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Clinical informationist participation in grand round sessions of gastroenterology department: An action research study

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Abstract:

BACKGROUND: Nowadays, providing access to the required information by clinical informationist (CI) is vital for clinical teams to make the best decision. This study was carried out to identifying how CIs should participate in grand round (GR).

MATERIALS AND METHODS: The current study is an action research study. It was conducted in the GR sessions of the Gastroenterology department of Al-Zahra Hospital affiliated with Isfahan University of Medical Sciences in 2017. Participants included attending physicians, fellowship students of the Gastroenterology departments, a CI, and two supervising medical librarians. Data were collected through observation and discussion. Qualitative content analysis and concept mapping were used for data analysis.

RESULTS: The findings indicated that existing problems were related to the CI, medical team, and infrastructural ones. The participation of the CI in medical team was arranged based on the following steps: planning, action, evaluation, and suggestions. It started from an initial diagnosis of patients and ended in GR meetings. During evaluation step, suggestions were made to remove the existing problems and in the fifth step, results were summarized and a framework for the participation of the CI in GR sessions was suggested.

CONCLUSIONS: Medical team members were satisfied with the participation of the CI, but it is necessary to remove the existing structural and personal barriers (related to the CI and medical team members), in order to improve the efficiency of this participation.

Keywords:

Action research, clinical informationist, clinical librarian, grand round, medical team

Introduction

Nowadays, increased volume of information requires distinguishing between accurate and inaccurate information in order to have advancements in any fields of sciences.[1-3] In medicine field, the majority of questions asked by medical specialists occur at the point of care, so timely access to accurate and relevant information is required to offer more effective care for patients.[4,5] On the other hand, educational rounds including grand rounds (GR) (GR are methodology of medical education and inpatient care, consisting of presenting the medical problems and treatment of a particular patients [rare cases] to an audience consisting of doctors, residents, and medical students), significantly affect clinical education and therefore it is necessary to pay special attention to the quality of topics offered in these rounds. It seems that evidence-based topics and clinical decision-making are missing in conducted educational rounds in Iran.[6]

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A clinical informationist (CI) is a person who meets the information needs of medical teams and can facilitate the use of evidence-based medicine to make the best possible medical decisions.[7,8] Furthermore, the presence of informationists can save time for the medical team and may help to reduce the treatment cost of healthcare system, patients and their families.[9-11] It also affects the information seeking behavior of physicians, promoting their library skills and develop the role of medical librarian as an effective treatment team member.[12]

There are some infrastructural and skill-based requirements for the participation of CIs in medical teams which need to be identified.[13] Although CIs currently offer limited services in several hospitals in Iran, they are not yet readily accepted. Evaluating the participation and services provided by CIs can help determine the strengths and weaknesses of treatment process and help improve the CIs' ability to provide high quality services.

The aims of the current study focus on identifying how CIs should participate in GR, and creating the framework for their participation in GR to assist clinical teams in decision-making.

Materials and Methods

Action research could help participants to find the solutions for themselves by the research setting, data collecting and analyzing, and controlling the usage of their results. It also focuses on the deep perception of participants' behavior, and their application of learning rounds for their improvement. The following study is an action research study that includes five steps:[14]

First step: Recognizing and describing the problem

Literature review showed that the presence of the CI in clinical teams is necessary and can lead to the improvement of medical decision-making.[13-21] Despite the necessity of CIs presence in medical teams for providing right information in right time, this participation has not been practically implemented in Iran, except in one case.[21,22] Hence, it was decided to implement this study in a real situation, specifically in GR.

Second step: Planning for action

The CI attended in weekly patient's history-taking sessions and GRs of gastroenterology department of Al-Zahra hospital for rare disease. Patient's history was taken every Tuesday and GR sessions had held the next Mondays. In each patient's history-taking session, patients entered the gastroenterology department to share their medical conditions with fellowship students (fellowship is the period of medical training that a physician undertakes after completing a specialty training program [residency]. During this time, the physician is known as a fellowship student or fellow). In GR sessions, attending physicians and fellowship students gathered together in order to discuss treatment options for the patients whom medical history were taken.

In this step, details of CI participation including time, location, participation method, and the procedure were planned.

