

ASSESSMENT OF THE MANAGEMENT INFORMATION SYSTEM IN THE MEDICAL SERVICE OF A PROVINCIAL HOSPITAL

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The study aimed to determine the current state of the management information system in a provincial hospital. It focused on determining the status of the hospital information processes, quality of the information processes, and the problems encountered in the seven departments of medical services. Moreover, it determined the significant difference in the quality of information services among the seven sections in the medical service. This research was primarily a descriptive assessment institutional study which used both qualitative and quantitative data. Universal sampling was used to include the 40 medical personnel. Results showed that all the seven sections were moderately efficient in so far as the eight hospital information processes are concerned. In terms of accuracy, completeness and adequacy, the out-patient section was rated very good while the other six sections were rated good in implementing the eight hospital information processes. The quality of timeliness of the records section was poor but the other sections were considered good. There were varied and numerous problems with the current information processes system of the hospital categorized into hospital information processes and other related problems such as facilities, funds, system, training and the people (patients and staff). There was a significant difference in the quality of information services in the different dimensions of medical services. Results highlighted implications for adopting an integrated hospital information system.

Introduction

An effective information system is a vital component of quality health service delivery system. Adequate, updated and technically sound information is a prerequisite to effectively meet health issues and concerns. In this light, all efforts should be exerted to ensure that data are managed well at all levels. This encompasses activities to ensure proper data collection, recording, reporting, analysis, interpretation and utilization, feedbacking and data dissemination.

Walsh and Simonet (1995) posited that health information is required for strategic planning as well as for setting priorities. They emphasized the importance of having quality health information to ensure quality assurance and quality improvement for an efficient health service delivery, human resource management, in program evaluation and management and research. Community members also need quality information to enable them to choose health enhancing behaviors.

The World Health Organization (WHO) in 2006 argues that investment in health management information systems (HMIS) now could reap, in the future, multiple benefits such as helping decision makers detect and control emerging and endemic health problems, monitor progress towards health goals, and promote equity. It also strengthens the evidence base for effective health policies, permitting evaluation of scale-up efforts, and enabling innovation through research. Furthermore, the WHO stressed the empowerment of individuals and communities through timely and understandable health related information and drive improvements in quality of services thus improving governance, mobilizing new resources, and ensuring accountability in the way information is used. (World Bank 2006)

In the Philippines, government hospital facilities have the Hospital Statistical Reporting System. This report is submitted annually to the Department of Health (DOH) Central Office through the provincial health offices and regional health offices. The reports include the number of admissions, bed occupancy rate, leading causes of admission and discharges, number and types of surgical operations performed, leading causes of mortality and the number of consultations per type of service.

This study is aimed to contribute towards the overall enhancement of the current HMIS. For the hospital staff, the study may help them determine the present status of the hospital information system (HIS), thus allow them to identify gaps currently affecting the quality of the HIS. Administrators will also be able to identify specific barriers and enhancers towards a more functional information system.

For the hospital staff directly involved in the information system, useful information gathered as a result of this study, is hoped to inspire them towards improved performance of their duties and ensure the quality of services they render to clients. For hospital managers, the inputs on information system will provide them reliable basis for decision making. The results of this study can also be useful in crafting a plan of action to resolve specific issues and concerns currently affecting the hospital.

The study might be helpful to other government hospital managers who find themselves in the same situation. It is hoped that the study would also contribute useful data for information system research. The data revealed in this study may be added to the bank of knowledge and information already existing on factors affecting the quality of hospital information system.

Theoretical/ Conceptual Framework

The theoretical underpinnings of this study emanated from current trends in the health information system and systems theory. These two were deemed appropriate in directing the structure and format of this investigation.

A health information system is a process whereby health data (input) are recorded, stored, retrieved and processed for decision-making purposes (output). Any information system has three parts: inputs, processes, and outputs. It integrates the data gathering system that serves the total operations and management of the organization. Decision making broadly includes managerial aspects such as planning, organizing and control of health care facilities at the national, regional and institution levels; and clinical aspects which can be subdivided into (i) providing optimal patient care, (ii) training of medical personnel to generate appropriate human resources, and (iii) facilitate research and development activities in various fields of medicine. All basic information needs of the organization are interrelated through a common database.

