

**Evaluation of data accuracy of Health Information System
At the Locality level - Khartoum State ,2011-2012**

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ABSTRACT:

Background:

Introduction Health Information System is the system that integrates data collection, processing, reporting and use of the information necessary for improving health services. It's actually a crucial determinant for health planners to implement and distribute health services in balance equitable way in the society

The overall aim of this study is to investigate the quality of health information system in Khartoum State at different administrative levels during 2011-2012.

METHODOLOGY

The study was a descriptive cross sectional health facility based study, characterized by two stage cluster sample. It was limited to three randomly selected localities namely, Khartoum, Omdurman and Sharg Elneel. The sample size of health centers was 93 health centers. The health centers represented three categories namely: governmental health centers (42), non-governmental organizations centers (46) and only five private centers. Direct Interviews were conducted with (93) medical directors and (93) statistical technicians at the health centers through pre-tested standardized administered questionnaire.

In-depth interviews were carried out with the managers and statistical technicians at the health team, locality and State Ministry of Health levels. A standard checklist was used to review the statistical monthly reports and the infrastructures of the statistical units at the health centers. The data was analyzed by using SPSS version 11, and chi-square test was used to find correlation. P value < 0.05 is considered significant.

RESULTS

The study revealed that the statistical monthly reports of the year 2010 were not up to the required standard of accuracy. The percentage of statisticians using tally tables at the governmental centers was (21.4%) while in NGOs centers, it was (37%) and (40%) at the private centers. This study showed that there was an evident accuracy of the information of the statistical

monthly report of the year 2010, regarding the diseases reported in outpatient clinic of the health centers.

CONCLUSION

The study concluded that the health information system was inadequately functioning at the locality level in Khartoum State. There were many loopholes and negative aspects that need to be managed, mainly the inaccuracy of the statistical monthly report.

مستخلص الدراسة

خلفية: نظام المعلومات الصحية هو آلية لجمع ومعالجة وتحليل البيانات ونقل المعلومات التي تحتاج إليها جميع مستويات إدارات الخدمات الصحية ومجالات التدريب والبحوث والقطاعات ذات الصلة لتوظيفها والاستفادة منها في العملية الإدارية ووضع الخطط والاستراتيجيات

الاهداف: تقييم جودة المعلومات الصحية على المستويات الادارية المختلفة بولاية الخرطوم خلال العام ٢٠١١-٢٠١٢.

المنهج البحثي:

هذه دراسة وصفية على مستوى المؤسسات الصحية, تميزت بأسلوب عينة عنقودية من مرحلتين. وقد تم تحديد البحث ليشمل ثلاث محليات تم اختيارها عشوائيا وهي تحديدا محلية الخرطوم, امدرمان وشرق النيل. ولقد كان حجم العينة بالنسبة للمراكز الصحية (٩٣) مركز صحي تم توزيعها الى ثلاث مجموعات كلاتي (٤٢) مركز صحي حكومي، (٤٦) مراكز منظمات، (٥) مراكز خاصة حسب التوزيع النسبي. اجريت المقابلات الفردية مع (٩٣) مدير طبي و(٩٣) احصائي بالمراكز الصحية عن طريق استبيانات صممت لهذا الغرض. كما أجريت المقابلات الشخصية مع مدراء الرعاية الصحية الأولية والإحصائيين على مستوى الفرق الصحية والمحلية ورئاسة وزارة الصحة الولائية. كما تمت مراجعة التقارير الاحصائية وملاحظة البنية التحتية لوحدات الإحصاء بالمراكز الصحية عن طريق قائمة ضبط.

النتائج:

اظهرت الدراسة ان التقارير الاحصائية الشهرية للعام ٢٠١٠ لم تكن بالمستوى المطلوب من الدقة. شكلت وقد وجد ان الاحصائيين الذين يستعملون نظام الحزمة لتصنيف في المراكز الحكومية لا يتجاوز %٤٠.٢١ بينما ترتفع النسبة في مراكز المنظمات الى %٣٧ والمراكز الخاصة الى %٤٠. كما اوضحت الدراسة مستوى ملحوظ من عدم دقة المعلومات الصحية بالتقرير الاحصائي الشهري للعام ٢٠١٠ فيما يتعلق بالامراض الموجودة بسجل العيادة الخارجية بالمراكز الصحية.

