

Original Article

The Communicable Diseases Surveillance System in Iran: Challenges and Opportunities

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Abstract

Background: The aim of this study was to determine the challenges and opportunities of the Communicable Diseases Surveillance System (CDSS) in Iran.

Methods: This qualitative study was conducted using semi-structured interviews and focus group discussions (FGD) with 64 participants from October 2016 to April 2017. Purposeful sampling was used to recruit participants. The collected data were analyzed via the content analysis method. Data analysis was performed using MAXQDA10 software.

Results: The results of this qualitative study were categorized in two parts: Challenges and opportunities. The CDSS is facing challenges in the fields of stewardship, reporting, information analysis, information, interventions, and education. Good infrastructures and structure, the technical support provided by the Centre for Communicable Disease Control (CCDC), the achievements of the CDSS, and the suitable electronic systems are among the opportunities of CDSS.

Conclusion: The results of this study showed that CDSS has several major challenges. Authorities and policymakers must not ignore communicable diseases and their management tools, including CDSS because of their focus on non-communicable diseases. Some important strategies to overcome the challenges of CDSS can be the following: motivating policy makers to put emphasis on communicable diseases as a national security issue, the ratification and modification of laws and regulations on reporting, the involvement of the CDSS in the accreditation of hospitals and the renewal of the license for healthcare professionals, and motivating organizations outside the health sector to participate in the programs through inter-institutional agreements.

Keywords: Challenge, Communicable diseases, Iran, Surveillance system

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Introduction

Nowadays, despite the dramatic advances of medical sciences in the control of communicable diseases, these diseases can potentially cause epidemics and health problems around the world.¹ Unfortunately, despite the successful eradication of smallpox, other communicable diseases have not been successfully controlled so far. On the contrary, these diseases are increasingly threatening the public health and leading to an increase in health care cost in many countries, especially in developing countries. On the other hand, the world is affected by the emergence of new infectious agents such as Ebola, avian influenza, AIDS, SARS, and the reappearance of infectious diseases in new forms, some of which are resistant to treatment, such as malaria, gonorrhoea, and meningitis.² These are all the reasons that highlight the importance of addressing communicable diseases and the need of countries for an

effective health surveillance system for the comprehensive, accurate, and timely collection of health information.^{3,4}

However, despite the implications and the importance of the Communicable Diseases Surveillance System (CDSS), it is facing several challenges in many countries. In some developing countries, policies have shifted their focus from communicable diseases to non-communicable diseases, and there has been a decrease in the importance of communicable diseases.⁵ Doctors, especially those working in the private sector, do not report the cases and it is one of the main challenges of CDSS that has been reported by some studies.⁶ The inadequate information of the health staff about communicable diseases and the method of reporting is also one of the obstacles and challenges facing CDSS.^{7,8}

However, the few studies that have sporadically been carried out on stakeholders and groups involved in CDSS

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in Iran show that this system still has many challenges. In a study conducted in 2013, the main reasons for not reporting communicable diseases by doctors in the private sector were the followings: lack of awareness of goals in the surveillance system, inadequate understanding of reporting, and lack of appropriate feedback. As stated in the mentioned study, not reporting disease by doctors in the private sector is one of the main challenges of CDSS in Iran.⁹ Based on the results of another study conducted in 2015, public and private hospitals have an inadequate collaboration with CDSS that is due to motivational factors and insufficient information.⁵ It has also been found that doctors have inadequate knowledge, attitude, and performance in the disease reporting system.¹⁰

Taking into consideration the increasing importance of communicable diseases, the reappearance and emergence of communicable diseases, the impact of disease epidemics on different countries, and the potential of diseases for becoming a security and trans-national problem, it is necessary to evaluate CDSS carefully and comprehensively. Therefore, the aim of this study is to identify the challenges and opportunities of CDSS using a qualitative assessment. Using the qualitative method allows researchers to gain insight into participants' experiences and thoroughly examine the challenges and opportunities of the people directly involved with the CDSS.

Materials and Methods

The present qualitative study was conducted over a period of six months, from October 2016 to April 2017. The reason for choosing a qualitative method is the nature of the research question. Qualitative methods seek to discover the human experiences because it is the experiences of each person that shapes the structure of truth for them.¹¹ The qualitative method was used in this study because its objective was to identify the challenges and opportunities of the CDSS based on the stakeholders' perspective.