Third step: Action

In this step, relevant information resources were searched on the topics and questions especially PICO presented to CIs by fellowship students or attending physicians in related medical and clinical databases and resources that mentioned in methodology section. The number of cases was 30 and each case had 1–5 questions that referred to CI for searching. Then, the concept map of each condition was drawn based on patient's medical history and information retrieved from various sources and presented to fellowship students for classification and diagnosis. Finally, rare cases identified in these sessions were used for case report articles. In this step, information about each of the solutions, derived from previous steps (searched information) was used to select the best possible solution. Afterward, data analysis was carried out and the best approach was selected to have this teamwork collaboration.

Fourth step: Evaluation

In the evaluation step, the results of the interventions were determined. In this step, the achievement of research goals was determined based on the previous steps. In fact, the information retrieved by CIs for medical teams, medical team satisfaction, writing patients' histories in standard forms, using concept maps, and number of published case reports based on the cases presented in GRs, signifies the role of the CI in improving medical decisions. Then, feedbacks from fellowships and attends are received by verbal communication and were used to improve the participation process through making some changes in process according the feedbacks.

Fifth step: Determination of findings and future planning

In this step, results of previous steps have been analyzed, the gaps and problems have been identified in order to improve the participation process, various solutions have been suggested by CI and the research team. Furthermore, an outcome report has been provided to other researchers. This report shows the participation process of the CI in the GR.

In next part, the other elements of methodology will introduced such as study location, participations, data collection.

Study location

This study was conducted in GR sessions of Gastroenterology Department of Al-Zahra hospital affiliated with Isfahan University of Medical Sciences. Some reasons for selecting this hospital include:

1. It is one of the largest hospitals in Isfahan province and the main center for patient referral from surrounding provinces
2. Attending physicians of gastroenterology department offered a proposal to university's faculty of Library and Information Sciences for the cooperation between CIs and medical teams
3. Some medical team members of gastroenterology department supported this cooperation
4. The majority of other departments in this hospital did not have GR sessions for rare cases.

Participants

Participants of the study included a CI, two supervising medical librarians, seven fellowship students, and two attending gastroenterologist. In the current action research, cooperation and participation of fellowship students was more than attending physicians. The study started in February 2017 and continued for 1 year. In the 1st year, there were three fellowship students and four others were added to the study in the next year. The two attending physicians remained unchanged during the entire course of the study. They were gastroenterology specialist who provided useful information about medical teams and their related problems, the clinical setting and its related problems and research action in clinical settings and also paved the way for the participation of CIs by coordination with the hospital management. Thirty patients with rare diseases referred to medical commission were included in this study during the time of the study.

Data collection

Data collection was carried out through (1) observing behaviors of the medical team in GR sessions (direct observation by CI); (2) document search based on the clinical topics mentioned in the sessions (in databases including Web of Science, Embase, PubMed, Clinical Key, and the relevant specific websites including Liver Foundation, GARD and NORD, and registries such as Clinicaltrials.gov for searching for ongoing studies) and etc., and (3) discussion (with medical team members when necessary). Inclusion criteria were: (1) Involved cases with rare diseases referred to the gastroenterology department, (2) Being a clinical fellowship in this department, (3) Being an attending physician in this department, and (4) a tendency for participating in this study. For overcoming bias, a report was being written exactly after each GR session based on the notes during the session. Then it was given to the team members randomly. This process was done for each GR session. Data gathering was done until reaching data saturation and informational redundancy.

Data analysis

Content analysis and concept mapping were used to analyze the data collected through reports base on observation and discussion with the medical team. All reports from observation and discussions were written down at the end of the day in MS Word 2013 software. After typing, it was divided into smaller meaning units (primary codes). Then, these meaning units were compared with each other and categorized based on their similarities and differences (subthemes). Next, these subthemes were categorized into the five main themes of Action Research steps. Then they drew through concept mapping [Figures 1-7].

Ethical considerations

This study was approved by the Ethical Committee of Isfahan University of Medical Sciences. Before the study, participants were informed of study objectives. In order to satisfy the ethical requirements, precision in the transcription of reports, lack of bias in analyses, the confidentiality of information and acquisition of written consent were all considered.

Validity

Several strategies were used to increase the validity of this action research including precision in data gathering, long involvements with data, carrying out the research in two phases, surveying the participants' satisfaction about search results during research, determining its strengths and weaknesses, providing solutions for the weaknesses, paying attention to any changes occurred through observations and comparing the results of this research with other similar studies.

