

Interpreting the Value of Information Received From Library Sources in Clinical Decision-Making Experienced By Physicians and Residents

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Abstract

The medical profession currently has extensive information and knowledge of the latest valid scientific advances in disease diagnosis, treatment strategies, and patient care, and is used by physicians, but there is little evidence on the assessment of the usefulness of information used by physicians in dealing with clinical problems. This study aims to interpret the value of information received from library sources in clinical decision-making experienced by physicians and residents. The study is qualitative. The participants were 28 subjects including 13 specialists, 4 subspecialists, and 11 residents of healthcare educational centers of Birjand city chosen through a purposeful sampling method. For data collection, semi-structured interviews, and for data analysis, Colaizzi's seven-stage method was used. 7 main themes were identified including clinical, cognitive, qualitative, status, Guidance, pedagogic, and research, and 34 subthemes. The results showed that information has been valuable from different aspects of clinical decision-making. Thus, providing and making up-to-date as well as relevant information accessible to the healthcare team should be the agenda of medical sciences libraries as well as healthcare policymakers.

Keywords: Phenomenology, Clinical Decision Making, Physicians, Information Resources.

Introduction

Physicians work in an uncertain and high-risk environment where many emergencies can arise at any moment, and decisions must be made to save lives. Efficient decision-making is impossible without information; physicians need the information to reduce uncertainty and make better decisions (Ali, 2000). Besides, new therapeutic and diagnostic methods have been discovered over time. On the other hand, patient data is insufficient for clinical decisions, and physicians thus need to search for information in related resources. The search for clinical

information and evidence plays a very important role in the clinical practice of physicians, including patient treatment or management (Satish Kumar, Gautam & Vijayaraghvan, 2011). Various studies have also mentioned the value of information searched from information sources in the decision-making and care process of the patient. For example, Urquhart and Hepworth investigated the value of the information provided by healthcare libraries to physicians and the share of libraries in clinical decision-making in 1995 using a questionnaire, interviews, and critical incident techniques. The results showed that the information obtained could help in clinical decision-making, and the information received from the Library supports developing patient care with a more suitable cost. Also, the effect of medical libraries was measured on patient care in New Zealand with the participation of 372 physicians by Burton (1995). According to the results, the obtained information could prevent nonessential tests and procedures (29%) and reduce the duration of hospitalization (20.3%).

Further, information resulted in changes in issues such as patient recommendation (54.4%), order of radiography (18.6%), and medication prescription (40%). In another study, Ashcroft (1998) investigated the effect of using the information on the decision-making of physiotherapists. The results showed that the usage of information caused them to perform some aspects of patient care differently.

Further, an investigation of the effect of hospital libraries and information received through them on patient care and clinical decision-making was performed by Naeem, Ahmed & Rabbani (2013). They found that, according to physicians, the information provided by the hospital libraries has an important effect on patient care and clinical decision-making. The value of library services and information in nursing and patient care was assessed using a critical incident technique (Marshall, Morgan, Klem, Thompson & Wells, 2014). The results showed that library resource use had a positive relationship with changes in patient regulation, performing patient care differently, preventing harmful accidents, and saving time. In another research, Sakai, Sato, Sato & Watanabe (2018) investigated the clinical usefulness of library services and information through a questionnaire. They showed that most physicians and residents appraised the relevant information searched through library sources. According to nurses, again, the information provided through the Library had caused the generation of new knowledge in them.

The literature review showed no relevant study in Iran. Most international studies have been varied using a quantitative approach. Therefore, attempts in the present study use two approaches of phenomenology and critical incident technique (CIT) because applying CIT and other qualitative methods helps researchers obtain rich, more detailed data. In addition, the analysis of the value of information extracted from information resources to solve clinical problems highlights the role and importance of information in promoting health services and can encourage health librarians, informants, and policymakers to provide up-to-date and valid information to physicians promptly and encourage residents and physicians and residents to combine clinical information and evidence with their clinical experience to have a more effective clinical practice. Therefore, considering the importance of this subject and the lack of evidence in this field, the present study aimed to explain the value of information received from library resources in the clinical decision-making of physicians and residents.

