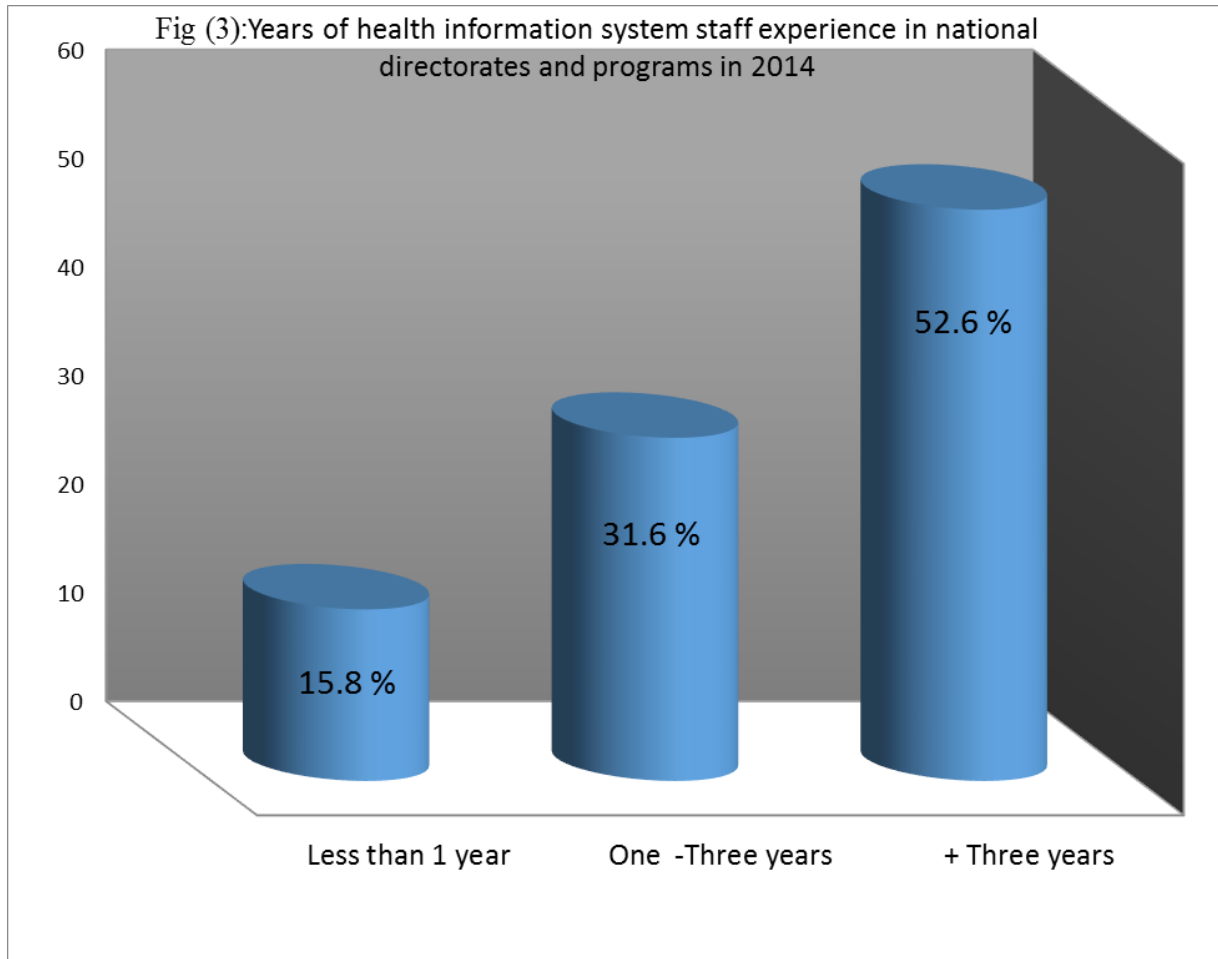


Table (3) Availability of information communication infrastructure				
Information communication		Printer	Telephone	Fax
Yes	No.	19	13	7
	%	100	68.4	36.8
No	No.	0	6	12
	%	0	31.6	63.2
Total	No.	19	19	19
	%	100	100	100

DISCUSSION:

