Adequacy of Communicable disease Surveillance System Attributes for Target Disease of Expanded Program on Immunization in Al –Najafe Governorate

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***Abstract*- Objective:** To evaluate the communicable disease control surveillance system to target disease of expanded program on immunization at primary Health Care Center, Health Care Sectors, and Health Directorate throughout indicate the level of usefulness of surveillance system characteristics of simplicity, flexibility, acceptability, representativeness, timeliness, stability. **Methodology:** descriptive evaluation study is conducted on primary health care centers, primary health sectors, health directorates in AL- Najafe Governorate from 25 March 2015 to 30 January 2016. A probability multistage sample of (22) subjects which is selected from communicable disease for target disease of surveillance system units. Data were collected throughout the utilization of the developed questionnaire and interview technique. Questionnaire has been divided into three main parts consist, form(A) especially for health directorate, form (B) for health sectors, and form (C) for primary health care centers that consists of attributes items (80) items.. Results: The study results indicate that the study results The major frequency suspected and confirmed diseases are tuberculosis and hepatitis B.. The system is average complex, inflexible, unacceptability, unrepresentative, low utility, unstable system in primary health care centers and health care sectors while were opposite surveillance system at health directorate. **Recommendations**: recommend reveal Ministry of Higher Education and Scientific Research Further studies should be conducted to involve more governments in Iraq about the effectiveness of the surveillance system and to determine the factors that cause it is in affectivity. Apply the surveillance system as a unit in the faculty of nursing curriculums to increase the community health nurses' experience in area of surveillance system. Also, regarding Ministry of Health of recommendation Used of community health nurses as a managers to manage the surveillance system to benefit from their experience in surveillance system and all the community and community health nursing duties.

***Index Terms*-** surveillance system, communicable disease

I. Introduction

Surveillance has been around a long time. And it has historically focused on close observation of individuals exposed to a communicable disease such that early manifestation of the disease could be detected and prompt isolation and control measures imposed. This form of surveillance is referred to as medical surveillance. A more recent form of surveillance involves continuous monitoring and follow- up of health-related status or events within a population [(1).]

The surveillance system in terms of it structure, process and output. Structure consists of objectives, resources and organizational procedures i.e. the input to the system. The epidemiological surveillance process may be divided into a) observation, communication and confirmation of the event/sand b) interpretation, presentation and communication of the findings to decision-makers. The final output of the surveillance system often takes the shape of a communication or report to the decision-makers. The use to which that report will be put (its impact) is the ultimate test of whether the surveillance system works [(2)].

Communicable disease surveillance is the continuous monitoring of the frequency and the distribution of disease and deaths due to infections that can be transmitted from human to human or from animals, food, water or the environment to humans, and the monitoring of risk factors for those infections. This definition means information for real action. Surveillance systems are networks maintaining and monitoring their operation at different levels and providing information for disease prevention and control [(3)].

Public health surveillance is a tool to estimate the health status and behavior of the populations served by ministries of health, ministries of finance, and donors. Because surveillance can directly measure what is going on in the population, it is useful both for measuring the need for interventions and for directly measuring the effects of interventions. The purpose of surveillance is to empower decision makers to lead and manage more effectively by providing timely, useful evidence [(4)]

Public health surveillance activities are generally authorized by legislators and carried out by public health officials. Public health surveillance systems have been developed to address a range of public health needs. In addition, public health information systems have been defined to include a variety of data sources essential to public health action and are often used for surveillance to prevent the outbreak. These systems vary from a simple system collecting data from a single source, to electronic systems that receive data from many sources in multiple formats, to complex surveys. Because surveillance data describe a current health situation or changes in the health situation over time, these data can be used to generate hypotheses about the causes and predictors of disease in future and detected the dangerous or outbreak [(5)].

Surveillance of infectious diseases is recognized as the cornerstone of public health decision- making and practice.