Generalizability

The results of this study can be used in similar settings such as other specialized GRs with only differences in jargon and patients. However, the necessary skills for CIs to participate in medical teams remain similar. Furthermore, this study is the first study regarding participation of CIs in GRs in Iran and the world.

Results

In the following section, findings of the current study are presented based on five action research steps:

Problem determination and description

To identify the existing problems, first, the CI attended

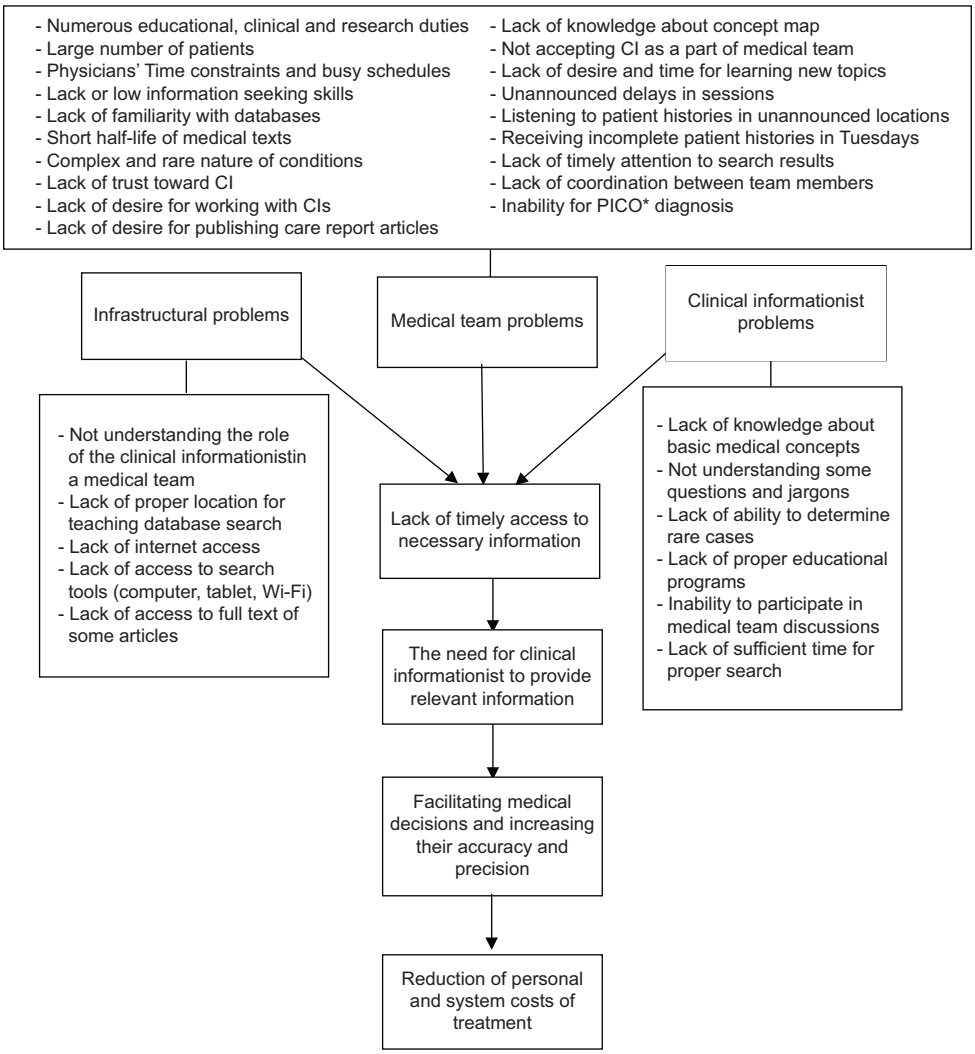

Figure 1: First step of action research (problem determination and description). *PICO: The PICO process is a technique used in evidence-based practice to frame and answer a clinical or healthcare-related question. It is also used to develop literature search strategies. PICO acronym stands for: Patient/Problem or Population, Intervention, Comparison, Outcome

the Gastroenterology Department of Al-Zahra hospital for an experimental period of 6 months (2017) to observe the clinical setting. The analysis of observations and discussions during this period shows the problems hindering the participation, which is shown and described in Figure 1.