The study showed that the previous NHIS policy documents and the 5 years National Health Information Strategic Plan were produced in 2007 for the period (2007-2011). Both documents were endorsed and partially implemented (Table 1). The HIS policy has been reviewed since 2013 to cover the period (2012-2016), but not yet endorsed or implemented to be a guide towards system reform. The NHIS strategic plan for the period 2012-2016 has been developed, endorsed and put into action with focus on integration; improving reporting and data quality, computerizing the system, and building the human and infrastructure capacity. The NHIS policies, plans and projects were developed in line with local, subnational and national strategic health plans⁽²⁾. National and health laws related to HIS are available, but no HIS regulation has been enacted yet. The National Public Health Act 2008: covered the establishment of national

health statistics system, the notification of notified diseases and the commitment of all health institution- public and private to have well kept information registers, regarding confidentiality and easy retrieval for concerned users and producers of health services. The Civil Register Act 2011: covers the registration of birth and death events in the country and the issue of their legal documents. The Statistical Law 2003: covers statistics procedures (population census) and household surveys. National Information Centre Law 2009; covers the coordination, development and technical supervision of federal ministries information systems ICT sets and internets.

Manuals, guidelines and procedures for HIS functioning are available, but still there is a great need for legal regulations. Policy weaknesses include inadequate legislation, absence of a national strategic plan, and functioning coordination mechanisms. A particular weakness identified was the absence of a regulatory framework to ensure that the private healthcare sector was part of the health information system⁽⁶⁾. It is also important to adopt and keep clear rules, responsibilities, and standards for the health information system⁽⁷⁾.

Many of the federal units have technical staff; information technicians; public health, and statisticians but only one unit has a demographer. The workforce of 10 units (52.6%) has more than 3 years of experience; 11 units (57%) have members with basic statistical training and only 2 units have members trained on the International Classification of Disease (ICD). The lack of adequate numbers of HIS staff with sufficient skill with respect to computer literacy and HIS issues emerge as a universal problem. Staff lack training, clear career development pathways, and motivation. Remuneration systems are poor and donors or the private sector often lure away the best staff⁽⁵⁾. Federal information units suffer from lack of statisticians and information technicians and a serious shortage of demographers (fig 2). Although ICD practices are essential for HIS activities, training on ICD is greatly neglected. The purpose of the ICD is to allow the systematic recording, analysis, interpretation and comparison of mortality and morbidity data. Both Sri Lanka and the Philippines have implemented ICD-10, but both countries still need to improve their cause- of –death data. This is not only because a relatively high proportion of people who die are not medically certified (Sri Lanka) or are not certified by the attending doctor (Philippines), but also because doctors do not always bother, or have not been trained, to certify carefully or fill in the death certificate correctly. In neither country is much known about the quality of cause- of- death certification or mortality coding, since no validation studies of either have been undertaken⁽⁸⁾. Thus, for a health information system to produce valid, reliable, and useful information, staff skills must be built and maintained through initial training, regular refresher courses, and regular follow- up with supervision⁽⁵⁾. Moreover, Training must be aimed at improving qualifications, not just the acquisition or maintenance of skill; this will improve the status of health information workers in relation to other health workers; unfortunately Training facilities and training resources for health information staff and statistics are not adequate at all. HSTTC the training center that was established to qualify statistical technicians has stopped

functioning, since 2013 and the suggestion to transfer all courses and modules to health training institutions has not been implemented yet.

The availability of computers and other ICT equipment at locality and health facility levels are scarce, a challenge that occurs even in developing countries. While most health units in industrialized countries now have access to computer equipment, in many developing countries computers are still not available at the district level. Yet rapidly developing computer technology will make health information systems increasingly effective and powerful management tools for the health services. Computer equipment is becoming more affordable ⁽⁹⁾.

A comparison of data sources results with the overall assessment of data sources in 2007 HMN Sudan HIS review and assessment which was present but not adequate, shows that population based sources has witnessed some improvement: census 2008, civil registration acts 2011 and population surveys 2006-2010, are conducted and put in action.

CONCLUSION:

The HIS national policy for the period 2012-2016 has been formulated but not endorsed or disseminated in order to be implemented. Generally, coordination is deficient and there is no representative national committee in charge of HIS. The system currently has no written regulations to ensure the perfect functioning of HIS and the integrity of national statistical services. Finalization, endorsement and implementation of the HIS policy to define the respective roles of health and statistics institutions all over the country is therefore essential and will improve coordination mechanisms. Formulation and endorsement of a functioning representative national committee to guide the development and maintenance of the health information system together with enactment of detailed legal regulations covering fundamental principles of the HIS is recommended. Strengthening capacity building activities with focus on information sciences, data analysis and use together with improvement of ICT infrastructure is of great importance.

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