Surveillance data are crucial for monitoring the health status of the population, detecting diseases and triggering action to prevent further illness, and to contain public health problems. The need to strengthen disease surveillance and response system is recognized globally. A well functioning disease surveillance system provides information for planning, implementation, monitoring and evaluation of public health intervention programmes. Early warning of epidemics is essential for effective and rapid control this consider core function for surveillance system, while information on endemic communicable diseases is essential for monitoring the disease. So, surveillance of communicable diseases is a national function [(6)].

The ease of implementation and degree of success of an evaluation of surveillance system is closely linked to the maturity of results-based management practices. Results -Based Management and Accountability Frameworks (RMAFs) help managers ensure to enhance the safety and quality of patient care provided, to reduce morbidity and mortality, and to improve health regardless of the practice setting through following points [(7)].

II. Methodology

A descriptive study using the evaluation process is conducted on primary health care centers, health sectors, health directorate in AL-Najaf governorate. The study is carried out to evaluate the communicable disease surveillance system of target disease expanded program on immunization from 25 March 2015 to 30 January 2016. The evaluation process is employed at three levels, regional (Health Directorate), intermediate i.e. Districts (Health Sectors), and local level (Primary Health Care Centers (PHCCs) in AL. Najaf Governorate. A multistage sample of (3) Health Sectors, and (18) Primary Health Care Centers, which is selected throughout the use of probability sampling approach. The sample of study is divided into two stages which include (Health Sectors, Primary Health Centers). In addition, to Health Directorate (Public Health Department), fourth more responsible about surveillance system unit. The Study Instrument a pre tested interview administered questionnaires are used to elicit and collect information from people who are involved in the study for obtaining perfect information. The developed questionnaires are depending on CDC guideline for evaluation of public health surveillance system with some modification to be adopted with our situation. These comprised of questionnaires are (80) items.

Questionnaire (A) for Health Directorate, Questionnaire (B) for Health Care Sectors, and Questionnaire (C) for Primary Health Care Centers.

Data are collected through the utilization of the developed questionnaire and interview technique as means of data collection and keeping records of all available contacts that facilitate the access to the study sample from the period from 25 March 2015 to 30 January. Interviews are conducted with Focal points personnel of communicable disease EPI surveillance. Time for each interview varies with respect to the duty of each interviewer, after a permission was arranged from the Ministry of Planning Central Statistical System and Al-Najaf Health Directorate, the Center of Training and Staff Development. In addition to other consents are also obtained from al. Najaf Health Directorate. As a result of conducting a pilot study, reliability was determined through the implicated the cronbach alpha technique on A Simple random sample of (2) primary health care centers and one health sectors are selected for pilot study, which are involved in the surveillance system, employs at this centers are interviewed on individual basis for determining the data. Internal consistency is employed for the determination of the instrument reliability Cronbach alpha by computed for such determination.

III. Results

Table (1) Distribution of the Study Sample According To Suspected and Confirm for one year for Target Disease of Surveillance System at Health Directorate in 2014

Diseases	Suspected frequencies	confirmed frequencies
TB	504	149
DI	1	0
Measles	41	3
Hepatitis B	269	52
Pertussis	10	0
Tetanus	4	3

Poliomyelitis	**0**	**0**

T: tuberculosis; DI: diphtheria

This table shows that the major suspected diseases are TB and hepatitis B (504, and249) respectively. Also the study results indicate that the major confirmed diseases are TB, and hepatitis B (149and 52) respectively.