Participants included managers and experts at the level of the Ministry of Health and Medical Education (MOHME), the level of Universities of Medical

Sciences, the level of district's health network, and other organizations involved in CDSS such as veterinary organizations, medical councils, welfare organizations, private laboratories, and private hospitals. The purposeful sampling method was used to select individuals who had the greatest information and knowledge about the research question. Also, the maximum variation sampling method was used to cover all aspects of the CDSS and to identify different perspectives. To this end, participants were selected from all levels of the health system and organizations involved in the CDSS.

Data were collected through semi-structured interviews and focus group discussions (FGD) conducted by two researchers (HA and AMB). In each interview and FGD, the goals and importance of the study were first explained to the participants. Having ensured the confidentiality of information, the interviews were recorded with the permission of the interviewees. Afterwards, the following questions were asked: "Give us a brief summary of your experience and background." "What challenges does the CDSS have?" "What are the strengths and opportunities of the CDSS?" In addition, during the interview and the group discussion, researchers tried to obtain more accurate and more in-depth information from the participants through probing. The duration of each interview was between 35 and 60 minutes and the duration of FGD sessions was 110 to 120 minutes. Data saturation was achieved after conducting 47 interviews and three FGDs (Table 1). A total of four people did not consent to participate in the study because of personal reasons.

The conventional content analysis approach was used to analyze the data.¹² Content analysis method is a suitable method for obtaining valid and reliable results from the written data.¹³ In order to analyze the data, first, the transcribed texts of the interviews were read word-by-word and the codes were extracted from the interviews. After identifying the codes, the final analysis was performed and the relationship between the codes was determined. Finally, the data were classified using MAXQDA10 into categories, subcategories and codes.

Table 1. Demographic Data on People Participating in Interviews and Focus Group Discussions

	Managers	Staff	Total
Policy maker in health sector	2	—	2
Centre for Communicable Diseases Control (CCDC) in level of Ministry of Health and Medical Education	4	5	9
Vice chancellery for health in level of University of medical science	12	4	16
District's health network	2	2	4
District health Center	2	-	2
Public Hospital (Infection control nurse and Laboratory)	—	5	5
Rural health center	—	2	2
Other organization ^a	7	-	7
Total	29	18	47
Focus Group Discussions (FGDs) in level of District health Center	—	3 FGD (17 staff)	

^a Other organizations involved in surveillance system including Veterinary Organization, Medical Council, welfare organization, private laboratory, and private hospital.

According to Lincoln and Guba, the four criteria of credibility, conformability, transferability and dependability were used to determine the trustworthiness of the data.¹⁴ The member check method was used for credibility. Conformability was made possible using the maximum variation sampling method and obtaining opinions of participants. Transferability was made possible by describing all the research steps and assuring quality of data collection. Reliability was provided through peer review.

Results

In this study, a total of 47 persons were interviewed. In addition, 17 persons participated in three FGDs. The participants' demographic data are presented in Table 1.

Challenges and Weaknesses of CDSS in Iran

Based on the results of data analysis, the challenges of CDSS were classified into five categories, and 14 sub-categories (Box 1).

1. Stewardship Challenges

The stewardship challenges are the problems that are related to the policymaking and management of CDSS at the senior and middle levels of management at the MOHME. The stewardship challenges identified through data analysis were classified into two main sub-categories including the followings: challenges of inter-sectoral governance and challenges of intra-sectoral leadership.

Challenges of inter-sectoral governance: Participants believed that the following items were the challenges facing CDSS in Iran: weaknesses in regulatory and legal frameworks such as the non-involvement of the CDSS in the hospital accreditation, the low involvement of the CDSS in the renewal of the permits issued for health care professionals, non-involvement of the CDSS in the evaluation of health professionals, non-involvement of the CDSS in providing health care professionals with financial rewards, lack of coordination between Health

Deputy and Treatment Deputy at Universities of Medical Sciences, overlooking strategic and operational plans, and the weaknesses in involving the private sector including hospitals, laboratories, and private sector physicians in the CDSS. One of the laboratory experts who was working in the public sector said,

"Laboratory accreditation sheets do not have any item to assess our relationship with health centers, to find out how much we help them, how much we are active, what are our documents, and how much we cooperate with them. There is nothing like this" (p.15).