Planning for action

In this step, an action plan was designed. To this end, with the help of one of the attending physicians of gastroenterology department, the nature of GR sessions, as well as methods and information gaps in these sessions were identified and the roles of the CI in reducing these gaps were determined and prioritized. Then, the CI attended to the GR sessions solely based on the initial experimental test period. During this period, monthly meetings were held between the CI, two supervising medical librarians and attending physicians. The feedback of these meetings showed that it is necessary for CIs to attend patient history-taking sessions. Finally, based on the GRs derived information identifying patient medical history, holding GR sessions after few days and presentations of patient's case to attending physicians by fellowship students in GR, the process for participation of the CI was planned as shown in Figure 2.

The reasons for participation of the CI in patient history-taking sessions include: (1) Necessity of familiarity of the CI with patients' condition, in order to draw the concept map [Appendix 1]; (2) Necessity of presence in clinical settings and getting information about each medical condition and (3) Necessity of clarifying the clinical query by fellowship students and presenting the query to the CI.

Action

In this step, the created plan in the previous step has been implemented. Hence, the CI participated in GR sessions

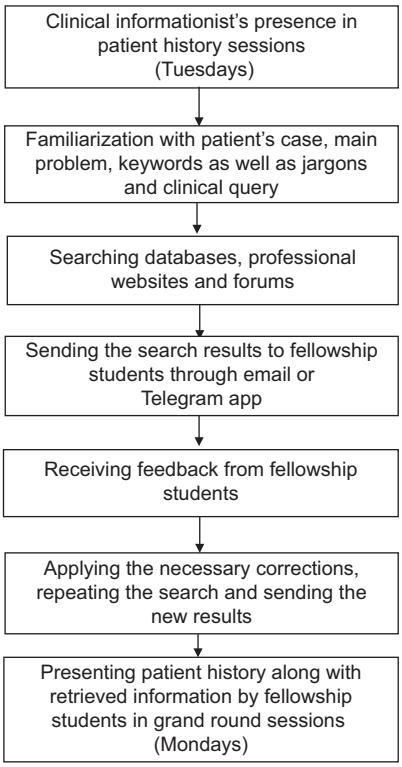

Figure 2: The second step of action research (action planning)

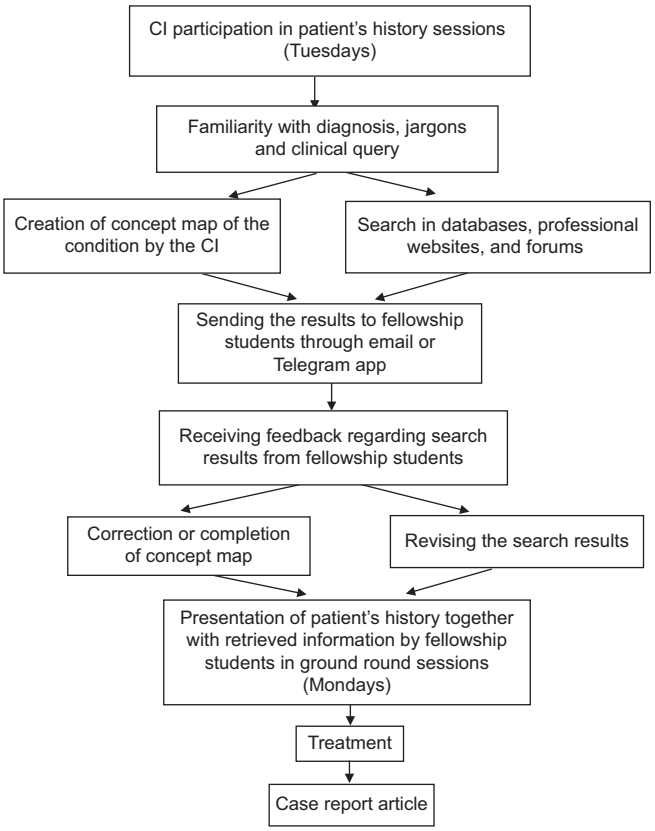

Figure 3: Third step of action research (action)