Table (2): Distribution of the Study Subjects According to Simplicity Attributes for different levels of Surveillance System

Attributes for surveillance system	Rating	Primary Health Care Centers			Health Sectors			Health Directorate		
		F	%	Evaluate	F	%	Evaluate	F	%	Evaluate
Registration records format) Easy to use form for as cases of target disease of EPI an easy	NO	9	50	Complex Range=(54-81)	1	33.3	Complex Range = 9-13.5	1	100	Simplicity Range =>4.5
	YES	9	50		2	66.7		0	0	
Is there can be classified and diagnosis as cases of target disease of EPI an easy?	NO	10	55.6		2	66.7		0	0	
	YES	8	44.4		1	33.3		1	100	
The system has the ability to additional sources of information, such as cases of reporting the existence of target disease of EPI	NO	15	83.3		2	66.7		0	0	
	YES	3	16.7		1	33.3		1	100	
	Total	18	100		3	100		1	100	

F: frequency, % percentage

This table shows that the simplicity attribute for the surveillance system is complex at the primary health care centers and health sectors with statistical range of (54-81 and 9-13.5) respectively, while at the health directorate the surveillance system is simple at range of (> 4.5).

Table (3): Distribution of the Study Subjects According to flexibility Attributes for different levels of Surveillance System

Attributes for surveillance system	Rating	Primary Health Care Centers			Health Sectors			Health Directorate		
		F	%	Evaluation	F	%	Evaluation	F	%	Evaluation
System flexible can be make changes to his	NO	13	72.2	Inflexible Range= 36-54	2	66.7	Inflexible Range =6-9	1	100	Inflexible Range

plan to suit the areas subject to surveillance	**YES**	**5**	**27.8**		**1**	**33.3**		**0**	**0**	
The system has the ability to additional sources of information, such as cases of reporting the existence of target disease of EPI	**NO**	**13**	**72.2**		**2**	**66.7**		**1**	**100**	
	YES	**5**	**27.8**		**1**	**33.3**		**0**	**0**	
	Total	**18**	**100**		**3**	**100**		**1**	**100**	

F: frequency, % percentage

This table reveals that the flexibility attribute for the surveillance system is inflexible at the primary health care centers, health sectors, and health directorate at range of (>36-45, 6-9, &> 4.5) respectively.

Table (4) Distribution of the Study Subjects According to Representative Attributes for Surveillance System to Health Directorate, Health Sectors, and Primary Health Care Centers

Attributes for surveillance system	Rating	Primary Health Care Center			Health Sectors			Health Directorate		
		F	%	Evaluation	F	%	Evaluation	F	%	Evaluation
1- The surveillance system can be represent incidence for target disease of EPI	**NO**	**11**	**61.1**	**Unrepresentative Range=36-54**	**2**	**66.7**	**Unrepresentative Range=6-9**	**0**	**0**	**Representative Range=>3**
	YES	**7**	**38.9**		**1**	**33.3**		**1**	**100**	
2- The surveillance system can be represent incidence for geographic are target disease of EPI	**NO**	**8**	**44.4**		**2**	**66.7**		**0**	**0**	
	YES	**10**	**55.6**		**1**	**33.3**		**1**	**100**	
3- The surveillance system can be represent epidemic for population for target disease of EPI	**NO**	**13**	**72.2**		**3**	**100**		**0**	**0**	
	YES	**5**	**27.8**					**1**	**100**	
	Total	**18**	**100**		**3**	**100**		**1**	**100**	

F: frequency, %: percentage

This table depicts that the representative attribute for the surveillance system is unrepresentative at the primary health care centers and health sectors with statistical range of (36-54 and 6-9) respectively, while at the health directorate the surveillance system is representative at range of (> 3).

Table (5) Distribution of the Study Subjects According to Timeliness Attributes for Surveillance System to Health Directorate, Health Sectors, and Primary Health Care Centers

Attributes for surveillance system	Rating	Primary Health Care Center			Health Sectors			Health Directorate		
		F	%	Cumulative Percent	F	%	Cumulative Percent	F	%	Cumulative Percent
4- Are there constraints and delay in time between the system steps for tell about an epidemic or outbreak and control the target disease of EPI in 2015?	NO	5	27.8	27.8	3	100	100	1	100	100
	YES	13	72.2	100	0	0	0	0	0	0
5- The number of weekly reports sent in a timely manner	One each Weekly	17	94.4	94.4	3	3	100	1	100	100
	Forth each weekly	1	5.6	100	0	0	0	0	0	0
	Total	18	100		3	100		1	100	

