

**DATA QUALITY OF HEALTH INFORMATION SYSTEM AT KHARTOUM STATE  
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Article Received on 08/01/2016

Article Revised on 27/01/2016

Article Accepted on 20/02/2016

**ABSTRACT**

The study was conducted at Khartoum state health centers in Sudan to assess quality of data in Health Information System. This was a comparative cross sectional - facility - based study, two localities were randomly selected (Bahry and Sharqelnil) where Bahry is urban and Sharqelnil were rural or (semi - urban) which were chosen by multi-stage random sampling from each locality. The data were collected by interview with health system service providers, key-informants (the directors of health centers) for obtaining data on the health system, check-list, focus group discussion with statistician (report writer) and in-depth interview with concerned personnel (directors of health affairs in the two localities and the directors of health information system in state ministry of health (SMOH) and federal ministry of health (FMOH). Data was computed and analyzed by SPSS software. Frequencies and proportion were calculated. The study shows that the majority of out-patient registration books were 13(72.2%) were not complete. Two thirds 4(66.7%) of the centers that have birth registration books were not complete. Exactly half 4 (50%) of nutritional registration books were not complete. More than two thirds 7(70%) of the center that have reproductive health registration books were not complete. More than two thirds 13(72.2%) of epidemiological registration books were complete. More than two thirds 13(72.2%) of out-patient registration books were not accurate. The study recommended that the state should conduct intensive frequent training on all the essential components of data management. Namely: health indicators definition and interpretation, use of data tools, recording data, file storage and retrieval, data compilation and analysis, data validation and reporting, supportive supervision should be oriented in all aspects of data management to enable them to provide technical assistance for data quality improvement.

**KEYWORDS:** quality of data utilized in the system.**INTRODUCTION**

Reliable and accurate public health information is essential for monitoring health and for evaluating and improving the delivery of healthcare services and program<sup>[1-4]</sup> most errors can be attributed to management failures, faulty system, unhelpful processes and poor training and guidance for staff. As countries report their progress towards achieving the United Nations Millennium Development goals. The need for high-quality data has never been greater<sup>[5,6]</sup> furthermore. Funding and support for public health activities, such as immunization programs. Remain contingent on demonstrating coverage using routine statistics.<sup>[7]</sup> however, assuring the quality of health information system remains a challenge. Studies of public health information system in resource-poor countries frequently document problems with data quality, such as incomplete records and untimely reporting.<sup>[8,9]</sup> yet these system are often the only data sources available for the continuous, routine monitoring of health program.<sup>[10,11]</sup>

**METHODS****Study design**

This was a comparative cross sectional-facility-based study.

**Study area**

Khartoum state constitutes<sup>[7]</sup> localities; two localities were randomly selected to represent the state; where one is urban and the other in rural or semi-urban (bahry and shargelnil were chosen). health center located in the two selected localities are (54); 28 in bahry and 26 in shargelnil represent the study units.

**Study population and sample size**

The sample size from both selected localities was determined as (18) units out of the total health center. This proportion of sample size drawn (33.3%) is in fact reasonable and practicable to yield good outcome. This was agreed upon between the supervisors and researcher.

The study was targeting health services providers in the two localities (82).concerned personnel at the federal ministry of health. State ministry of health and at the locality level. The health centers in each section were selected using simple random sampling technique.

#### Tools of data collection

Data was collected by in-person interview, focus group discussion and review of available records at the levels of state and locality. The questions were designed to meet the objectives of the study. Data was collected by a research team (data collectors) using an in-person interview with the respondents.

#### Data processing, analysis and presentation

All completed questionnaires were entered into a database immediately after these had been manually edited and coded. Computer software was used for data entry. Data validity check was performed for all the questionnaires. After cleaning data was analyzed using statistical software package, correlation test was done for the comparison of the data gained between urban and semi-urban health centers.

The data was presented in the form of tables charts or histograms depending on whether the variable is quantitative discrete or continuous.

#### Ethical consideration

Ethical permission for the study was obtained prior to collection of data by contacting and receiving approval from the appropriate management authority, the health directorship of the city involved. Participants were assured of the their responses and provided informed verbal consent.

#### RESULT

Health centers located in the two selected localities are(54); 28 in Bahry and 26 in Shargelnil represent the study units. The sample size from both selected localities was determined as (18) units out of the total health centers. The study was targeting health services providers in the two localities (82), concerned personnel

at the federal ministry of health, state ministry of health and at the locality level (directors of health services). The health centers in each section were selected using simple random sampling technique. The majority of out-patient registration books 13(72.2%) were not complete. About two thirds of health centers 11(61.1%) had complete vaccination registration books. Two thirds 4(66.7%) of the birth registration books were not complete. Exactly half 4(50%) of nutritional registration books were not completed. More than two thirds 7(70%) of reproductive health registration books were not complete. More than two thirds 13 (72.2%) of epidemiological registration books were complete. More than two thirds 13 (72.2%) of out-patient registration books were not accurate. Near two thirds 11 (61.1%) of vaccination registration books were accurate. Greater majority 5 (83.3%) of birth registration books were not accurate. All nutritional registration were not accurate.

The majority 7(70%) of reproductive health registration were not accurate. More than two thirds 13 (72.2%) of epidemiological registration were accurate. More than two thirds 13(72.2%) of out-patient registration data were collected timely. Near two thirds 11 (61.1%) of vaccination registration data were collected timely. All health centers provided with birth registration books and certificates collected their data timely. Three quarters 6(75%) of nutrition registration data were collected timely. The majority 13(72.2%) of epidemiological data were collected timely.