Challenges of intra-sectoral leadership: This class of challenges includes the weaknesses in attracting the partnerships from organizations outside the health sector such as veterinary medicine organization, prisons organization, welfare organization, etc. Non-systematic cooperation between organizations outside the health sector and CDSS (problems in the implementation of contracts on the cooperation between other organizations and the CDSS) and the person-centric nature of cooperation between other organizations outside the health sector and CDSS were among the sub-themes related to this challenge. As the participants stated, there is no law on the reporting of communicable diseases, hence it should be given more attention at legislative levels. The head of one of the Centre for Communicable Diseases Control (CCDC) departments said,

"We do not have the right laws on disease reporting; thus, we should try to make contacts with the Parliament and the Parliamentary Healthcare Committee and ask them to provide an appropriate legal basis for communicable diseases ... The few laws that are in place to report the communicable diseases are ratified before 1961" (p. 14).

2. Challenges of Reporting

The participants reported some challenges in reporting that were categorized in two sub-categories including comprehensiveness and quality of reporting and recording.

Comprehensiveness of reporting: Almost all the people participating in the study believed that reporting and recording in the CDSS was not comprehensive. As the participants stated, there were some problems and defects in private sector reporting that were due to different reasons; for instance, the private sector does not benefit from reporting, the health care service providers in the private sector do not have any knowledge about the reporting system, the working hours of the personnel in the private sector are different from what defined by the CDSS, and the importance of reporting is not understood. The participants also reported some problems in the reporting in the public sector that were due to several factors such as the continuous changes in the human resources working as the public service providers, lack of appropriate feedback to lower levels, and infrastructure problems such as the

Box 1. Categories and Sub-categories of the Challenges of CDSS

1. Stewardship

- Inter-sectoral governance
- Intra-sectoral leadership

2. Reporting

- Comprehensiveness of reporting
- Quality of reporting

3. Information

- Information systems
- Interpretation and publication of information

4. Education

- Status of the CDSS in university education
- Orientation of retraining courses

5. Intervention

- Facilities for intervention
- Intra-sectoral support
- Cultural response of the community
- Timely reporting or timely confirmation of the epidemics
- Assessment of the ability to respond to crises

lack of Internet platforms and hardware to report diseases. According to one of the experts participating in the study, there were no legal measures to motivate the private sector to report the cases of disease. One of the participants said,

"We are facing underreporting, which is too high. It is due to the fact that, a large number of people who should report the cases, I mean the doctors in the private sector, do not accept the public system at all; they do not give any response... There is no legal measure to force a hospital or private doctor to report" (p. 40).

Quality of reporting: Some of the participants believed that there were some problems with the quality of the reports. As they said, in some cases the reports were not of good quality. The quality of the reports was low because some reports were incorrect, only the available cases were reported, and reports were collected only to meet the requirements. The head of a communicable diseases department at one of the medical universities said,

"In the surveillance system, we only manage to collect the reports from a series of clinics and physicians' offices that are more convenient and accessible to us, only to do our assignments. We do it just as a mere formality. I think if we change our approach to the surveillance system, it certainly can have a better outcome" (p. 29).

3. Challenges of Information

Challenges of information were classified into two sub-categories, including information systems, and the interpretation and publication of information.

Information systems: Some of the most important problems with information systems are the followings: the multiplicity of data entry systems, the continuous changes in the systems, the lack of access to some systems by the peripheral levels, and the weak design of some systems. One of the experts working at a district said:

"In the last few years, we had a lot of information systems like the malaria portal that were really functional ... but when they had become well recognized, they were replaced with a new system" (FGD 2).

Interpretation and publication of information: Analysis of data revealed some important challenges facing CDSS in Iran in this field, including the followings: late publication of information in some cases, poor knowledge of the staff for the interpretation and analysis of data at the operational levels, weakness in providing feedback to operational levels, and poor collaboration between educational sectors such as universities and faculty members and administrative units.

4. Challenges of Education

Based on the collected data, the challenges of education were the "status of the CDSS in university education" and "orientation of retraining courses".