The system approach to management views the organization as a unified, purposeful system composed of interrelated parts. It provides managers a way to look at the organization as a whole (as cited in Leveriza, 1986). It shows that the activity of any part of the hospital affects the activity of all other parts.

The Systems Model is based on the core principle that input is processed into output and fed back to the input. It is a complete process where each and every stage is important and contributes to the overall improvement of the system.

Figure 1 illustrates the Input Process Output (IPO) of the HIS. The input includes the status of specific areas of concern such as recording, filing/ data banking, flow/submission of reports, data analysis, data utilization, feed backing, and data dissemination. The output or the key results will include the quality of HIS such as accuracy, completeness, adequacy, and timeliness.

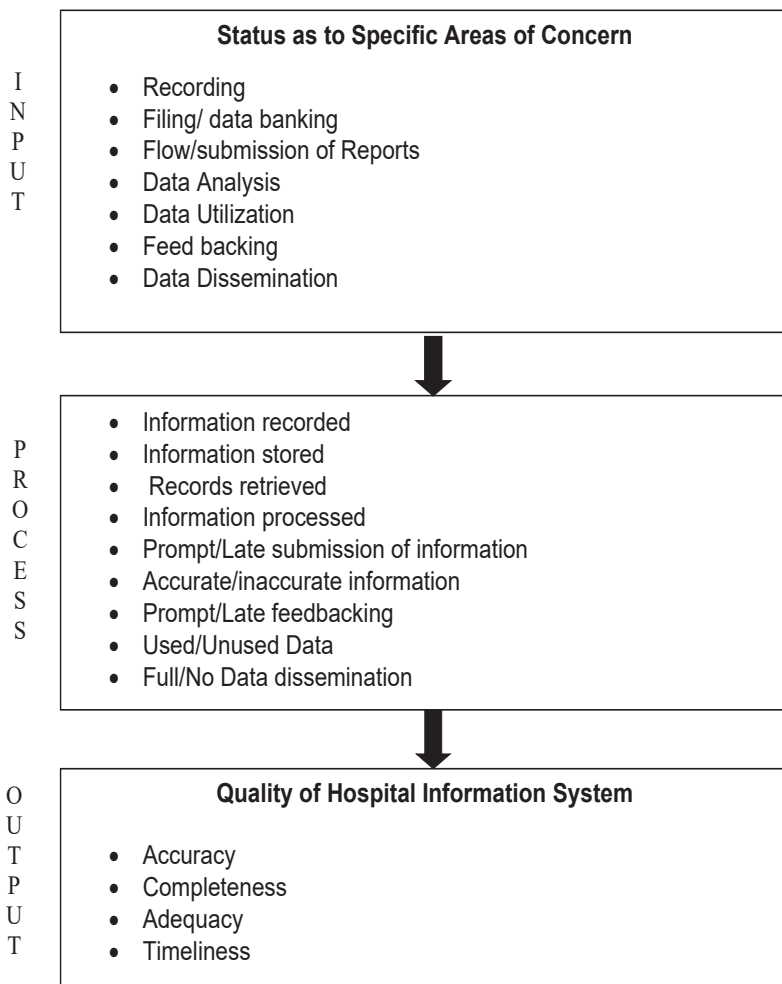


Figure 1. Conceptual Framework for Input Process Output.

Methods

This is a descriptive assessment institutional study that used both qualitative and quantitative data to arrive at the answers to the research questions. The study focused on a provincial hospital, which is a fifty-bed capacity health facility that renders 24-hour daily services to thirteen municipalities and its nearby municipalities. Doctors, nurses and other hospital staff in each section are available during their duty hours to attend to all patients currently admitted in the hospital. Unlike the hospitals in nearby province, the provincial hospital is under the administrative control of the autonomous regional government through the Department of Health (DOH). As a non-devolved agency, the hospital operates within the meager budget allocation

from the national government through the autonomous regional government and DOH with the support of the provincial government, local government units, national agencies, local, national, and foreign donors.