F: frequency, %: percentage

This table presents time attribute for the surveillance system is unstable system has emerged due to different and delay time of information collection so the highest percentage is (72.2%) in primary health care centers while system stable and don't delay time of data collection in health sectors and health directorate. Also (94.4%, 100%, and 100%) regarding to the number of weekly reports sent in a timely manner is one each week in primary health care centers, health sectors, and health directorate**.**

Table (6) Distribution of the Study Subjects According to Acceptable Attributes for Surveillance System to Health Directorate, Primary Health Care Centers, and Health Sectors

Attributes for surveillance system	Rating	Primary Health Care Center			Health Sectors			Health Directorate		
		F	%	Evaluation	F	%	Evaluation	F	%	Evaluation
Is there accept data generated by the surveillance system?	NO	6	33.3	Un acceptable Range=54-81	1	33.3	Un acceptable Range=9-13.5	0	0	Acceptable Range = >4.5
	YES	12	66.7		2	66.7		1	100	

Is there use the resulting which obtained from data collected through the surveillance system?	**NO**	**8**	**44.4**		**2**	**66.7**		**0**	**0**	
	YES	**10**	**55.6**		**1**	**33.3**		**1**	**100**	
The data resulting from the system is acceptance for the employs of the surveillance for target disease of EPI	**NO**	**15**	**83.3**		**2**	**66.7**		**0**	**0**	
	YES	**3**	**16.7**		**1**	**33.3**		**1**	**100**	
	Total	**18**	**100**					**1**	**100**	

F: frequency, %: percentage

This table indicates that the acceptability attribute for the surveillance system is unacceptable at the primary health care centers and health sectors with statistical range of (54-81 and 9-13.5) respectively, while at the health directorate the surveillance system is acceptable at range of (> 4.5).

Table (7): Distribution of the Study Subjects According to stability Attributes for different levels of Surveillance System

Attributes for surveillance system	**Rating**	**Primary Health Care Center**			**Health Sectors**			**Health Directorate**		
		F	**%**	**Evaluate**	**F**	**%**	**Evaluate**	**F**	**%**	**Evaluate**
Is there the system is able to collect, manage and provide data from the non-delay about occur health events for target disease of EPI ?	**NO**	**8**	**44.4**	**Inactive Range= 36-54**	**2**	**66.7**	**Inactive Range= 6-9**	**0**	**0**	**Active Range = >3**
	YES	**10**	**55.6**		**1**	**33.3**		**1**	**100**	
Is there the system is able to operate at all times about target disease of EPI?	**NO**	**11**	**66.1**		**2**	**66.7**		**0**	**0**	
	YES	**7**	**38.8**		**1**	**33.3**		**1**	**100**	
	Total	**18**	**100**		**3**	**100**		**1**	**100**	

This table reveals that the stability attribute for the surveillance system is inactive at the primary health care centers and health sectors with statistical range of (36-54 and 6-9) respectively, while at the health directorate the surveillance system is active at range of (> 3).

IV. Discussion

The major suspected diseases are tuberculosis and hepatitis B. Also the study results indicate that the major confirmed diseases are tuberculosis and the Hepatitis B at health directorate (Table 1). These results come along with that of [8] which mention that the confirm of Hepatitis B and TB is about 38 in Hawaii.

Moreover, in study by [9] which include the cases of EPI in Babylon Province-Iraq which were Tuberculosis and hepatitis B remains from most popular health problem and confirm for EPI in Babylon province-Iraq is consistent with study finding.