Materials and Methods

This is a qualitative and phenomenological study in which the researcher identifies the essence of the human experience of a phenomenon as described by the research participants (Creswell, 2014). Besides, CIT was used to accurately investigate the participants' experiences, Because focusing on critical events makes it easier to understand the studied situation or a specific incident. Participants are free to express their experiences as they narrate the most memorable experience, as well as provide real-time reports of real-life issues and situations in simple and clear language, which makes the researcher's mentality when analyzing data is minimized. Therefore, considering the preceding, the interview questions were asked based on the CIT technique, and participants were asked to describe a time when they needed to search for information in an information resource in the face of a clinical problem and to answer the following questions:

1. According to your opinion, how was the clinical value of the information in the recent clinical decision you encountered? Did it have a positive effect? How? What has been the impact on future clinical decisions? What are the unfortunate events and side effects prevented? Please explain by recalling a real experience in this field.

2. How has the information searched from information resources affected your previous knowledge? For example, regarding approval or change in your previous knowledge or creation of new knowledge? Please, explain by mentioning a real experience

3. What was the quality of the information searched from the information resources? Was the information relevant? How was its authenticity? , etc., Please, explain by recalling a real experience in this field.

4. Apart from the mentioned cases, what was the other value of the library information?

The participants in this research were physicians and residents of educational healthcare centers, including Imam Reza, Valiasr, Razi and Iranmehr in Birjand, Iran who were chosen through purposeful sampling. In this research, to determine the sample size, theoretical saturation was used whereby the interviews continued until the data became repetitive and no new data was obtained. In this research, the information reached saturation in an interview with 28 physicians and residents.

The inclusion criterion included consent to participate in the study and having expertise in one of the clinical areas. The exclusion criterion also included unwillingness to cooperate at any research stage. A total of 27 interviews were performed in hospital wards and only one was conducted in a physician's office. The duration of the interviews varied from 11 to 60 minutes, depending on the time and extent of recalling real experiences. The average interview time was also 30 minutes.

For data analysis, Colaizzi's seven-stage method was used. In the first stage, the researchers repeatedly listened to the participants' recorded voices and typed them into Microsoft Word. Descriptions of all participants were also studied several times. In the second stage, the important statements were identified. In the third stage, a concept representing the meaning made by the participants' thoughts was extracted from each important statement and phrase. In the fourth stage, the researchers accurately studied the extracted concepts and organized thematic groups based on similarity. In the fifth stage, the findings were combined into a comprehensive description of the desired phenomenon, creating more general groups. In the sixth stage, a comprehensive description of the research phenomenon was presented as a clear statement. In the last stage, the results were given back to the participants and they were asked

about the findings. Also, a review by the supervisor and advisor faculty members was done to validate this study. To achieve transferability, the sampling was performed with the maximum variety, and attempts were made to interview individuals with different medical specialties to get different perspectives and increase the validity of the data.

Results

The study population included 28 patients (13 females and 15 males) with a mean age of 40 years, including 13 physicians specializing in ophthalmology, urology, pediatrics, infectious diseases, traditional medicine, ENT, radiotherapy and oncology, physical medicine and rehabilitation, and psychiatry, 4 subspecialties with specializations in pediatric heart, blood and cancer and pediatrics and 11 residents specializing in neurology, pediatrics, cardiovascular, neurosurgery, and internal medicine. In some specialties, depending on availability, more than one person participated in the interview.

Based on analysis of the voices of interviewees with regards to the value dimensions of information in clinical decision-making experienced by physicians and residents, 7 main themes and 34 subthemes, and 236 statements were found. However, there was no significant relationship between some of these categories and subcategories, including educational and research value with clinical decision-making and patient care, and because the participants provided the answer to the last question, and on the other hand, it was indirectly related to clinical decision-making (Table 1).