Status of the CDSS in university education: As stated by the participants, reporting is not institutionalized in

university education, the graduated people have inadequate knowledge about the CDSS, there are few apprenticeship courses (educational units) among the health courses, the health lessons are considered as recreational activities for students studying clinical majors, and the majority of the specialist human resources (physicians, nurses, physiotherapists, laboratory scientists) are not familiar with diseases subject to the immediate reporting. Because of all the mentioned factors, the educational system is not paying enough attention to CDSS. One of the heads of the CCDC said,

"The reporting system should be well established during the time of education. In other words, when the professor is describing communicable diseases, he or she must not only put emphasis on diagnosis and treatment, but also should highlight the importance of the reporting system" (p. 20).

Orientation of retraining courses: The participants believed that in addition to university education, in-service retraining at the beginning or during the service, which is held for health care service providers, has some challenges and weaknesses. The inappropriate orientation of retraining courses planned for nurses, physicians, physiotherapists, and laboratory specialists, and the poor design of retraining courses, and the presentation of these retraining courses by unskilled people were the most important drawbacks stated by the participants.

5. Challenges of Intervention

Intervention challenges included issues such as facilities for intervention, intra-sectoral support, cultural responses of the community, timely reporting or timely confirmation of the epidemic, and the assessment of the ability to respond to crises. In their views, due to the lack of reserved hospital beds, the lack of specialists in some of the first-line hospitals, and because of service and financial problems, the facilities for intervention are not in a good status. As they stated, at the time of intervention, intra-sectoral support and coordination between organizations outside the health sector are weak. The weak cooperation of the community and the confrontation of some of the programs with the common beliefs of the people are among the challenges reported by the participants. They believed that these challenges prevented patients from completing their full course of treatment. In addition, the other weaknesses reported by the participants were the followings: the weakness of outbreak assessment teams in districts, inconsistency in dealing with epidemics because of personal preferences, and insufficient preparedness to deal with crises caused by communicable diseases.

To highlight the importance of the involvement of other organs in dealing with communicable disease and implementing the interventions, one of the participants said,

"A series of interventions should not be only implemented at our level. Most of the time, we implement an intervention,

that is, we tried to carry out the intervention, however, it was not successful because of the lack of cooperation from other organizations” (p. 19).

Concerning the lack of facilities and financial difficulties for the implementation of proper interventions in the face of an epidemic, an expert who was working in disease control center of a district said,

“In the hospital, one of the important issues for patients with communicable diseases (influenza, CCHF disease) is to provide an isolated room ... Our hospital does not pay for this, and does not provide an isolated room” (FGD, 3).

Strengths and Opportunities of CDSS in Iran

Based on the results of data analysis, the strengths and opportunities in Iran were classified into four categories (Box 2).

1. Infrastructures

One of the opportunities of CDSS is related to the infrastructure and structure available for the system. These human and physical resources are achieved through many years of work and experience in CDSS, and need to be supported by higher levels of authority to continue the activities in the future with high levels of motivation and capability. The participants believed that CDSS had a good organizational structure and framework. The proper structure of the CDSS for primary health care and the availability of health care providers in remote areas help to promote reporting. Moreover, the monopoly in the delivery of some drugs used for specific diseases and the existence of a good laboratory network, which is in charge of definitive diagnosis at the regional and national levels, help to assess most of diseases within the CDSS channel. Concerning the proper organizational structure that is available within the health care network system, some people said,

“Our system uses the main infrastructure of the health

(system), that is, a structure spreading from the depths of the villages to the heart of the cities ... the established organizational structure has a custodian everywhere in the country” (p. 25). “It can be implemented at all levels and can be taught to many people, and in practice it can cover many diseases” (FGD, 3).

2. Electronic Systems

From the viewpoint of the participants in the present study, who were also the users of CDSS, some of the designed electronic systems are more appropriate than other systems and are among the strengths of CDSS in Iran. The portal system is one of the well-designed and suitable systems in CDSS. The most important strengths of this system are the followings: increase in reporting, up-to-date data, systematic data flow, elimination of manual and paper systems, simplification of tasks, speeding up the reporting, and gradual evolution of the system. Syndromic system had also some benefits for CDSS; among its major benefits, we may note the followings: early detection and reporting of diseases, enhancing evidence-based reporting, and increasing reporting in the private sector. After the launch of the syndromic system, there has been an increase in the reporting by the private sector. It might be attributed to the fact that, previously some physicians did not report the disease due to their doubt and uncertainty in diagnosis of the disease, however, the syndromic system provided a solution to this problem. Several systems have been designed and implemented in the last 20 years, which, according to the participants in this study, tuberculosis, malaria, influenza, and AIDS systems were among the strengths of the CDSS.