Respondents for this study included all the key officials in medical services and some selected personnel of the provincial hospital directly involved in the HIS and in health service delivery. The end users of the data assessed the quality of the HIS. The study used universal sampling in choosing the respondents of the study. There was a total of forty respondents, chosen on the basis of their knowledge of the information desired.

A survey questionnaire was utilized. Part 1 focused on the assessment of the status of the HIS in terms of the degree of efficiency on the areas of collection, collation (filing and data banking), recording, processing, data analysis, data utilization, feedbacking and data dissemination. The assessment used the rating scale with 1 as not efficient (NE), which means it needs improvement or no information was complied with; 2 is described as moderately efficient (ME), which means that some information was complied with; and 3 is described as very efficient (VE), which means that all information were complied with. The second part focused on the assessment of the quality of data being generated in the provincial hospital statistical report in terms of accuracy, adequacy, completeness and timeliness. The assessment rating was scaled into three, namely, (1) poor, (2) good, and (3) very good. The instrument was validated by experts to establish its reliability, and pilot tested in a similar hospital to establish its validity.

The researcher coordinated with the provincial hospital officials for permission to conduct the study. The response was favorable so an endorsement letter was forwarded to the respondents of the study. The schedule of data collection was drafted relative to specific respondents. The questionnaire was then distributed to the respondents. Collected information were recorded, tabulated and analyzed. Interpretation and conclusions were drawn from the findings and recommendations were made using these findings as bases. Frequency and percentage, as well as weighted mean and analysis of variance (ANOVA) were used as statistical treatment.

Results and Discussions

Table 1 shows the status of the hospital information processes in the different clinical and records services of the seven sections of medical services in the provincial hospital. All the seven sections are *moderately efficient* in terms of recording/listing/filling-up forms, data processing, data analysis, data utilization, feedbacking, and data dissemination. Out of the seven sections, only the outpatient department is rated *very efficient* with a rating of 3.00 in terms of submission of reports.

Table 1. Status of the Hospital Information Processes in the Seven Departments of Medical Services

Areas of Concern	Emergency Room		Outpatient Section		Clinical Ward		Operating/ Delivery Room		Laboratory Section		Radiology Section		Records Section	
	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI
1. Recording/ listing/filling-up forms	2.2	ME	2.00	ME	2.09	ME	2.00	ME	2.20	ME	2.33	ME	2.00	ME
2														
2. Filing forms/ records or	2.2	ME	1.00	NE	2.18	ME	2.00	ME	2.00	ME	2.33	ME	2.00	ME

data banking	0													
3. Data Processing	2.10	ME	2.00	ME	2.00	ME	2.00	ME	2.40	ME	2.00	ME	2.00	ME
4. Data Analysis	1.70	ME	2.00	ME	2.00	ME	2.00	ME	2.40	ME	2.00	ME	2.00	ME
5. Submission of Reports	2.20	ME	3.00	VE	2.09	ME	2.00	ME	2.20	ME	2.00	ME	2.00	ME
6. Data Utilization	1.70	ME	2.00	ME	2.10	ME	2.00	ME	2.20	ME	2.00	ME	2.00	ME
7. Feedbacking	1.70	ME	2.00	ME	1.91	ME	2.00	ME	2.20	ME	2.00	ME	2.00	ME
8. Data Dissemination	1.60	ME	2.00	ME	1.90	ME	2.00	ME	2.40	ME	2.00	ME	2.00	ME
Overall Mean	1.93	ME	2.00	ME	2.03	ME	2.00	ME	2.25	ME	2.08	ME	2.00	ME

*WM-Weighted Mean; DI- Descriptive Interpretation; ME-Moderately Efficient

The precise or exact accuracy or quality of the information is presented in Table 2. The overall result shows that the outpatient section is rated *very good* in terms of accuracy as revealed by the mean of 3.00.

Table 2. Quality of Information Services According to Accuracy.