الخلاصة:

ان نظام المعلومات الصحية لا يعمل بالصورة المطلوبة بمحليات ولاية الخرطوم حيث ان هناك بعض السلبيات (الصعوبات) التي تحتاج الى دعم اهمها عدم دقة التقارير الاحصائية الشهرية.

Introduction

Health information system is usually defined as an integral effort to collect, process, report and use of health information to influence policy-making programs action and research⁽¹⁾. It is a basic tool of health management and a key input for the progress of any society. Health

information is an integral part and one of the six building blocks of the health system⁽¹⁾The ultimate goal of health information is to timely generate, analyze and disseminate sound data for public health decision making.

Data quality refers to” data that is accurate, valid, reliable, relevant, legible, complete and available in a timely manner to decision-makers for healthcare delivery and planning purposes⁽²⁾.

Data quality also refers to data that is fit for purpose or “fit for use”⁽³⁾The Fundamental principles for data quality include accuracy, completeness and timeliness (3).

Data quality has become an important issue, not only because of its importance on promoting high standards of patient care, but also because of its impact on governmental budgets for the provision of health services. Accurate, timely and accessible health care data play a vital role in the planning, developing and maintaining health services.

The Federal Ministry of Health is responsible for national health planning. It is also responsible for laying out strategic plans for providing health services and annual evaluation of the effectiveness of these services. State Ministry of Health is shouldering the responsibility of providing health services to state level. Hospitals, localities, primary health care units are under the technical Supervision of the State Ministry of health-Khartoum Sudan⁽⁴⁾.

Locality is administrative and functional level where the health information is interpreted and used for bottom planning. The health information is collected and compiled from different types of health units. Statisticians are responsible for organization, classification and preparation of the monthly statistical reports. These statistical reports are sent from locality level to the local health system department at the State Ministry of Health .The overall aim of this article is to investigate the quality of the health information system in the term of the accuracy of statistical monthly report2010 at Khartoum State localities.

METHODS:

A descriptive facility based, study was conducted at Khartoum State localities. Khartoum is the National Capital of Sudan. Khartoum State consists of seven localities and 450 health center⁽⁵⁾. The health center is a health unit responsible for the provision of primary health care services, including preventive services such as immunization ,antenatal care, family planning, diarrheal control and health awareness programs⁽⁵⁾.There are three types of health centers, namely, Governmental, Private and. Non-Governmental Organizations Center.

A standard checklist was develop and pretested tested in10 HCs for correction and finalization.(93)checklist were distributed to (93) statistical section including the three types of health centers. The check list was used to review the statistical monthly reports; the main variables were about accuracy, completeness and the available working facilities and infrastructures. Arabic language was used for the chick list and translated into English language. An informed consent will obtained from different administrative levels, for the ethical approval. Data was analyzed using SPSS version 11, and chi-square test was used to

find correlation. P value < 0.05 is considered significant.

The accuracy of information in the reports was assessed by matching the randomly selected (monthly) reports from the annual statistical monthly report of the year 2010) and the opposing register books for 2010.the accuracy of the information was assessed by three items ⁽⁶⁾.

1. Compilation of data using tally table
2. Matching of total number of diseases in the reports to the total number in opposing register books.
3. Matching of total number of Malaria cases in the reports to the total number in opposing register books (one disease selected randomly).

Accuracy was assessed regarding items 2 and 3 by either accurate (matched) and inaccurate (not matched).