Table 1

The value dimensions of information

Main theme	Subtheme
1-clinical value	preventing adverse events / Preventing indiscriminate drug prescription Enhancing quality / facilitating healthcare performance / better management / being efficacious / giving reassurance/recommendation to patients / increasing accuracy/change of diagnosis/change of treatment / shortening the hospitalization / reducing costs / saving time/effectiveness in future clinical decision-making
2-Cognitive value	Better judgment / persistence in memory / refreshing memory / generation of knowledge / enhancing knowledge / modifying previous knowledge/consolidation of previous knowledge
3-Quality value	Being a source of reference/relevancy/credibility/accuracy / being up-to-date / comprehensiveness/ease of use
4-Status value	Promotion of social status / increasing self-confidence
5-Guidance	Guidance
6-Research value	Research applications
7-Pedagogic value	Educational applications

Clinical value

One of the value dimensions of library information is its clinical value, which refers to the value the information has on the patient's bedside. This theme has the following subthemes:

Preventing adverse events

Medical errors are a serious public healthcare problem, jeopardizing patient safety [18]. Various factors affect the reduction of medical errors, the acquisition of information about diseases, medications, their side effects, and similar issues, which the participants have mentioned as follows:

"as you study more, year by year, you gain more experience, and in turn, your errors diminish" (physician 2).

"Searching is more effective than acting upon your previous information. For example, I searched one case for a patient who suffered from benzodiazepine toxicity. We give such patients an antidote which should be flumazenil. I wanted to administer it to the patient; when I searched, however, it was contraindicated for patients with epilepsy or head trauma. Accordingly, I did not give him what was beneficial for the patient because if I prescribed it, it might have threatened the patient's life" (resident 1).

Preventing indiscriminate drug prescription

One useful point of using library information at the patient's bedside is preventing indiscriminate drug prescriptions. A participant in this regard stated that:

"For example, throughout our educational courses, we would prescribe antibiotics for long periods for patients undergoing tonsil surgery. Or some cases used special medications. However, in new methods and texts, the antibiotic prescription was negated. Although it may not have been written in this definitive form in texts, recently, it has largely been proven that the consumption of antibiotics does not affect tonsil patients. Nevertheless, throughout the medical course, this issue was an educational point by had learned throughout the course. Still, when I performed different searches and looked that the different experiences mentioned by papers, these were rejected. With this in mind, I have been adopting this-antibiotic prescription for some years, which is 100% beneficial for the patient" (physician 7).

Improving quality

Helping quality improvement of healthcare services is another valuable point of library information on the patient's bedside. In this regard, the participants stated that:

"Definitely, by continuing application of such information, the technical knowledge of physicians would increase, leading to improved healthcare quality" (resident 10).

"In my opinion, it improves healthcare quality for the patient" (resident 11).

Facilitating the healthcare performance

Based on the interviewees' opinions, library information can accelerate the course of treatment. A sample of their points in this regard has been as follows:

"Dramatic change. For example, regarding therapeutic algorithms, you cannot act haphazardly. However, if you bring up to date algorithm and act upon it, within less than a quarter of an hour, you can find out what you should do. At the same time, if you want to choose a treatment based on your own opinion, it takes a long time, for example, in gastrointestinal bleeding" (resident 2).

"Acceleration of the procedure and shortening the treatment process as well as proper clinical decision-making which eventually leads to higher productivity in terms of cost-benefit is an excellent outcome" (resident 10).

Better management

Some information has had another value, which has been better disease management. In this regard, one of the physicians stated:

"I can deal with the patient or communicate with them or manage them better than in the past, especially regarding their diagnostic and therapeutic packages" (physician 9).

Efficacy

Efficacy is another characteristic the physicians experience when using library information for clinical performance. They stated that:

"Yes, they are very efficacious; I mean the information of such sources is efficacious and good" (physician 1).

"Many points I have searched have been convenient, though there may have been some special cases which have not been evidence-based, but most of the issues I searched have been practical and solved my problem. This is an important issue indeed" (physician 7).

Confidence

Searching for information helped some participants to act on their clinical performance with confidence. A sample of the participants' points has been as follows:

"The more I searched, the more reassured I was for my performance, and I was confident knowing all of its aspects. Accordingly, I had reference and performed by duties ethically, scientifically, and legally" (physician 3).

"I have been treating patients more confidently" (physician 10).