Areas of Concern	Emergency Room		Outpatient Section		Clinical Ward		Operating/ Delivery Room		Laboratory Section		Radiology Section		Records Section	
	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI
1. Recording listing/filling-up forms	2.00	G			1.91	G	1.67	G	2.20	G	2.00	G	1.80	G
2. Filing forms/ records or data banking	2.00	G	3.00	VG	2.00	G	1.67	G	2.60	VG	2.00	G	1.60	G
3. Data Processing	1.90	G			1.91	G	1.67	G	2.00	G	2.00	G	1.80	G
4. Data Analysis	1.90	G			2.00	G	1.67	G	2.20	G	2.33	G	1.60	G
5. Submission of Reports	1.70	G			1.82	G	1.33	P	2.20	G	2.00	G	1.80	G
6. Data Utilization	1.70	G			1.73	G	1.33	P	2.00	G	2.00	G	1.80	G
7. Feedbacking	1.80	G			1.55	G	1.33	P	2.20	G	2.00	G	1.80	G

8.Data

Dissemination 1.70 G 1.82 G 1.33 P 2.00 G 2.00 G 1.80 G

Overall Mean 1.84 G 3.00 VG 1.84 G 1.50 G 2.18 G 2.04 G 1.75 G

**WM-Weighted Mean; DI- Descriptive Interpretation; VG-Very Good; G-Good; P-Poor*

Table 3 presents the quality of information services in terms of completeness. The overall result shows that only the outpatient section is *very good* in terms of completeness and the other six sections are rated *good* by the respondents.

Table 3. Quality of Information Services According to Completeness.

Areas of Concern	Emergency Room		Outpatient Section		Clinical Ward		Operating/ Delivery Room		Laboratory Section		Radiology Section		Records Section	
	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI
1. Recording/listing/ filling-up forms	2.00	G	3.00	VG	1.82	G	1.67	G	2.20	G	2.00	G	1.40	P
2. Filing forms/ records or data banking	1.90	G			1.64	G	1.67	G	2.20	G	3.00	VG	1.80	G
3. Data Processing	1.90	G	3.00	VG	2.00	G	1.67	G	2.00	G	2.00	G	1.80	G
4. Data Analysis	2.00	G	3.00	VG	2.00	G	1.67	G	2.40	G	2.33	G	1.60	G
5. Submission of Reports	1.90	G	3.00	VG	1.82	G	1.33	P	2.20	G	2.00	G	1.60	G
6. Data Utilization	1.70	G			1.82	G	1.33	P	2.00	G	2.00	G	1.80	G
7. Feedbacking	1.80	G	3.00	VG	1.55	G	1.33	P	2.00	G	2.00	G	1.80	G
8.Data Dissemination	1.50	G	3.00	VG	1.82	G	1.33	P	2.00	G	2.00	G	1.80	G
Overall Mean	1.84	G	3.00	VG	1.81	G	1.50	G	2.13	G	2.17	G	1.70	G

**WM-Weighted Mean; DI- Descriptive Interpretation; VG-Very Good; G-Good; P-Poor*

In terms of overall results, the six sections, namely emergency room (ER), clinical ward, operating/delivery room, laboratory section, radiology and records section, obtained a *good* rating in all the hospital information processes. However, there is no section that obtained a *very good* rating in terms of adequacy of hospital services. The records section showed a *poor* rating of 1.25 on data analysis (Table 4).

Table 4. Quality of Information Services According to Adequacy.