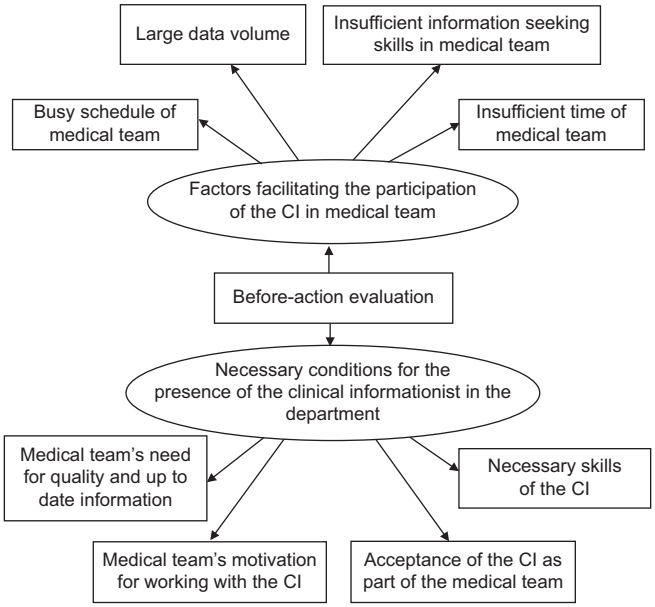

Figure 4: Fourth step of action research (before-action evaluation)

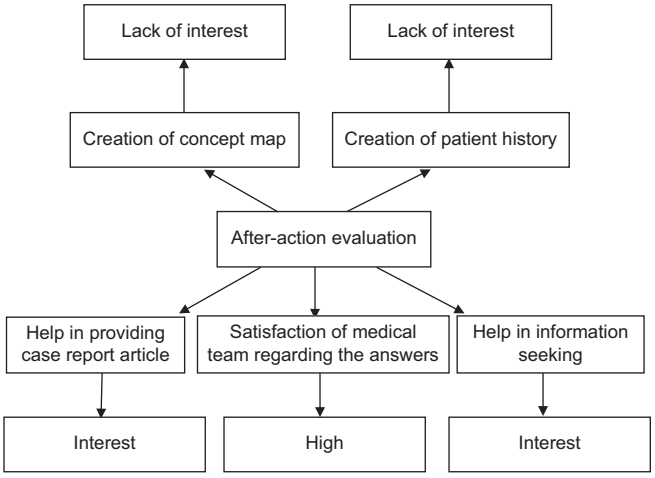

Figure 5: Fourth step of action research (after-action evaluation)

on Mondays. The queries regarding rare diseases were discussed in these sessions and the CI was asked to conduct an appropriate search and report the results to fellowship students. After following this procedure for a period of time, observations showed that search results were not effective; because in each GR session, cases related to the patients from the history-taking session of the previous Tuesday were discussed, therefore any clinical information searched after the Monday session was not used in actual discussions. To increase the effectiveness of the retrieved information, it was proposed that the CI would present the relevant information to fellowship students before each Monday session (GR) in order to utilize them in Monday's discussions. The CI drew the concept map for each rare disease based on patient's history and sent it to fellowship students.

During the new procedure, fellowship students would attempt to diagnose the patient's disease and investigate patient histories and then present a summary of the

