Abstract
Despite the fact that significant progresses has been made in prevention and control of infectious diseases and decrease in the risk, as a health problem, was expected, the disease is still one of the major causes of suffering, disability and death in the world. To control and prevent these diseases, it is vitally important and necessary to collect precise, timely, and complete data to discover and study epidemic and to develop sound control strategies based on collected data. The present study on National Notifiable Infectious Deceases Surveillance System (NNDSS) was conducted in India in 2008, and proposed an appropriate model for India, which can be a major help source for managers and officials in the Ministry of Health.

Communicable diseases are a major cause of mortality and morbidity in emergencies, and particularly in complex emergencies, where collapsing health services and diseases control programmes, poor access to health care, malnutrition, interrupted supplies and logistics and poor coordination among the various agencies providing health care often coexist.

Despite these successes, infectious diseases continue to pose an important public health problem. Today, the issue of emerging and re-emerging infectious diseases is at the forefront of public health concern. The very young, older adults and hospitalized and institutionalized patients are at an increased risk of attack from many infectious diseases. Changes in demographics, lifestyle, technology, land use practices, as well as increasing poverty, have each played a role in emerging infections.

According to the World Health Organization, one of the main causes of morbidity and mortality, in relation to the prevention of infection diseases is communicable diseases.
**Magnitude:**

Magnitude of control and reduction of the diseases are one of the main aims in the world development. Each year, by determining health indices and daily observation of the changes in such indexes, the condition of each country is assessed.

In fact, the surveillance system as a strategy is a key in prevention of infectious diseases and forms the basis for control and prevention of infectious diseases.

Since India is on the epidemiologic transition; therefore, episode of contagious diseases, have gradually declined and at the same time prevalence of non-contagious diseases are rising. Therefore prediction of financial resources and provision of the required facilities, particularly about contagious disease which impose medical cost to the system are necessary in the program designed for eradication of the diseases. Prevalence of newly emerged and re-emerged diseases such as tuberculosis, Malaria, HIV/AIDS, Hepatitis etc, also the situation of the neighboring countries doubles the attention to the process of epidemiology about these diseases.

Referring to the review of the relevant literature about epidemiology of reportable infectious diseases, the required time for decision making is several hours to several days. Therefore this problem doubles the significance of data, regarding time limit about the statistical analysis. Proper and on time information about the society based on the needs of the determined indexes in the prevention and control of this disease will be effective. One of the country's problems in the system rendering health care service is deficiency in the informatics system, recording and reporting. It points out that in case of continuing this defect process; it affects badly the health care success and the main indexes. Since the outcome of the process in notifiable infectious diseases surveillance system is information and the society faces the increasing rate of
population, changes in life style, prevalence and episode of infectious and non-infectious diseases, the researcher is trying to do a descriptive study on notifiable disease surveillance system and based on the obtained data plan to design a proper model. It is hoped that the findings of this study would help to improve the level of public health qualitatively and quantitatively.

**Main objective of the study:**

A study on national notifiable infectious diseases surveillance system in India. A managerial perspective.

**Specific aims**

1. Study the structure of the national notifiable infectious diseases system in India.
2. Study of data of the national notifiable infectious diseases system in India.
3. Study of admission criteria for recording of infectious diseases of the national notifiable diseases surveillance system in India.
4. Study on the processing of the data for national notifiable infectious diseases surveillance system in India.
5. Study of the methods of data analysis for national notifiable infectious diseases surveillance system in India.
6. Study of method of distribution of national notifiable infectious diseases surveillance system in India.
7. Study of the national surveillance system for classification of notifiable infectious disease in the India.
8. Study on the drugs quality of control method of national for notifiable infectious diseases, surveillance system in the India.
9. Study of the instruction and strategy of cofidetiality related to national notifiable infectious disease surveillance system in the India.
Research questions:
1- How is the national notifiable infectious disease surveillance system?
2- What are data of national notifiable infectious diseases surveillance system in the India?
3- What are the results of evaluating the presented model by Delphi methods?
4- What is the better model for the national notifiable infectious disease surveillance system in the India?
5- What are the criteria of admission for National Notifiable Diseases Surveillance System in India?
6- What is the process of data collection for National Notifiable Diseases Surveillance System in India?
7- What is the process of data analysis for National Notifiable Diseases Surveillance System in India?
8- What is the method of information dissemination for National Notifiable Diseases Surveillance System in India?
9- What is the case classification for National Notifiable Diseases Surveillance System in India?
10- What is the data quality controlling method for National Notifiable Diseases Surveillance System in India?
11- What is the guide line of confidentiality for National Notifiable Diseases Surveillance System in India?