Areas of Concern	Emergency Room		Outpatient Section		Clinical Ward		Operating/Delivery Room		Laboratory Section		Radiology Section		Records Section	
	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI
1. Recording/ listing/filling-up forms	2.00	G	3.0	VG	1.82	G	1.67	G	2.20	G	2.00	G	1.75	G
2. Filing forms/ records or data banking	2.00	G	3.0	VG	1.73	G	1.67	G	2.20	G	2.00	G	1.75	G
3. Data Processing	2.00	G	3.0	VG	1.91	G	1.67	G	2.00	G	2.00	G	1.75	G
4. Data Analysis	2.00	G	3.0	VG	2.00	G	1.67	G	2.00	G	2.00	G	1.25	P
5. Submission of Reports	1.90	G	3.0	VG	1.82	G	1.33	P	2.20	G	2.00	G	1.50	G
6. Data Utilization	1.80	G	Item not rated	-	1.82	G	1.33	P	2.00	G	2.00	G	1.75	G
7. Feedbacking	1.90	G	3.0	VG	1.55	G	1.33	P	2.00	G	2.00	G	1.75	G
8.Data Dissemination	1.90	G	3.0	VG	1.73	G	1.33	P	2.00	G	2.00	G	1.50	G
Overall Mean	1.94	G	3.0	VG	1.80	G	1.50	G	2.08	G	2.00	G	1.63	G

*WM-Weighted Mean; DI- Descriptive Interpretation; VG-Very Good; G-Good; P-Poor

Table 5 shows the quality of information services according to timeliness. The respondents of the outpatient section did not rate all the indicators of hospital information processes. In terms of overall results, five sections namely, ER, clinical ward, operating/delivery room, laboratory section, and radiology section obtain a *good* rating in all the hospital information processes. However, the records section, with an overall result of 1.41 is *poor* in terms of timeliness of their quality services.

Data show varied and numerous problems currently existing in the information processes system of the provincial hospital. The problems are categorized into (1) hospital information processes such as collection, recording, processing, feedbacking; and (2) related problems such as facilities, funds, system, training and the people (patients, staff).

Table 5. Quality of Information Services According to Timeliness.

Areas of Concern	Emergency Room		Outpatient Section		Clinical Ward		Operating/ Delivery Room		Laboratory Section		Radiology Section		Records Section	
	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI	WM	DI
1. Recording/ listing/filling-up forms	1.90	G	2.0	G	1.91	G	1.67	G	2.40	G	2.33	G	1.00	P
2. Filing forms/ records or data banking	1.90	G	2.0	G	1.91	G	1.67	G	2.40	G	2.33	G	1.50	G
3. Data Processing	1.70	G	2.7	VG	1.91	G	1.67	G	2.00	G	2.00	G	1.75	G
4. Data Analysis	1.90	G	3.0	VG	2.00	G	1.67	G	2.40	G	2.00	G	1.00	P
5. Submission of Reports	1.70	G	3.0	VG	1.82	G	1.33	P	2.20	G	2.00	G	1.50	G
6. Data Utilization	1.80	G	Item not rated	-	1.82	G	1.33	P	2.00	G	2.00	G	1.75	G
7. Feedbacking	1.90	G	3.0	VG	1.55	G	1.33	P	2.00	G	2.00	G	1.50	G
8.Data Dissemination	1.80	G	3.0	VG	1.73	G	1.33	P	2.00	G	2.00	G	1.25	P
Overall Mean	1.83	G	2.3	G	1.83	G	1.50	G	2.18	G	2.08	G	1.41	P

**WM-Weighted Mean; DI- Descriptive Interpretation; VG-Very Good; G-Good; P-Poor*

Table 6 shows the significant difference in the Quality of Information Services among the clinical and records sections. The computed *f* value is 8.342 for the quality area on accuracy, the *p* value being lesser than the 0.05 level of significance, thus rejecting the null hypothesis. This means that there is a significant difference in the quality of information services on accuracy among the different clinical and records services.

The significant difference in the quality of information services among the different clinical and records services in terms of completeness is also presented. The data provides a computed *f* value of 9.454. The *p* value is lower than the 0.05 level of significance, thus, the null hypothesis is rejected which means that there is a significant difference in the quality of information services on completeness among the different clinical and records sections.

The computed *f* value for the quality area on adequacy is 2.716, which shows significant differences in the quality of information services on adequacy among the different clinical and records sections. Likewise, the computed *f* value of timeliness quality area is 3.536, which also shows significant differences in the quality of information services on timeliness among the seven medical service departments' different clinical and records sections.

Table 6. Test on the Significance in the Difference in the Quality of Information Services in the Seven Sections in the Medical Services.