3. Technical Support Provided by Upper Levels

The technical support provided by the CCDC was one of the other opportunities and strengths of CDSS. The participants believed that all levels had access to CDSS guidelines, and the CCDC quickly developed guidelines for most of communicable diseases, including emerging diseases. In addition, the participants reported some other strengths of CDSS such as the support for interventions that included different items, as follows: the establishment of a rapid intervention team and the epidemiological team, timely implementation of interventions as appropriate, obtaining support from governors at the times of crisis, and training the community in the event of epidemics. One of the participants commented on the appropriate guidelines developed by the center for disease control and said:

“There is almost a very strong guideline for each individual disease, which makes it easy to give a response to the private sector, our staff, and hospitals” (p. 26).

4. Achievements of the CDSS

The participating in the study stated that the achievements

Box 2. Categories and Subcategories of Strengths and Opportunities of the Communicable Diseases Surveillance System

1. Infrastructures

- Proper framework and organizational structure of the CDSS
- Appropriateness of the organizational structure for the field of health
- Favorable access to resources (physical and human resources)

2. Electronic systems

- Designing and launching the portal system
- Designing syndromic surveillance systems
- SIB system
- Launching other systems, such as influenza

3. Technical support provided by upper levels

- Appropriate guidelines
- Analyze and publish of information
- Support in interventions

4. Achievements of the CDSS

- Maximum immunization
- Reduction of the burden of communicable diseases
- Control and eradication of some diseases

of the CDSS in recent years were among the main strengths of CDSS. As the participants stated, the status of immunization of communicable diseases was one of the strengths of CDSS in Iran, and it was more valuable when comparing with neighboring countries like Afghanistan, Pakistan, and Iraq that are facing many drawbacks in this field. In addition, from the perspective of the participants, it was of great importance to observe that many preventable diseases were almost eradicated in Iran, as this reduced the burden of communicable diseases. Concerning the success of the CDSS in the elimination and eradication of some diseases, a participant said:

“After 40 years, in 2014 for the first time we did not have any case of El Tor in the country. In the past 10 years, we successfully eradicated paralysis. During the past 10 years, we eliminated Malaria Falciparum. These are among the very special issues which are considered as our great achievements” (p. 31).

Discussion

The weaknesses in regulation and laws and the lack of intra-sectoral and inter-sectoral coordination were the most important challenges of CDSS. In line with the results of our study, Jabari and Rostami¹⁵ showed that inefficiency in inter-sectoral and intra-sectoral coordination in the health system and non-enforcement of the laws and regulations are the most important custodianship problems in Iran's health system. The WHO's report in 2000 identified custodianship as the most important function of the health system.¹⁶ It seems that the supportive laws that are necessary to play the custodianship role by the MOHME are weak. Advocacy and legislation are essential to reinforce the CDSS. This can only be achieved through collaboration of the health sector with other sectors.¹⁷ Therefore, enhancing the stewardship role of the CCDC by setting and updating rules for reporting of communicable diseases and improving inter- and intra-organizational coordination are among the most important strategies for addressing the challenges and improving the CDSS.

The results of the study showed that the quality and quantity of communicable disease reporting are not good. As reported by various studies conducted in the country, physicians have improper knowledge, attitude, and performance about the disease reporting system, the patients are dissatisfied with the reports and the confidentiality of the data collected by the physicians, and they perceive no benefit in reporting^{5,9}; the mentioned items are introduced as the challenges which justify the low rate of reporting by the private sector. The results of the study by Mahdavi et al indicate that only 68.1% of deaths among children under the age of five are reported.¹⁸ In another study, the estimated completeness of the reported cases of hepatitis B in 2006–2013 was 77%.¹⁹ Fournet et al reported the strengthening of communication between the private and public sectors as a precondition for improving

the surveillance system.¹⁷ Krause et al also emphasize that feedback of surveillance data to physicians and other reporting organizations can be an incentive to participate actively.²⁰ Considering that a large proportion of patients in Iran refer to the private sector for treatment, the involvement of private sector by benefiting from reporting and giving feedback should be priorities of the CDSS.