The sample
For designing the model of NNIDSS of the country, the researcher studied about health system in different states in the initial stage. Also for examination of the proposed model by Delphi method. I referred to the ministry of health, university and health department of New Delhi the disease experts, and the infectious disease faculty members and experts
of organization for control and campaign against the diseases. The PhD students under management for infectious diseases was also covered. The questionnaire with the proposed protocol will be delivered through mail or by referring to the subjects.

Finally after sending of questionnaire the questionnaire were collected. The incomplete questionnaire were excluded and the completed questionnaire were used for statistical analysis.

**Type of research**

This cross-sectional study was performed in 2007-2008. Considering the advantages and disadvantages of current NNIDSS of India, a new NNIDSS will be designed by Delphi method.

**Research methodology**

Selection of country in this study was done based on the review of the literature, Internet, counseling (advice of experts) and the following features.

- After selection of the country, by referring to the review of literature, the Internet, journals and communication with the reporters, the following will be done.
- The main points of the NNIDS in India were considered to the aims of the study.
- Considering the main points of the study, a blank table (table 1) was prepared.
- The validity and durability of the table concerning the aims of the study in India was evaluated by experts through interviewing and the necessary changes will be incorporated.
- During the research, the data relevant to the main points of the study of the NNIDSS in India were classified and given in the table.
- Advantage and disadvantage of current system were pointed out by investigating different sources and experts opinions and were presented in the table.
• The Instructions, booklet, state rules and interview with the administrators and executives entered in the table.

• Considering to the data available in the table, a model suitable with the economic, cultural, and geographical conditions of India for NNDSS was proposed.

• The proposed model will be examined by Delphi method as follow:
• Questionnaire based on the major and minor points of the proposed model and the aim of the study was prepared by the researcher.

• Validity of the questionnaire at different times by 15 experts in India was evaluated.

After referring to the National Institute of Communicable Diseases (NICD) and Ministry of Health and Family Welfare at the Health Department, and preparation of the lists faculty members concerned with infectious diseases, experts at the organization for prevention and campaign against infectious disease, the students and PhD graduated student of management of health information the questionnaire and the proposed model were distributed through mail and personal contact.

Finally after sending the remaining questionnaire (within 15 days) the questionnaire were collected.

• The incomplete questionnaire were excluded. Analysis of the completed questionnaire leads to clarification of the needs for designing questions about the major and minor points of NNIDSS.

• A brief questionnaire considering the presented proposals the validity of the questionnaire was evaluated by the experts in India.

• This questionnaire was sent to those experts whose questionnaire was analyzed at the first step.

• Analysis of the second stage questionnaire leads to minor changes in the second model.
• After analysis, finally, for presentation of model for NNIDSS of India, some experts were asked in a session and there was a discussion undertaken about the proposed model. In this session, the final agreed model was sent to the NNIDSS.

**Data collection tool**

Some data of this study was collected by referring to the review of the literatures, journals, counseling, study of the state rule, and state instructions. Data presented in this section includes major and minor points of NNIDSS of India. The data was given in the blank table.

Validity of the table with the help of the experts through interview leads to the proposal of a model for NNIDSS for India.

In three steps the proposed model was examined by Deli method.

For examining in the first step, (questionnaire number one was attached) a questionnaire was prepared by the researcher. The questionnaire number one comprises 5 questions about the measuring of the demographic features and 33 questions about the model points.

For examining of the model at the second step (the questionnaire is attached) a questionnaire with 4 questions was prepared. The validity was evaluated by the experts from Iran and India through interviewing at different stages.

The present research which investigates NNIDSS of India and aims at proposing an appropriate model for India was carried out in 2008. In line with the objective of the research and to identify the parameters of NNIDSS of India, library sources and Internet was used and specialists and experts of India were consulted through e-mail and face-to-face interview.
Considering the advantages and shortcomings of each parameter, and taking into consideration socio-economic, geographical and cultural conditions of India, a model was proposed for NNDSS of this country. The model was tested in three stages by means of Delphi method. A model was finally proposed for NNDSS in India.