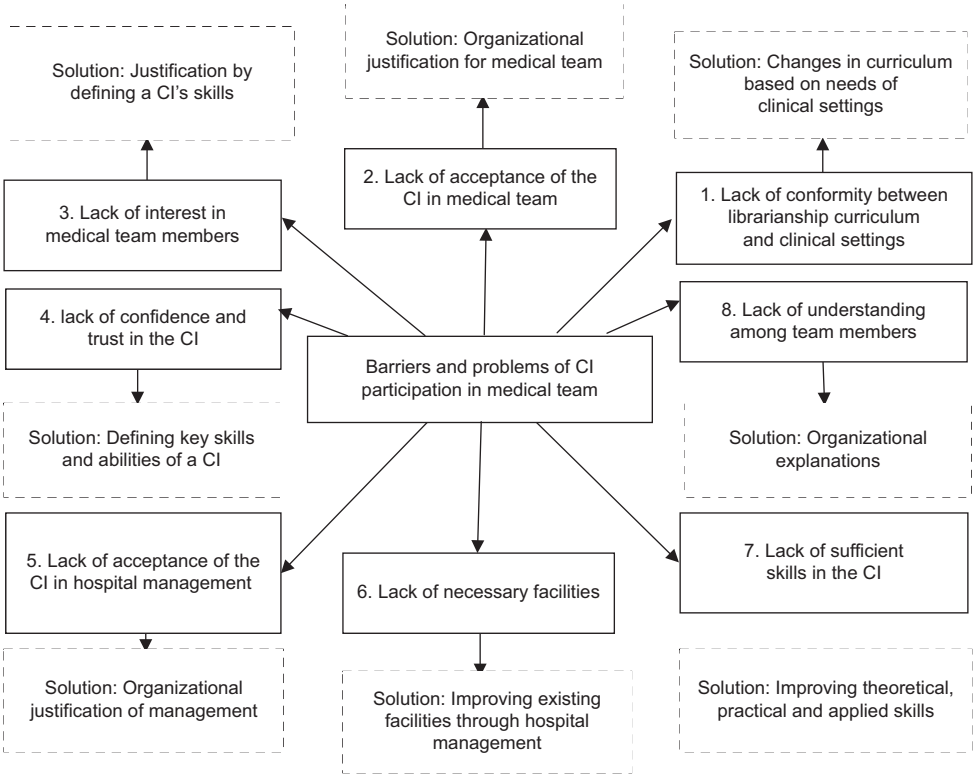

Figure 6: Fifth step of action research (Determination of lessons and planning for future actions)

condition along with search queries to the CI. Then, a concept map would be created by the CI based on the patient's history and it would be sent to fellowship students along with search results.

In this procedure, from Tuesday history-taking session to Monday GR session, the CI would conduct literature searches. For ambiguous queries, necessary clarifications or simplifications were made by fellowship students through phone calls or SMS. The search results were E-mailed to fellowship students. In case of dissatisfaction with the search results, fellowship students asked the CI to revise and refine the search. Finally, the satisfaction of fellowship students with search results was evaluated. Some searches provided acceptable results while in others, fellowship students asked for a comprehensive search.

Evaluation

The evaluation step was carried out in two phases: (1) before-action evaluation and (2) after-action evaluation based on Shynz's approach.[23,24] In before-action evaluation, factors facilitating the participation of the CI in medical teams were investigated and necessary conditions for the participation were identified. It is shown in Figure 4.

In after-action evaluation, the results of implemented actions were investigated and necessary revisions were made. This study aimed to achieve the satisfaction of a medical team through helping to provide patient history, drawing a concept map of disease, searching information and helping to publish case reports. The evaluation of these aims is shown in Figure 5.

The following barriers are preventing the fulfillment of the aim of "creating the patient's history": (1) Not enough explanation regarding the disease has been provided to the CI by fellowship students; (2) Ambiguity in some of the clinical queries; (3) Lack of standardized forms to create patient's history; and (4) Incomplete nature of some patients' histories.

Furthermore, the following barriers prevented the fulfillment of the aim of "drawing the concept map": (1) Lack of knowledge about some diseases and related problems among CIs, (2) Lack of cooperation of fellowship students in the creation of concept maps; (3) Incomplete patient histories; (4) Lack of desire among fellowship students to use concept map; and (5) Lack of access to concept map drawing software.

Determination of learning and planning for future actions

The CI's participation in medical teams led to familiarity with the process of participation in the clinical setting. Furthermore, presence in the GR sessions helped to understand the gaps and barriers for this participation [Figure 6]. The results also helped design