The principle is to verify the reported information on coverage data, that is, to compare the data available from one level (a form, report, chart, etc.) against the same information that has been collated or reported at a more central level. ⁽⁶⁾

Results:

Table (1): Compilation of Data by Using Tally Table Technique in different health Centers at the Selected Localities- Khartoum State2011-2012

Health centers	Compilation of Data by Using Tally Table Technique in Different Health Centers at the Selected Localities- Khartoum State 2011-2012		Total
	Used	Not used	
Governmental	9 21.4%	33 78.6%	42 100%
NGOs	17 37.0%	29 63.0%	46 100%
Private	2 40.0%	3 60.0%	5 100%
Total	28 30.1%	65 69.9%	93 100%

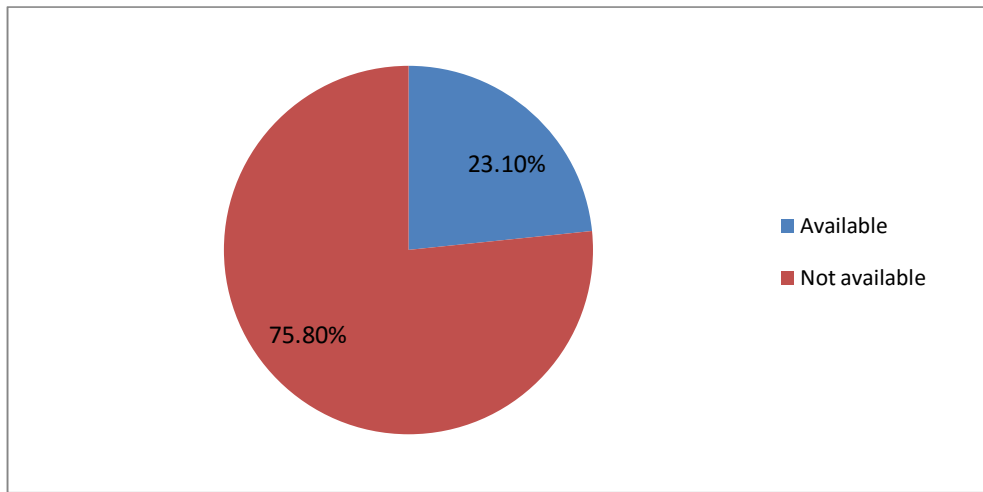


Fig (I): Availability of the Tally Sheets(Papers)at the Statistical Units at Different Types of Health Centers at the Selected Localities - Khartoum State 2011-2012

Table (2): Accuracy of the monthly statistical report (2010) at Different Types of Health Centers at the Selected Localities - Khartoum State 2011-2012

Health centers	Matching of total number of diseases in the register book(at outpatient clinic) of the year2010 to the total number revealed in the final diseases report of the year 2010		Total
	Matched	Not matched	
Governmental	16 38.1%	26 61.9%	42 100%
NGOs	15 32.6%	31 67.3%	46 100%
Private	2 40.0%	3 60.0%	5 100%
Total	33 35.4%	60 64.5%	93 100%