This chapter presents a summary of the findings and discusses the objectives of the research and states the final conclusion. Researcher's proposal with regard to the results is presented at the end.

A summary of the findings of the research:

A summary of the findings about the nine parameters are given below:

The first parameter of NNDSS was “The structure of NNDSS”. According to the research findings, NICD was determined as the organization in charge at national level. It was suggested that a secretary for management of health information in NICD center be established as a subset monitoring organization involved in policy making. PHC, CHC, state and NICD were approved as NNDSS.

The 2nd parameter was “Data types in NNDSS”, The registration of demographic, clinical, laboratory and epidemiological, diagnostic, vaccination records, and risk factors data were approved by most specialists in order to use some of these data in terms of the disease.

Doctor's clinic, private and government hospitals, rural and urban health centers, army, Blood Transfusion Organization, Blood Bank,
government laboratory, private clinics, nursing home, prisons, and vets were considered as essential sources for notifying the diseases.

The 3rd parameter “Criteria for patient's acceptance for registration in NNDSS”. Suspected case probable case, definite case, clinical compatibility, epidemiological relevant and laboratory confirmation were proposed as criteria for accepting patients for registration in NNDSS according to disease type. To describe the variables, the completion of standard definitions of all notifiable diseases were suggested. To make a framework for disease definitions, clinical description and laboratory criteria were agreed on for diagnosis and classification of disease for the purpose of notification.

Fourth parameter was “The process of data collection in NNDSS”. To collect data, depending on disease type, active and passive methods were considered as being necessary. Data collection process starts from first sources local (PHC), State (CHC), and ends with national (NICD).

Different time limits were set for data transfer according to disease type and there was consensus among experts in this regard. For urgent cases telephone, e-mail, and letter-on daily basis, and weekly 5 days after diagnosis, and monthly and annual reporting were suggested. Further, to transfer data, web, telephone, e-mail and letter were considered as priorities in the order mentioned respectively.

The fifth parameter was “Data analysis method in NNDSS”. The use of diagram, table and disease chart were suggested as appropriate
methods to present data and to analyze data such as cases, deaths, incidence rate, incidence rate of disease, case fatality ratio and general awareness of risk were suggested. On the use of an appropriate software for data analysis, it was suggested that existing software for this purpose be examined and appropriate software such as INFO-EPS and MS-EXCEL be selected.

Sixth parameter was “Methods for information dissemination in NNDSS”. To disseminate information, electronic, press, audio-visual and oral mode were suggested. And weekly report on mortality, mass media, and notification through web, newspapers, meeting, handouts, books, postal letters, press interview, bulletin, reports and weekly review were considered as most appropriate ways for information dissemination.

Seventh parameter was “The application of International classification of diseases in NNDSS”. Considering the use of International classification system of diseases at national level and its importance from experts’ viewpoints, the use of ICD-10 for all health levels was considered as being necessary.

The eight parameter was “Data quality control methods in NNDSS”. The preparation of written guidelines for data quality control in NNDSS, consensus on national standards of notification, complication of standard definitions of disease, the determination of the minimum data for notification at national level, publishing manual /guide for users, time period set for notification, regular training of staff, safeguarding
confidentiality, using appropriate statistical methods for data quality control were approved by specialists.

The indexes of completeness, timeliness, validity accuracy, clarity, controlling recurrent cases, and usefulness of data were approved as main indexes of quality control by experts. The use of appropriate software package, capable of automatic identification or recurrent cases on the basis of some specific fields for prevention from recording recurrent cases was recommended. IDSP is data quality control monitor organization.

Ninth parameter was "guidelines of confidentiality in NNDSS". MOHFW was agreed as the organization in charge of developing guidelines and policies for confidentiality of data and patients privacy. Making governmental rules concerning invading patients' privacy as a result of disclosure of their confidential information was considered as being important. Emphasis was laid on unified identity number to keep track of the patients instead of sending data related to patients' identity and defining different levels of management allowed to have access to computer and identity details of patients.