Giving recommendations to patients

Another use of library information in the clinical performance experienced by the physicians and residents was related to their recommendations to patients:

"Yesterday, a patient came to my office. He had sent all of these documents to my professors in Tehran and abroad. We have patients who search a lot whose major is not related to medicine, or they may have Obsessive-compulsive disorder, or for any reason, they like to come to me and say that doctor said this point or that reference said so, and now what should I do. I should introduce him as a good reference. I told them this is our credible reference, and I teach based on such as Mendel, Harrison, and other up-to-date sources that are credible and not my own opinion. I told him to study more so that he can make his own decision" (physician 3).

"I try to manage my mind critically and in an evidence-based manner, based on which I recommend patients. Many times in our office, some patients say this is effective, while I often say I don't know but can search for it. Then I say, in their next visit, I will inform you. We search, and for example, the case is Vergil control, with one study saying it is effective while another regards it as ineffective. Eventually, they said no difference was observed. Then, we tell the person no difference was observed. Some said it is effective while others mentioned that as ineffective" (physician 15).

Increasing accuracy

The usage of library information in the decision-making process would cause higher accuracy for some physicians when facing similar cases in their clinical performance. One of

the physicians said:

"I examined the patient more accurately; for example, for hypertension, I am aware that when there is a child whose mother says her child had been born with 2 kg weight, I measure her blood pressure" (physician 1).

Modifying the treatment

The use of information in some cases has resulted in modifying the diagnosis and treatment favoring the patient. The participants stated that:

"Recently, I had a patient who had undergone open-heart surgery, following which he had found a complication; it was unwanted and very rare following the surgery. I had to refer to new information sources for the treatment, and I did not gain any suitable response from primary treatments. Eventually, based on my search, I could add some medication items to the primary treatments, whereby a suitable response was achieved. The patient was discharged in good status. Initially, we used drugs to manage heart failure, and I decided to inject albumin and control and regulate the blood serum proteins. However, Since no suitable response was obtained, I went for the second line of treatment, which used glucagon and octreotide medications, with the latter being the responsive treatment" (physician 4).

Changing the diagnosis

Changing the diagnosis is another issue mentioned by the participants. One resident stated that:

"Yes, we use library information frequently, and in many cases, even the course of diagnosis has changed" (resident 1).

Shortening the hospitalization

The duration of hospitalization is directly related to the number of procedures taken for the patient and treatment costs. Using library information in clinical decision-making by one of the interviewees also caused a reduced duration of hospitalization. He stated that:

"The recovery course increased, the hospitalization was shortened, and the patient's complaints improved. Indeed, it was effective, we had a patient hospitalized for about seven or eight days, but no response was achieved. I changed the treatment and added other solutions, whereby the patient recovered within four days" (physician 4).

Reducing costs

Another value the use of information has had in the recent experience of participants was preventing issues such as referral to advisors and reducing patient treatment costs. The recent experience of one of the residents was:

"The very yesterday or the day before, we had a patient who was a man with COPD. He had this condition for several years. The patient had come to our hospital with vertigo. In his test results, there was a special test in which we were unaware that a person with lung conditions may have altered RNA, which is a hepatic disorder. Then, for example, we wanted to request internal advice and examine his liver internally. We search for them to find out what has happened. That moment, for example, we used up-to-date information through the Internet at the patient's bedside and searched and found that, yes, COPD itself can elevate RNA. At that moment, our approach towards the patient treatment changed, whereby we could prevent internal advice for which we wanted to incur high costs for the patient so that an advisor would

write the prescription. It changed within five minutes (there is something internal like this). In the same example I made for you, we could incur maybe about the five-dollar cost to the patient since we did not know this high RNA may have been related to his underlying condition" (resident 5).

Saving time

One of the challenges physicians face is heavy occupation and the importance of time, especially in emergencies. Concerning saving time, physicians and residents regarding the value of received information stated:

"You could save more time compared to making contact, and it is unclear whether the point mentioned by that specialist would be valid" (physician 6).

"The time I allocate for asking my colleague and making contact with them is simultaneously lost if they say I don't know or they may give incorrect information. Instead of wasting my time, I search for myself. For example, when the patient is very sick, I prefer to search for myself" (resident 1).