P value> 0.05

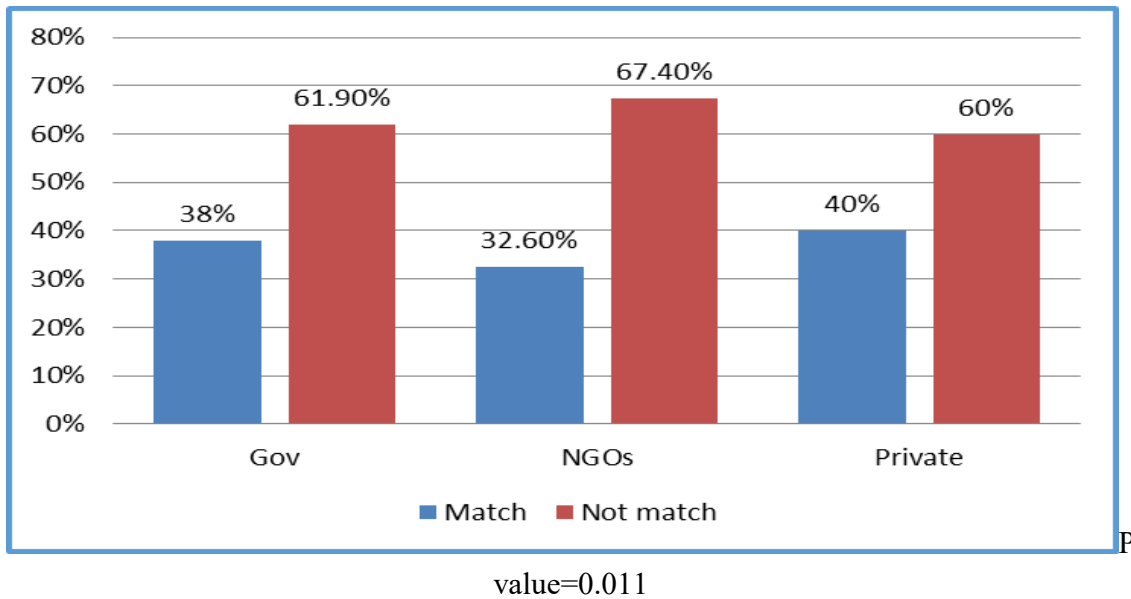


Fig. (II): Matching of the Total Number of the Confirmed Malaria Cases in the Registry Book to the Total Number with in the Final Report 2010-211.

Table (3): Availability of the outpatient registry books(2010) at the Statistical Units at Different Types of Health Centers at the Selected Localities - Khartoum State 2011-2012

Outpatient registry book 2010	Frequency	Percentage
Available	89	95.6%
Not available	4	4.3%
Total	93	100%

DISCUSSION:

This study showed that the statisticians at the health centers were not using tally table to classify data .This problem was more obvious in the governmental centers than in NGOs and the private centers. (78.6%) of the GOV Centers were not using tally table while about (60%) in the NGOs and private centers never used the technique (table1).Only (23.1%) of the tally paper sheets were available at the statistical units fig(I).Using tally tables to compile and classify data is an important tool and technique in the classification of data and it is a criterion improvement of data quality⁽⁷⁾. Usage of tally chart and computer programs will ensure higher levels of accuracy, by

the statisticians, involved in the system. (95.6%) of the outpatient registry book for the year 2010 were available and stored at the statistical units (Table 3).

To compare the situation of accuracy in other countries we found that in Tanzania, they are in a better position in making use of tally tables besides the register books and the forms. In spite of the fact that “health workers at health facilities report incorrect data on the total number of patients attended”⁽⁸⁾; one of the major problems they were facing was the shortage of registers books and the working staff. The situation in South Africa does not differ much from Tanzania regarding the quality and tools of the collected data⁽⁹⁾.

This study addressed the issue of the accuracy by matching the number of the diseases reporting to the health centers (that reported at the outpatient clinic) and the number of the diseases revealed in the final report.

It was found that information collected at private health centers (40%) were relatively accurate than the governmental (38%) and the NGOs centers (32.6%). (table 2). No significant differences in matching diseases for accuracy between different types of health centers, as (P value > 0, 05). The total number of malaria cases at the outpatient registry book, was compared to the total number of the same disease reported in the Final disease report⁽⁶⁾. The governmental centers recorded (61.9%) of inaccuracy. The NGOs (67.1%) and the private centers (60%) (Fig II) There was significant differences between these types of health centers in the accurate number of the malaria cases when matched with the source (p.value 0.011).

This problem of data accuracy was clearly obvious in all types of health centers. Accuracy is the most important factor that helps planners to take objective decisions. “Accuracy will tell where the best places are worthy of spending money and what kind of efforts are required to make improvement”⁽⁹⁾.

CONCLUSION

The study concluded that many problems (constraints) were facing the process of data quality, mainly the accuracy of data. It revealed that the health information system at the locality level require greater attention in order to be effective in using and managing health information for the improvement of health care services.

DISCLOSURES

No conflicts of interest, financial and others are declared by the author.

AUTHOR CONTRIBUTIONS

Author contributions: W.B.M. conception and design of research;
W. B. M. analyzed and interpreted data result; W. B. M. Drafted manuscript; and M. K. M. E. edited and revised manuscript; M. K. M. E. approved final version of manuscript.

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