Quality of Information Services	<i>f</i> value	<i>p</i> value	Decision	Interpretation
Accuracy	8.342	.000	Reject Ho	Significant
Completeness	9.454	.000	Reject Ho	Significant
Adequacy	2.716	.039	Reject Ho	Significant
Timeliness	3.536	.012	Reject Ho	Significant

*0.05 level of significance

All the seven sections in the provincial hospital were *moderately efficient* insofar as hospital information processes were concerned, except for the outpatient department (OPD) that was rated very efficient in terms of submission of reports. The said rating was attributed to the staff having more time to prepare reports as they render service up to 4 p.m., unlike the other services, which offer 24-hour duty for most days of the week. Their best practice is the ability of the staff to gather and process data and keep the records on or before the closing time.

The other six sections were *moderately efficient* in all the hospital information processes. On the other hand, the outpatient section was rated *not efficient* as shown in the 1.00 rating in terms of filing forms/ records or data banking. The filing system of the outpatient section of the provincial hospital seemed inefficient because there are lots of records that are misplaced, even lost, especially records of patients who insist on being attended to after 4 p.m. when OPD personnel are not on duty anymore. Patients at that time are entertained and treated in the emergency room. Usually, records are not properly endorsed to the OPD personnel the following day by ER personnel.

Duran-Arenas, Rivero, Canton, Rodriguez, Franco, et al. (1998) affirmed the need for a facility to be flexible and capable of adapting to local needs while at the same time allowing for standardization of health care quality assurance indicators and subsequent ability to measure and compare the quality performance of health facilities. However, a principal barrier to improving service quality in many health care facilities is the lack of reliable systems for managing and retrieving individual patient records. Most service statistics subsystems track data only from public sector providers and facilities. Future improvements must implement systems to ensure reporting of service data from the private sector. This challenges the areas in the provincial hospital to improve their sections that are not efficient and to continue the best practices of sections delivering very efficient services.

Out of the eight information processes, only filing in forms/ records or data banking was rated. The other processes were not rated and this was due to insufficient information provided that eluded rating them. In terms of accuracy, the outpatient section is very good in filling in records as long as they are endorsed correctly to them, especially those who sought consultation as an OPD case in the ER. The staff had its system of filing all the records they had gathered. Their only problem was charts that were misplaced or even lost in transition. The data also show that the other six sections, namely, ER, clinical ward, operating/delivery room, laboratory section, radiology and records section are good in implementing the eight hospital information processes.

The operating/delivery room obtained a poor rating on the hospital information processes, including the submission of reports, data utilization, feedbacking, and data dissemination. This attributed to the inability of this facility to operate on a regular basis, with no regular personnel assigned to it, especially after office hours and on weekends, thus some surgical procedures done were not properly recorded, seemed logical. No medical personnel like an anesthesiologist

were assigned to properly manage the operating room, much less keeping the records. There was no regular schedule for elective surgical operations. Some information was not properly filled up in required forms, especially on emergency cases at night.

The overall results show that only the outpatient section is very good in terms of completeness, and the other six sections are rated good. But in this section not all the information services were rated. The respondents did not rate the process of filling-in forms/ records or data banking and data utilization. But the information processes were all rated very good in terms of completeness. The outpatient section personnel included only those records on their files and did not mention the records that were misplaced and lost.

Table 3 also presented three sections: the ER, clinical ward, and laboratory section were good in implementing completeness of information in the eight hospital information processes. The radiology department obtained a very good rating in filling in forms/ records or data banking. In radiology section, all patients who would undergo radiological procedures must be recorded in the log book provided with complete data, procedures done to include radiologic diagnosis carefully provided in the logbook. Reports were routinely done and monitored by the central and regional office for accreditation and renewal of license to operate. They must strictly follow the rules and regulation in submitting their reports properly to the said offices, otherwise accreditation and renewal of license might not be granted.