The simplicity of the system is determined through the evaluation of its components as being statistically examined. The analysis of the collected data indicates that the system is complex at primary health care centers, and health sectors, while it is simple in health directorate (Table 2). The results of the data analysis display that the simplicity of the system varies according to nature of the tasks and processes that take place within the system. In addition, these findings have emerged due to that the classification of EPI cases is difficult, and the system is unable to add additional sources of information, such as reporting the existence of target disease of EPI at primary health care centers and health sectors. These results are supported by [10] whofind that the target disease of EPI surveillance system is complex at all levels of surveillance system except health directorate and that there is difficulty in classification and diagnosis of target disease of EPI cases.

The analysis of the collected data indicates that the system is inflexible at primary health care centers, health sectors, and health directorate (Table 3). The finding of the study present the surveillance system is flexibility which congruent with the findings from the studies by [11] in Pakistan; and [15] in Washington State. These studies indicate the flexibility as a surveillance system attribute for target disease of EPI, and find that the Surveillance System is inflexible at health care centers, health sectors, and health directorate. In addition, there is no up to dating and developing the planning and strategies to control and prevent target disease of EPI outbreak cases at all levels due to the policy that determine the responsibility of surveillance system unit and General Health Directorate in Ministry of Health. The study findings indicate that the system is unacceptable at primary health care centers and health sectors while, is acceptable at health directorate (Table 3).

The study findings are consistent with the study of [12] and [13] in Bikita District. These studies indicate that the surveillance system is unacceptable at local health level.

The present study indicates that the system is unrepresentative at primary health care centers and health sectors but, the system is completely representative at health directorate (Table 4). The study findings are consistent with that of [14] who find that target disease of EPI Surveillance system, is unrepresentative at primary health care centers and health sectors. While, is representative at health directorate.

The study results indicate don't delay at health sectors and directorate level through 7 days except primary health care centers present some delay between steps of surveillance system for control the target disease of EPI Table (5). These results coincide with the findings of study of [15] who find that the percentage of performance on basis of reporting is higher than the target level and don't delay between steps of surveillance system except at the primary health care centers.

The study findings indicate that the system is unacceptable at primary health care centers and health sectors while, is acceptable at health directorate (table 6).

The study findings are consistent with the study of [16] and [17] in Bikita District. These studies indicate that the surveillance system is unacceptable at local health level.

The results indicate variation of stability of the system between different levels. The participant in the study at health directorate make the surveillance system active in terms of the ability to collect, manage and provide data without delay. Contrary to the local and district level, the system is inactive that there is a slowdown in the system work and depict that the system is unable to provide dataset and the system is unable to operate at all times during the year at primary health care centers and health sectors (Table 7).

The finding of the study on this point comes to match that of the study of [11] in Pakistan that indicates that the system is active at health directorate only. Also, [12] in South Africa find that target disease for EPI Surveillance System is inactive at district level and active at health directorate. These findings have emerged because that there is a deficient in materials and resources to complete the duties covered by surveillance system at the primary health care centers and health sectors.

V. Recommendations

1. Further studies should be conducted to involve more governments in Iraq about the effectiveness of the surveillance system and to determine the factors that cause it is in affectivity.
2. Encourage the academic personnel to be involved and participate in supporting the surveillance system through their studies and efforts in telling about the diseases according to the system of the surveillance system.
3. Provide a research based solutions and a new discovered methods and programs to improve and maintain the surveillance system in Iraq.
4. Reinforcement of the health facilities by specialized health manpower that have high scientific degree to make a periodic and accurate surveillance for the outbreaks and epidemic for communicable diseases.
5. Statisticians may coordinate the monthly surveillance forms and use of electronic statistic program, such as EPIINFO and ICD10 in data analysis at all levels of surveillance system.
6. Provide an appropriate logistic support and budget to serve the surveillance system in Iraq.
7. Employ a mass media to increase the community awareness about the importance of the surveillance system and the importance of the participation in telling about the diseases.
8. A periodic evaluation should be made for the surveillance system structure, process, and outcome to determine the strong and weakest point in surveillance system.

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