Effective in future clinical decision-making

In addition to the valuable points of library information for the current decision-making of physicians and residents, the searched information would also be effective for their future clinical decision-making. In this regard, they stated:

"Since the information has been applied practically, they would be consolidated in my mind better so that I could use them for subsequent patients. Indeed, it does not have only a memorizing aspect but also a practical dimension" (physician 4).

"It becomes an experience so that in the next time, for example, when the same case comes to me, all of the references and searches as well as the experiences of others can help me in better decision-making" (physician 5)

Cognitive value

This value dimension of information relates to the effect of information received through library sources based on the person's previous knowledge. The subthemes of this dimension are as follows:

Better judgment

Judgment is a process in which individuals think about the aspects related to the issue for which they want to make decisions and express their opinion. Acquiring information through library sources has caused residents and physicians to have better judgment in their clinical decision-making. They stated that:

"The more a person collects information, the better they can judge" (physician 3).

Persistence of information in memory

The events that occur under special conditions remain in memory longer and searching for information at the *patient's bedside has been an issue in helping the participants to memorize the situation better. They stated that:*

"It is very effective; when you search for the information you have searched yourself and found something, all these will stick in your mind" (physician 1).

"It has remained in my mind longer, perhaps that moment on the patient bedside if I had

not searched, it may have escaped my mind" (resident 3).

"When a person searches for something on the patient's bedside, it would stick in mind more strongly. It is better than when using it somewhere and memorizing various points consecutively while not categorizing them. Searching for something and finding and reading on the patient bedside significantly help mental visualization and recall" (resident 6).

Refreshing the memory

One of the areas of applying library information is recalling forgotten points. The physicians and residents stated that:

"Definitely. For example, that moment you may not remember and choose to adopt the treatment while forgetting some points, you search and become refreshed which is also better for the patient" (resident 3).

"Sometimes some parts may be eliminated; for example, it says this drug has been withdrawn because of its side effects. Here, your knowledge becomes up-to-date that drug becomes eliminated, and your knowledge gets upgraded. Indeed, by referring to references, especially more valid and robust references, your information becomes up-to-date progressively. Even in cases when I have read some points in the past week, and when I look up again it helps me review all information and consolidate it while becoming up-to-date as well" (resident 4).

Generation of knowledge

Searching for information causes the generation of new knowledge in the person. The physicians and residents also mentioned this point when expressing their real experiences:

"The main thing which may be most valuable in this regard is that one can acquire newer points and knowledge" (physician 7).

"For example, once there was a case with cellulite for whom the treatment was penicillin and clindamycin. After the search, it changed into tazocin and vancomycin, which caused a generation of new knowledge" (resident 1).

Enhancement of knowledge

Searching for information according to him the interviewees caused the development of their previous knowledge. In this regard, they stated:

"Any routine task a person checks, for example you can think even at home sometimes they asked me questions and I use that an answer right. It is crystal clear in the office and working environment, but even at home I use it and it may change my data. Indeed, each is developing my knowledge and making your performance more standardized compared to the available references" (physician 17).

Modifying the previous knowledge

Medical knowledge is becoming up-to-date, and new therapeutic and diagnostic methods are discovered daily, whereby treatment procedures change. Once physicians search for information, their previous knowledge becomes modified. The physicians also mentioned this point in interviews and stated:

"There have been many cases where the information has changed considerably because of the information in the changes. Well, I search again where my previous knowledge for drug

prescription may change in the new case" (physician 16).

"It changes some part of it. For example, in the treatment, exactly what I told you, such as in chemotherapy for breast cancer when I studied at medical school in about 2010-2011, i.e., around 10 years ago, you could think, one generation has been the third generation of medications or the second-generation of one of the chemotherapy methods will be used. Now we see it does not have any benefit, and if I want to prescribe it to the patient, my previous data has changed, meaning that it has changed my course of action. Previously, the patient would come to me with some conditions; I told him he could be treated by this chemotherapeutic method, which would benefit him. However, recent studies now say not all patients who received this chemotherapeutic method benefited from it. Accordingly, I changed my model for around two years" (physician 17).

Consolidating previous knowledge

One of the effects of using library information by physicians is consolidating and confirming their previous knowledge. They stated that:

"It consolidates your information and makes it more mature" (physician 8).