The records section was rated poor in terms of completeness in recording/listing/filling-up forms because charts were not properly and regularly collected. It takes several days for the physician-in-charge to complete the required charts. Other charts or records are kept by some physicians and other personnel for several days before they are returned to the records section. Incomplete charts and records for completion are not also routinely delivered to the one in charge. Furthermore, the operating/ delivery room obtained poor rating on the completeness of hospital information processes such as submission of reports, data utilization, feedbacking, and data dissemination. This poor rating could be due to operational capacity, records are not properly obtained and not properly kept and no standard rules and regulations are followed in the operating room.

In terms of overall results, the six sections, namely, ER, clinical ward, operating/delivery room, laboratory section, radiology and records section obtained a good rating in all the hospital information processes. However, no section obtained a very good rating in terms of adequacy of hospital services. The records section was rated poor on data analysis. On the other hand, the operating/delivery room obtained a poor rating in terms of adequacy on the hospital information processes which are submission of reports, data utilization, feedbacking, and data dissemination. Operating room reports, cases and procedures are not updated. Standard operating room policies are not followed due to incomplete guidelines on proper use of the operating room and facilities.

In terms of timeliness as a quality of information services, the respondents of the outpatient section did not rate all the indicators of hospital information processes. The outpatient section, which render services during the office hours only, does not have a problem in terms of timeliness because they have more time to gather and fix their records accordingly than the other sections. In terms of overall results, five sections, namely, ER, clinical ward, operating/delivery room, laboratory section, and radiology section that were rated good by the respondents in all the hospital information processes. However, the records section obtained an overall rating of poor in terms of timeliness of their quality services. There was no section which obtained a very good rating in terms of timeliness of hospital services. Four services—the ER, clinical ward, laboratory, and radiology, were given a good rating in all the hospital processes.

The records section was rated poor on timeliness of services in the following information processes: recording/ listing/ filling up forms, data analysis, and data dissemination. The records section is rated poor in terms of timeliness due to poor handling of records for

completion and submission. Some personnel like doctors do not report regularly for work. Charts and records are not properly accomplished even after the doctors made the rounds. The records section has no means of following up the person in charge for compliance once they go off-duty. They had to wait for the next tour of duty, which is seven days or more, for them to comply with incomplete charts or records.

On the other hand, the operating/ delivery room obtained poor rating in terms of timeliness on the hospital information processes such as submission of reports, data utilization, feedbacking, and data dissemination. Due to lack of human resources, the operating room staff performs dual functions, thus, records are not properly managed and not regularly monitored by the hospital. Other cases are not recorded and reported on time.

Stansfield, Prata, Walsh and Evans (2005) contended that collection, collation, analysis and communication on the necessary information in a timely and understandable fashion require organized processes and procedures and a comprehensive HIS. Information dissemination in the provincial hospital obviously needs improvement to make its services satisfying to their clients.

The problems encountered in the current system of reporting are varied and numerous considering the state of the information processes system of the provincial hospital. On collection of records, both the emergency and laboratory sections of the hospital identified the incomplete data given by the client aggravated by the personnel's neglect in completing the patients' data as problems encountered in the current system of reporting. On recording, the hospital report's emergency and laboratory section reported no systematic keeping of patients' records; data were not encoded in the computer, pointing to the need to update the system of filing records, preferably electronically. On data processing, the ER and clinical ward problems include the need for a computer for easy keeping and retrieving of records. The outpatient section reported that it was much better to have a computer because some patients forget their file numbers, making it difficult to locate records. On feedbacking, the ER identified the absence of mortality and morbidity review and no case presentation as to problems encountered in the current system of reporting. On facilities, four sections of the hospital such as the ER, clinical ward, laboratory and record sections, mentioned the lack of high technology facilities such as computer units while the ER added lack of funds, lack of a workable system for hospital, orientation regarding workable/effective information system and a non-departmentalized information system, politics and poor maintenance, as the problems encountered with current reporting. The clinical ward reported consistency of strictly implementing hospital rules and regulations that all the employees should comply. It was systematic but still needed improvement in the reporting system of the laboratory section of the hospital, which was mentioned as a problem. Poor training of recording staff and lack of a continuing education of all staff especially the new ones were mentioned as problems as well. With regards to time management, no guidelines were available for the staff to follow; and health education and teaching were insufficient. Some problems encountered related to reporting were illiterate clients/patients; uncooperative patients or watchers with low educational attainment; lack of information provided to the patients regarding proper/ accurate ways of disease prevention; and occasionally hostile informants. A chief of staff who was not available, accounted for the communication gap between the administration of the hospital and the staff, as well as attitude problems towards work, were some concerns the hospital faced. The difference in the quality of information services of the different clinical and records services of the hospital based on quality, timeliness, accuracy, and adequacy are significant.