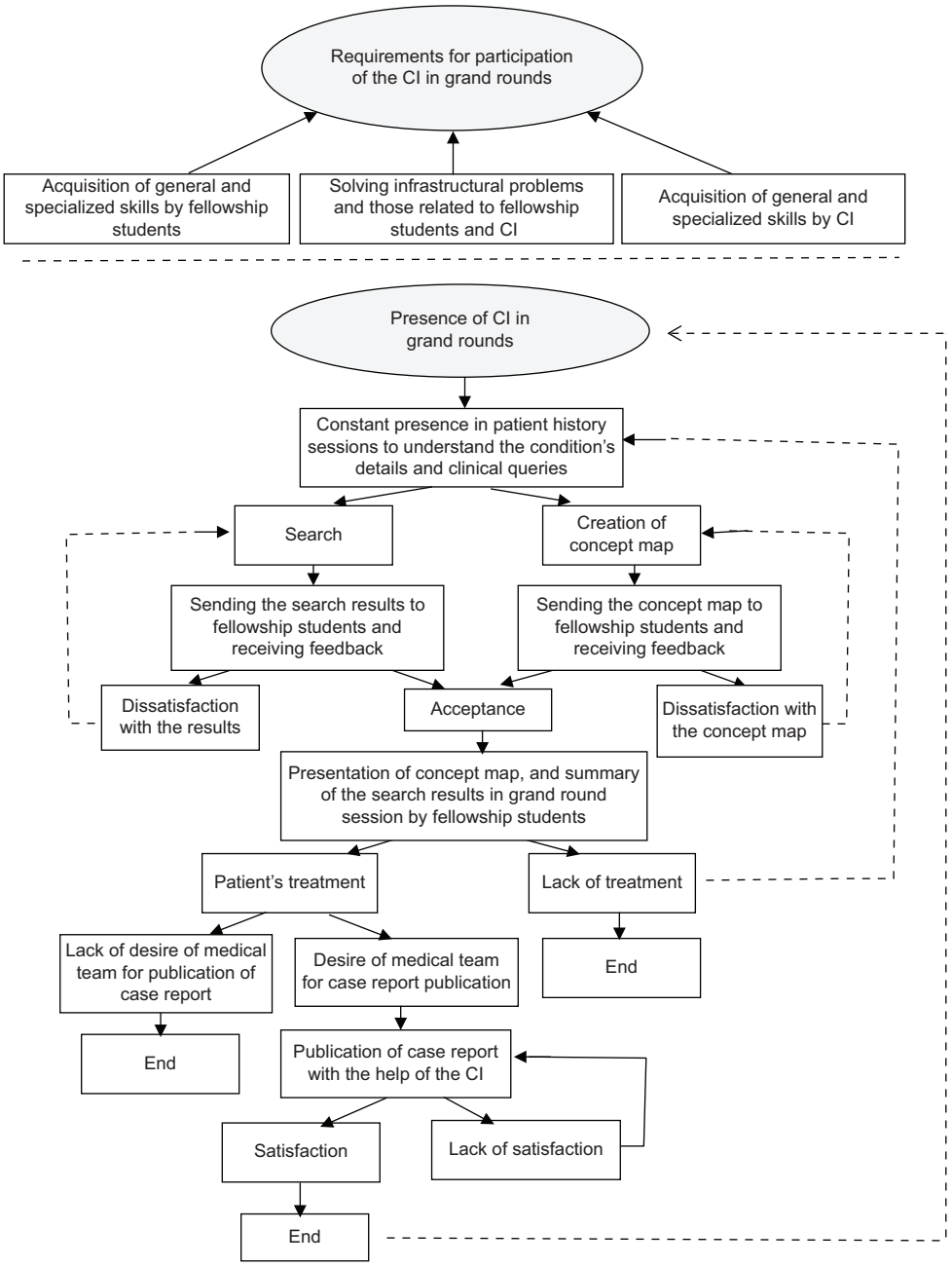

Figure 7: Suggested framework for the participation of the clinical informationist in grand round

an initial pattern of participation of the CI in GR sessions [Figure 7].

Discussion

During the first step, three categories of problems identified. The first category included infrastructural problems such as: Lack of acceptance by hospital management and awareness of managers regarding the position of the CI in medical teams. Similarly, Pappas,[25] mentioned organizational problems that occurred due to lack of organizational support for implementation of CI program. Lack of sufficient facilities and equipment in clinical settings was another problem. These findings are similar to the ones reported by Talachi *et al*.[8] and Momenzadeh *et al*.[26] They have indicated operational problems and lack of necessary facilities as barriers for the participation. Other infrastructural problems are lack of access to full text of some articles, proper places for teaching databases to fellowship students and access to information searching equipment (computer, tablet, Wi-Fi). These findings are in line with the results of studies carried out by Talachi *et al*.[8] with regard to organizational, operational and procedural problems, by As' adi Shali and Bagheri[13] and Momenzadeh *et al*.[26] with respect to lack of necessary facilities and

equipment and by Sladek *et al*.[27] in case of lack of access to computers.

The second category were some of the problems about the clinical team included: Lack of information seeking abilities in databases, numerous educational, research and clinical duties, large number of patients, lack of trust and acceptance of the CI by medical team members and lack of their knowledge about concept map. Some of these results were in line with the following studies: Amini *et al*.[15] about the lack of resident students' knowledge on information resources; Lappa,[28] about busy schedules of physicians; Miller and Kaye[29] and Swinglehurst *et al*.[30] regarding medical team members' unwillingness to use CIs' services. Pappas[25] stated that wrong beliefs among medical team members is one of the barriers for carrying out CIs programs.