"When you search for something, we may know its basis. We also have 90%. However, when we read more, our previous knowledge becomes more consolidated, etc." (Resident 4).

Qualitative value

Another value dimension of library information, according to the physicians and residents, has been related to the qualities of information received through library sources, with the following sub-themes:

Credibility

The credibility of the information received from information sources is a feature encouraging the physicians and residents to use them. They stated that:

"In my opinion, library information is more accurate since they are a series of accepted papers and have been approved. I think library information is better" (physician 1).

"Searching the information through science-based information sources and use of experiences of positions around the world and in prominent medical centers, which have in most cases higher value than a consultation with colleagues" (physician 10).

Relevancy

The relevancy of information received through references to the information needs of physicians in their real information-seeking experience has been another valuable point of library information. They stated that:

"After an extensive search across different sources, I have found relevant and highly credible information. In case of communication with a medical librarian, this process would be performed more quickly" (physician 10).

Ease-of-use

Considering the importance of time for physicians, information sources would be helpful, provided they are readily available and have ease of use. According to the physicians and residents, library information sources have this feature. They stated that:

"The first thing done is searching the issue, which is more convenient and logically more accessible" (physician 9).

"Suppose a physician is dealing with a patient at midnight, and the patient is in a relatively dire condition. The physician has no access to his colleagues, it is very late, and their window of opportunity is narrow. Here, the available virtual sources help him make the proper clinical decision when he has no colleague to guide him" (resident 10).

Updating

Another feature of library information is being up-to-date. They stated that:

"The information is updated" (physician 3).

"The library information can always update physicians' knowledge" (resident 4).

"The information has been 100% up-to-date" (resident 4).

Accuracy

The basis of proper and timely decision-making is access to correct and accurate information. In this regard, the physicians and residents stated that:

"In my opinion, the library information is more accurate" (physician 1).

"Its information is more accurate and complete" (physician 4).

Comprehensiveness

Another feature of information received from information sources, according to the interviewees, is its comprehensiveness. Some physicians stated that:

"The information sources complement the professors' information. For example, when we want to obtain information about the patient, the professor gives us a background. Since that moment he may not have the presence of mind when we search, we see it is exactly like that and is complementary" (physician 1).

"When I read a systematic review, all aspects of that subject have been propounded in the systematic review; the differential diagnoses have also been mentioned, plus different treatments. Here, I'm not looking at the issue only from one angle; it

Status Value

According to physicians and residents, status value is another dimension offered by library information. This aspect has had the two following subthemes:

Increasing confidence

Self-confidence is one of the traits of a person regarding how they know themselves. The higher this knowledge, the greater the person finds themselves valuable and competent (Tracy, 2012).

One of the points for the efficacy of library information in clinical decision-making experienced by the interviewees has been enhancing their self-confidence. They stated that:

"When one sees it helps you, and then gives you some subtleties, it is at least useful for one's self-confidence and increasing the knowledge" (physician 8).

"Anyway, the thing that eventually happens is that searching different papers, articles, e-books or exchange of opinion and consultation all can change the person's self-confidence and professional level" (physician 9).

Promotion of social status

Acquired social status or respect following the fulfillment of basic needs is essential for humans (Marsh, 1978). Acquiring skills and qualifications is one of the solutions for enhancing social status. In the experience of information seeking by some physicians, searching for information caused an elevation of their social status. They stated that:

"It is very effective; when you have some information you have searched and found yourself, all of it sticks in your mind. You may be one or several steps higher than your colleagues since you have gained more up-to-date and newer information" (physician 1).

Value of Guidance

Guidance is another value dimension of information according to physicians and residents. According to them, library information is a guide and roadmap in their experienced clinical decision-making. They stated that:

"When we refer to Cochrane, which performs a meta-analysis and offers a report on it, I'm confident it has taken a standardized method and performed the evaluation based on it. It is not personal taste or experience but an outcome of different contradictory studies. It juxtaposes meta-analysis and systematic review studies and offers a clear way" (physician 15).

"It offers a clear way and has no redundant marginal points" (resident 2).