The most important information challenges in the present study were the multiplicity of systems, the frequent changes in the systems, the lack of Internet platform and the electronic knowledge at the peripheral level, and the weakness in providing feedback to operational levels. The results of the study by Masoori and Ebadifard Azar showed that, as compared with other countries, Iran's CDSS does not meet all the information needs.²¹ The results of the study by Asadi et al showed that the information system used for primary health care was manual in all the studied centers, and the rate of computer use for collecting and processing data was only 25%; in addition, none of the 60 urban and rural health centers had access to the Internet.²² Some studies have reported that transforming manual reporting to the web-based reporting system has increased the timeliness and accuracy of data, increased reporting speed, reduced data loss, and has led to more accurate reporting and early detection of outbreaks.²³⁻²⁵ Yan et al showed that electronic syndromic surveillance system for infectious disease in China had the potential to identify the changing patterns of diseases in the community.²⁶ Therefore, connecting all reporting centers, including private sector physicians and laboratories, to information systems and facilitating reporting with fast warning devices can be strategies for increasing the effectiveness of CDSS.

One of the other challenges facing CDSS was educational challenges. The study by Sargolzaee et al in 2011 showed that the general practitioners' awareness of the CDSS for Crimean-Congo haemorrhagic fever (CCHF) was low.²⁷ The results of study by Hosseini et al also showed that lack of belief in the disease reporting system and lack of training about CDSS were among the main problems in the communicable diseases surveillance and reporting system.²⁸ The results of the study by Ahmadi et al showed that only 34.8% of the surveyed physicians were aware of the reportable diseases based on the knowledge obtained during the period of education.²⁹ Considering the fact that reporting rate is higher in physicians and other therapists who have received training on the importance of reporting infectious diseases,⁶ the revision of academic curriculum and targeted retraining help to increase reporting largely.

The findings of this study showed that CDSS faces challenges in interventions, such as lack of facilities for intervention, poor intra-sectoral support, cultural resistance, and delay in reporting. Jajoski and Grosleas conducted a study in the United States and concluded that deficiencies in reports and analysis in the surveillance system would restrict and prevent the timely intervention

and limit timely and appropriate interventions.³⁰ It seems that the interventional challenges are posed by other challenges of CDSS, including poor inter- and intra-sectional cooperation and poor reporting. Therefore, it is recommended to draft instructions for cooperation with different stakeholder organizations, strengthen the private sector reporting through their benefiting from the reporting system and facilitating reporting for them, and to conduct periodic plans for assessing the ability of local teams to respond to crises.

In the present study, the proper organizational structure, the availability of desirable resources, electronic systems, high coverage of vaccination, and the elimination and eradication of diseases were among the opportunities of CDSS. Based on the World Health Organization's statistics, the coverage of the triple vaccine and the coverage of measles vaccine in 2015 were 98% and 99%, respectively.³¹ Concerning achievements, it is worth noting that some of the participants in the study considered the negative aspect of these successes. They said that the success of CDSS has resulted in reduction in focus on this segment, and policy makers and the MOHME have given little attention to this sector. Some of the participants said that due to the decrease in the burden of communicable diseases and the numerous achievements of CDSS, less attention is paid to this sector and their financial resources had diminished. It seems that the use of appropriate infrastructure for the health sector, in particular family physicians and health care providers in rural areas, new electronic systems such as the SIB and syndromic system, and the establishment of urban family physician and electronic records will provide good opportunities for a more comprehensive CDSS coverage.

In conclusion, the results of this study show that CDSS has several major challenges. Authorities and policymakers must not ignore communicable diseases and their management tools, including CDSS, because of their focus on non-communicable diseases. Some important strategies to overcome the challenges of CDSS can be the following: motivating policy makers to put emphasis on communicable diseases as a national security issue, the ratification and modification of laws and regulations on reporting, involvement of the CDSS in accreditation of hospitals and renewal of license for healthcare professionals, inclusion of the CDSS in training and retraining programs of health professionals, and motivating the organizations outside the health sector to participate in the programs through inter-institutional agreements.

Authors' Contribution

Study design: GM, AMB, HA, MMG; Literature research: MK, AN, AMB; Data collection and analysis: AMB, HA; Writing and editing the manuscript: GM, AMB, HA, MN. All authors read and approved the final manuscript.

Conflict of Interest Disclosures

The authors have no conflicts of interest.

Ethical Statement

The proposal for this study was approved by the Ethics Committee of Kurdistan University of Medical Science with the file No. IR.MUK.REC.1395/184.

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