Some of these results were different from the following studies: Ghaffari and Masoumi[23] about trust in CIs and their abilities by medical teams; Soleimanzadeh-Najafi *et al*.,[17] Marshall and Neufeld,[18] Royal *et al*.,[20] Ghaffari and Masoumi,[23] Momenzadeh *et al*.,[26] Sladek *et al*.,[27] McGowan *et al*.[31] and Demas and Ludwig[32] about high acceptance of CIs' services; Roach and Addington[33] regarding cooperation between medical team and information specialists.

The third category were some of the CIs' problems included: incompatibility of the medical library and information science curriculum with information needs of clinical setting, lack of sufficient skills of medical librarians for working as CIs, lack of knowledge about basic medical concepts. In line with these problems, As' adi Shali and Bagheri[13] as well as Momenzadeh *et al*.[26] mentioned lack of skilled human resources (CIs) for collaborating with medical teams; Pappas[25] reported insufficient knowledge of CIs regarding evidence-based medicine and low self-esteem in CIs and Talachi *et al*.[8] reported personal and interpersonal problems as barriers for CIs participation in medical team meeting Pappas[25] stated that wrong beliefs among medical team members is one of the barriers for carrying out CIs programs. In the action-planning step, action plans were designed for the CI participation in medical teams. As mentioned by Esparza *et al*.,[34] in order to increase the effectiveness, first, we have to determine the time and manner of CIs' participation in medical teams. McKeown *et al*.[35] also emphasized the use of proper approaches for improving the quality of services provided by CIs and suggested oral and face-to-face communication methods to improve search results satisfaction level provided by CIs.

In the evaluation step, the participation of the CI in medical team produced the following results:

1. Creation of patient history, which was not appreciated by medical team and it was in line with the findings of Miller and Kaye[29] and Swinglehurst *et al*.[30] They showed little appreciation of CIs' services in medical teams
2. Drawing of concept map for each patient who received initial interest but ultimately failed to be realized due to time constraints and lack of cooperation of the medical team members. This was similar to the results reported by Amini *et al*.[15] regarding lack of practical use for retrieved information despite initial interest about clinical information sources
3. Helping information-seeking activities which were appreciated by the clinical team members
4. Helping medical team members publish case report articles which were appreciated by the clinical team members
5. High satisfaction of the medical team members regarding answers received from the CI.

Numbers 3, 4 and 5 were similar to the results reported by Soleimanzadeh-Najafi *et al*.,[17] Royal *et al*.,[20] Sladek *et al*.,[27] McGowan *et al*.[31] Demas and Ludwig,[32] Tahmasebi *et al*.,[36] Zare-Farashbandi *et al*.,[37] and Zare-Farashbandi *et al*.,[38] regarding interest in CIs' services in medical teams. However, numbers 1 and 2 were not previously studied despite, their impact on information seeking and retrieval in the next step.

In the final step of the action research, solutions were suggested based on identified problems and gaps and a framework was proposed for participation of CIs in medical teams' meetings. Implementation of the proposal framework needed to overcome on updating and reviewing of medical librarianship's curriculum, to obtain necessary and sufficient practical competencies by CI, prerequisite preparation in clinical teams and settings, providing facilities, and equipment in clinical settings.

Limitations

Some major limitations were: the lack of or limited access to some databases due to no university subscription, the small number of study population, because fellowship students were accepted on an annual basis while we had time limitation for finishing the study, not access to some related articles because of their different languages such as Japanese or French.

Conclusions

Based on the results of this study, a framework was proposed for participation of the CIs in GR sessions [Figure 7].

To summarize, the participation of the CIs in GR sessions of the gastroenterology department was successful,

resulted in better access of medical team to suitable information, and improve medical decisions. However, it is necessary for CIs and fellowship students to learn the essential skills before entering such a team work. Furthermore, it is crucial to solve identified problems by explaining the advantages of this cooperation for all involved parties including hospital management. It is also necessary to consider these factors when planning for similar future partnerships. Therefore, based on the results of this study, the following process [Figure 7] may be used in similar GRs besides the GI department and also in other departments but in other countries with similar socio-economic and health structure and process of GR.

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Conflicts of interest

There are no conflicts of interest.

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Appendix

Appendix A1: A disease concept map

Patient history: The case is a 29-year-old man who has respiratory infection disease. He is coughing during the eating times. He mentions that he uses antibiotics frequently and his recent computed tomography scan shows the probability of presence of fistula in his esophagus.

Question: Is it possible to have TE fistula and achalasia at a same time in a patient? What are nonsurgical approaches to TE fistula?