"It gives us the clue or key. I mean, they have taken that procedure, and the patient got well, so I will also choose it, or sometimes, on the contrary, if I do not perform it, it may be more helpful" (resident 4).

Research Value

The physicians and residents participating in the research also regarded educational and research value for the library information in addition to the value dimensions of information in their clinical decision-making process since they were also active in educational healthcare centers. For example, in the research dimension, they found the information useful for writing papers, theses, and something like these and stated that:

"You can use them to find the general policy and motivates you to see how the condition is in your region. For example, we have many international papers on antibiotic resistance. Still, it is different in Iran or our region so you take their policies and then perform novel research yourself" (physician 3).

"They are also useful for writing theses. I used up-to-date sources for writing my thesis and extract anything I want from them" (resident 3)

Pedagogic Value

The physicians and residents believed that the information also has educational value and has been useful for pedagogy in class and conference presentations. They stated that:

"It is also useful for education and pedagogy" (physician 3).

"Later, when I want to publish a paper, present it, or have a discussion, I can confidently assure my students that I have searched through databases. Or when I want to give a conference, I say I have investigated these papers, and what I say is based on them" (physician 3).

"It has effectively enhanced and promoted education" (physician 4).

Discussion

This study has been performed to identify the value dimensions of information in patient care and clinical decision-making as experienced by physicians and residents. Analysis of the interviewees' points culminated in extracting seven main themes, which are further explained. Then these results are compared against the findings of other studies.

One of the value dimensions of information is related to how information has affected patient care. In this regard, the research by Ali (2000) on exploring the relationship between information provided by Library and decisions made, it was found that the information presented by librarians has been effective in terms of care for the diagnosis and treatment of disease as well as management of clinical cases, and has had high value. They also stated that in response to utilizing the information provided by the Library, they have managed clinical cases differently compared to the past, helping them prevent side effects. In some cases, the course of disease management was modified (Ali, 2000). Some of these results are in line with the present research. Bryant and Gray (2006) also reviewed the texts from 2002 to 2005 and measured the positive effect of information on patient care. The results showed that information has positively affected patient care and contributed to saving costs (Bryant & Gray, 2006). In the study by Naeem et al. (2013) measuring the effect of hospital libraries and information received through them on patient care and clinical decision-making, most respondents found that the information received through the Library caused changes in the diagnosis of disease, recommendations to the patient, drug prescription, and order for tests. It also caused shortened hospitalization and prevented the referral of the patient to other hospitals as well as unessential procedures and tests for the patient (Naeem et al., 2013). The results of this research are also in line with some of the subthemes of clinical value. In the research by Sakai et al. (2018), the information obtained from information sources was valuable to the research participants in different aspects. Most physicians and residents stated that positive changes had occurred in their course of disease treatment in response to applying the information. The physicians and residents found this change positive mostly in choosing tests for a patient, while the nurses found them effective for a patient recommendation. In addition, according to the participants, another outcome of utilizing information was preventing adverse events and complications, as perceived by residents, physicians, and nurses respectively regarding the value (Sakai et al., 2018). Their study also confirmed some of the subthemes identified for this theme of clinical value in the present research. In the research by Marshall et al. (2014), again, a positive relationship was found between changes in given recommendations for patients, patient management in a different way compared to the past, preventing adverse events, and saving time (Marshall et al., 2014). The results of their research concur with the present study findings.

According to the present study, library information is valuable because of the effect that information has on the prior knowledge of physicians and residents. It has led to the confirmation, change, or creation of knowledge.

In the study by Naeem et al. (2013), again, the result suggested the generation of new knowledge in the participants or confirmation of their previous knowledge regarding drug selection (Naeem et al., 2013). Its results confirm some subthemes of cognitive dimension in the present research. In the research by Sakai et al., Who explored the clinical usefulness of library services and information in Japan, according to the nurses, the retrieved information

contributed to generating new knowledge (Sakai et al., 2018). The results of this research are again in line with the present study findings.