Ten(10) statisticians were include in the focus group discussion from where the following results were obtained: Most of the information about health information system that discussed was how to register properly, prepare reports, analyze data, presentation of data and utilize the information in the monthly reports at the local level. All respondent agreed that the problems of proper registration are due to the lack of guidelines for filling forms and books. Most of them mentioned that poor training is the main cause of poor reports, poor analysis and presentation of data and use of data at the local level.

**Table no (1) shows out-patient registration books completeness in health centers- khartoum state – 2011**  
N=18

Out-patient registration books	urban	Semi-urban	No	percent
Complete	3	2	5	27.8
Not complete	7	6	13	72.2
Total	10	8	18	100

**Table no (2) shows vaccination books completeness in health centers –khartoum-state 2011**  
N=18

Vaccination registration book	Urban	Semi-urban	Frequency	Percent
Complete	8	3	11	61.1%
Not complete	2	5	7	38.9%
Total	10	8	18	100%

**Table no (3) shows birth registration books completeness in health centers-khartoum state- 2011**  
N=6

Birth registration books	Urban	Semi-urban	Frequency	Percent
Complete	2	0	2	33.3%
Not complete	1	3	4	66.7%
Total	3	3	6	100%

**Table no (4) shows nutrition registration books completeness in health centers-khartoum state-2011**  
N=8

Nutrition registration books	Urban	Semi-urban	Frequency	Percent
Complete	4	0	4	50%
Not complete	2	2	4	50%
Total	6	2	8	100%

**Table no (5) shows reproductive health registration in health centers-khartoum state-2011**  
N=10

Reproductive health registration	Urban	Semi-urban	Frequency	Percent
Complete	2	1	3	30%
Not complete	4	3	7	70%
Total	6	4	10	100%

**Table no (6) shows epidemiological registration completeness in health centers-khartoum state-2011**  
N=18

Epidemiology registration books	Urban	Semi-urban	Frequency	Percent
Complete	8	5	13	72.2%
Not complete	2	3	5	27.8%
Total	10	8	18	100%

**Table no (7) shows out-patient registration accuracy in health centers-khartoum state-2011**  
N=18

Out-patient registration books	Urban	Semi-urban	Frequency	Percent
Complete	4	1	5	27.8%
Not complete	6	7	13	72.2%
Total	10	8	18	100%

**Table no (8) shows vaccination registration accuracy in health centers-khartoum state-2011**  
N=18

Out-patient registration books	Urban	Semi-urban	Frequency	Percent
Complete	7	4	11	61.1%
Not complete	3	4	7	38.9%
Total	10	8	18	100%

**Table no (9) shows birth registration accuracy in health centers-khartoum state-2011**  
N=6

Birth registration books	Urban	Semi-urban	Frequency	Percent
Complete	1	0	1	16.7%
Not complete	2	3	5	83.3%
Total	3	3	6	100%

**Table no (10) shows nutrition books accuracy in health centers-khartoum state-2011**  
N=8

Vaccination registration book	Urban	Semi-urban	Frequency	Percent
Complete	0	0	0	0%
Not complete	4	4	8	100%
Total	4	4	8	100%

**Table no (11) shows reproductive health registration in health centers-khartoum state-2011**  
N=10

Reproductive health registration books	Urban	Semi-urban	Frequency	Percent
Complete	2	1	3	30%
Not complete	5	2	7	70%
Total	7	3	10	100%

**Table no (12) shows epidemiological registration accuracy in health centers-khartoum state-2011**  
N=18

epidemiology registration book	Urban	Semi-urban	Frequency	Percent
Complete	9	4	13	72.2%
Not complete	1	4	5	27.8%
Total	10	8	18	100%

**Table no (13) shows out-patient registration data timeliness in health centers-khartoum state-2011**  
N=18

Out-patient registration book	Urban	Semi-urban	Frequency	Percent
Complete	8	5	13	72.2%
Not complete	2	3	5	27.8%
Total	10	8	18	100%

**Table no (14) shows vaccination data timeliness in health centers-khartoum state-2011**  
N=18

Vaccination registration book	Urban	Semi-urban	Frequency	Percent
Complete	6	5	11	61.1%
Not complete	4	3	7	38.9%
Total	10	8	18	100%

## DISCUSSION

The efficient collection, processing, utilization and dissemination of the most relevant information at different levels of the health system are essential. Nevertheless, the utilization of the health information for policy formulation, planning and decision-making remains as the most challenging at both the federal, state and locality levels.<sup>[12]</sup> from the review of forms and books to detect the quality of data (completeness, accuracy and timeliness): the study revealed that the data were incomplete in out-patient forms (72.8%). Vaccination registrations (38.9%), birth registrations (66.7%), nutrition registrations (50%), Reproductive health registrations (70%), epidemiological registrations(27.8%) (Tables from 7 to 27, almost the same result was found by the study conduct in KwaZulu-natal, south Africa for improving public health information: The level of data completeness was found (26%). Similarly, the proportion of data in the

information system considered accurate was found (37%); this result is in agreement with the five year national strategic plan(2007-2011) that they need to scale up the capacity data management in all states and 50% of the localities. Ten(10) statisticians were included in the focus group discussion. The information about health information system that discussed with the respondents in the focus group discussion was how to register properly, prepare reports, analyze data, presentation of data and utilize the information in the monthly reports at the local level. All respondents agreed that the problems of proper registration are due to the lack of guidelines for filling forms and books. Most of them mentioned that poor training is the main cause of poor reports, poor analysis, and poor presentation of data and use of data at the local level.

**ACKNOWLEDGEMENT**

My deep thanks go to ustaz Elshiekh Eltigani, Dr. Amel alamin and Dr. Alsadig Balla for their continuous support and advice. My warm thanks are due to my colleagues widad, Hasabalrasoul, mohammed azhary, without their efforts this thesis would not have seen light.

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