The outpatient section was rated very good because it was able to deliver accurate and complete services, whereas the other six departments were rated good in their service delivery. According to Loevinsohn (1994) timely, accurate and relevant information is a prerequisite to making good decisions on effective policies and services. Health information was required for

strategic planning and for setting priorities. It went without saying that accurate information processing would benefit the clients of the provincial hospital.

There was a significant difference in the quality of information services on adequacy among the different clinical and records sections of the seven departments in medical service. The seven departments were able to provide in different degrees, adequate and timely services to clients. Loevinsohn (1994) emphasized that timely, accurate and relevant information is a prerequisite to making good decisions on effective policies and services. Health information is required for strategic planning and for setting priorities. The delivery of timely services to the customers of the provincial hospital is a matter of justice to the constituents of this part of the country.

Moreover, Stansfield, Walsh, Prata, and Evans (2005) stressed that to collect, collate, analyze and communicate the necessary information in a timely and understandable fashion requires organized processes and procedures and a comprehensive health information system. They also emphasized on the striking difference between the need for information and the ability to respond to that need. The provincial hospital is obviously challenged to continue their best practices and work on the weak areas so the hospital can give its best service to its clients.

Conclusions and Recommendations

The study results support the need to use evidence-based decision making as a current thrust among health program managers, including those of the provincial hospital. This study demonstrates that the current state of the information system at the regional hospital is complex and changing but needs improvement.

The findings indicated that the status of the hospital information processes in the different clinical sections of the hospital such as the ER, outpatient section, clinical ward, operating/delivery room, laboratory, radiology, and the records section had significant differences in the hospital information processes in the different clinical and records sections of the seven departments. The dimensions measured the collection, collation (filing and data banking) recording, processing, data analysis, data utilization, feedbacking and data dissemination.

Just like any other institution, the provincial hospital had problems in the operation of information system processes. Foremost is the lack of funds to provide the much-needed technology to manage all hospital functions and help improve hospital information processes in the most efficient way possible.

The provincial hospital has been experiencing problems related to shortage of human resources for the following reasons—the lack of manpower attributed to the moratorium on hiring new personnel because of financial problems according to the Department of Budget and Management; the rapid turnover of personnel because of employee resignation due to their desire to get a better job; the existing number of human resources cannot cope with the demands of regular recording of cases especially during night shift. These factors contributed greatly to the current status of management of the information system in the provincial hospital.

Based on the findings of the study, the following are recommended to improve the management of information system in the medical service of the provincial hospital. First is the need for an integrated HIS that manages all hospital functions that is affordable and can improve operational efficiency, care quality and patient satisfaction. There is also a need to enhance proper information dissemination, recording, and follow up for effective utilization. Updates on basic and necessary information of personnel like addresses, phone numbers, etc., with regards to the hospital information, communications should be written for records purposes to ensure uniformity and proper dissemination, to avoid duplication and miscommunication and to verify any important information for legal and other purposes. Records and charts should be routinely monitored. There should be a regular submission of reports to proper authority. Strict

compliance of all patients' charts by the physician and other involved personnel on a regular basis. For human resources, they should encourage weekly and monthly conference/ meetings of all the hospital personnel. Hospital duties and assignments should be strictly checked and monitored to ensure proper endorsement of cases and records. Designation of a key person assigned in handling/ gathering of records and reports in each section. Finally, it is recommended that the provincial hospital conducts proper orientation/ training of all staff in all hospital sections regarding collection/ upgrading and handling records.

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