Another value of information in this study was related to the quality of information searched from information resources. The information was measured in relevance to the information needs, its validity, and up-to-datedness. Sakai et al. also reported that the information obtained from information resources was relevant from the perspective of physicians and residents (Sakai et al., 2018). Ashcroft also found that many respondents evaluated the library information as accurate and up-to-date (Ashcroft, 1998). In another study, Marshall et al. investigated the effect of Library and information services on patient care. The results showed that the information was up-to-date, relevant, and accurate

and thus have a qualitative value (Marshall et al., 2013), which is consistent with the results of the present study. Besides, the use of information by physicians and residents has increased their self-confidence. Self-confidence is a vital attribute for any physician (Clanton, Gardner, Cheung, Mellert, Evancho-Chapman & George, 2014) and affects their performance (Perry, 2011). In the research by Ayre et al. on developing a general instrument for measuring the effect of healthcare libraries, again use of library information and services caused improvements and elevation of the self-confidence level of the users (Ayre et al., 2018), being in line with the results of the present research.

The guidance value was another value dimension of information; according to the investigation by researchers, this has not been directly mentioned in other studies. However, it is justifiable since credible library information and texts are the basis for evidence-based medicine and the guideline for physicians in clinical decision-making (Druss & Marcus, 2005). The research and pedagogical value was another point the physicians and residents mentioned for the library information. Since the research site has been an educational healthcare center or research center, and the interviewees performed both healthcare practice and research and educational activities, it is justifiable. In the research by Naeem et al. (2013), the information proved to be useful both in clinical applications and for education as well as research (Naeem et al., 2013). The results of the research by Sidlofsky, Tripp and Bayne (2003) on exploring the effect of virtual libraries on educational hospitals also confirmed the results of the present findings. This is because that research also mentioned the utility of information received from information sources for clinical decision-making, research, and education (Sidlofsky et al., 2003). Comparing the present research results against other studies suggests that the themes and subthemes obtained in this research have been more comprehensive than similar studies. Also, according to the researchers' investigation, no study has mentioned all value dimensions of library information identified in this research. In addition, considering that in this study, the critical incident technique was used in the interview, and interviewees were asked to remember their real clinical experience in answering each question as much as possible. The use of different specialties led to the collected samples of different experiences from different groups. On the other hand, it turned out that the information sought from information sources has been influential in the Clinical decision-making of different clinical groups. This necessitates the attention of librarians and medical information centers to the information needs of all specialized groups.

Conclusion

The results showed that the information searched from information resources in different stages of clinical decision-making, including disease diagnosis, prescription, treatment, management, and patient counseling, was valuable. According to the interviewees, it was not only effective for their current clinical practice but also considering the need for information and its search in a specific clinical situation and to solve the problem; this experience has remained well in mind. It has been effective for similar clinical cases in the future. Thus, medical informers, librarians, and healthcare practitioners should pay special attention to making up-to-date and quality information accessible, which is in line with the needs of this group of specialists who play a significant role in society's health and welfare.

This research has also had some limitations. For example, the present study has been conducted in a limited context, including educational and medical centers affiliated with Birjand University of Medical Sciences. Care should be exercised when generalizing the results to other universities, especially non-governmental clinical centers. However, due to the lack of dependence on time and place in terms of access to information on the one hand and the consortium purchase of information resources by the Ministry of Health for its subordinate centers on the other hand, this limitation is somewhat less highlighted. Also, considering that the research has been carried out using a qualitative approach, it is suggested to investigate the value of information obtained from the categories and subcategories in the present study in future quantitative studies in different geographical contexts and with larger sample sizes. Also, considering that the present research was carried out on physicians and residents, it is suggested that qualitative research be conducted with the participation of other treatment staff, including nurses, and that the value of library information is investigated from their perspective.

Further relevant studies highlight the role of libraries, which provide clinical information and up-to-date information resources, to the information users and those who fund clinical databases for libraries and information centers. In addition, it makes it possible for librarians, medical informants, and health professionals to quickly and easily provide valid medical research and documents to this group, which play a major role in promoting the health and well-being of society. Also, physicians and residents can use reliable and up-to-date information in their clinical practice.

Authors' contributions

All authors contributed to the design of this study

Ethics approval

Not required is a review of the existing literature

Conflict of interest

The authors report no potential conflict of interest

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