Barriers and strategies in Implementing Clinical Decision Support System in Hospitals: A Case Study in Iran

Zahra Alighanbari [1] Ali Alizadeh [2] Farid Khorrami [3]

College of Management [1] , Bandar Abbas Branch, Islamic Azad University, Bandar Abbass, Iran. Department of Health Education [2], Hormozgan University of Medical Sciences, Bandar Abbass, Iran. Department of Health Information Technology [3] , Hormozgan University of Medical Sciences, Bandar Abbass, Iran.

(Received 18 Jan, 2017 Accepted 21 Aug, 2017)

Original Article

Abstract

Introduction: Most modern medical issues are inherently complicated and accurate decisions are not always likely to be made based on logical reasons. Furthermore, the huge volume of information relevant to a simple diagnostic area makes this decision making even more troublesome. Hence, with the advent of technology, there is an ever increasing need for the Clinical Decision Support System (CDSS) in hospitals. This study has been conducted in an Iranian hospital with the aim of identifying the most significant barriers for implementing CDSS and suggesting appropriate strategies to remove them.

Methods: This qualitative cross-sectional study was conducted in 2015. The sample population of the study included 180 physicians and nurses in Shahid Mohammadi hospital in Bandar Abbas whose performance was changed using CDSS. The participants were selected using stratified sampling from 23 different wards in the hospital. First, the barriers and strategies for implementation of CDSS in other countries were extracted from a review study which was used to make a preliminary model. Then, the results of a questionnaire and Delphi tests in three rounds were included in the final model.

Results: The most significant barriers in implementing CDSS were categorized into 6 groups according to the participants. These include barriers from human resources and infrastructures as well as financial, technical, environmental and legal ones. The barriers for them were divided into 5 categories including structural, technical, financial, human and environmental ones.

Conclusion: Since the most significant obstacle in implementing CDSS in this hospital was from humans, the hospital can use the barriers provided in 5 categories and better benefit from the system. These barriers are training the human resources before they start working, engaging them in implementation process of the CDSS and using evidence-based scientific databases in CDSS while removing fundamental barriers to the system.

Correspondence:
Ali Alizadeh, PhD.
Department of Health Education, Hormozgan University of Medical Sciences.
Bandar Abbas, Iran
Tel:+98 9177660266
Email:
alizadeh266@gmail.com

Key words: Decision Support System, Clinical, Information Systems, Medical Informatics

Citation: Alighanbari Z, Alizadeh A, Khorrami F. Barriers and strategies in Implementing Clinical Decision Support System in Hospitals: A Case Study in Iran. Hormozgan Medical Journal 2017;21(2):137-145.

Introduction:

A clinical decision support system (CDSS) is an application that analyzes data to help healthcare providers make clinical decisions. These systems take advantage of available medical information to diagnose different disorders and make prescriptions for patients (1). Also, they are computerized systems capable of problem solving (2).

The 80s saw the advent of computerized systems using improvisation techniques, mathematical programming and multi-factorial decision-making models. Now, considering management problems a variable in mathematical formulae, CDSS has proven useful and essential to hospital all over the world. Innumerable studies have demonstrated the effectiveness of CDSS in diabetic treatments (3), productivity and efficiency of hospitals and screening tests for inpatients (4), reduction of thrombotic complications for inpatients (5), development and operation of patient supervision programs (6), the treatment process of cardiovascular patients (7-9), prescription of medicines (10-12), preventing venous thromboembolism in inpatients (13-14) and even its positive effect in reducing the mortality rate (15). A study by Garcia, et.al. Even related the possibility of physician errors and reduced quality of medical services to a lack of use of CDSS in healthcare facilities (16).

Due to these positive effects, computer decision support systems are increasingly suggested for in- and outpatients (17) and different commercial versions are available now (18). But these positive effects are not clearly observable in medical security and quality of medical services in some cases and despite apparent benefits, CDSSs are often criticized by users in that it is not effectively operated (19-20). Other critics such as Bu et.al. Believe that this system had many barriers including high costs of installation and staff training, complications in human-machine interaction, lack of necessary knowledge, lack of access to patient-specific data and other technical problems (21).

Other researchers suggested ways to implement CDSS, namely evidence-based scientific databases (18,22), development of country (24,25), government support (25,26) and human factors (26). This study aimed to identify barriers and suggest strategies for implementing CDSS in a general hospital in Iran.

Methods:

This qualitative cross-sectional study was conducted in 2015. The sample population of the study included 180 physicians and nurses who were employed in 23 different clinical wards of Shahid Mohammadi hospital whose performance altered when using CDSS. The participants were selected using stratified sampling from different wards in the hospital. This study was conducted in two stages. First, the barriers and implementation methods of CDSS in other countries were determined from a case study which was used to make a preliminary model. Then, the results of a questionnaire on prioritizing the barriers to this system and Delphi tests in three rounds were included in the final model with consensus among all participants.

Following compilation of data from the first round of study and the first Delphi round asking participants about the barriers and barriers for CDSS implementation, 340 ideas were identified out of which 190 were barriers and 150 were suggested strategies. In order to remove redundancies, repetitive ideas were omitted and all relevant ideas were incorporated in the preliminary model. With no localization in making this model, all ideas were sent to participants in second round of Delphi test in form of a semi-structured questionnaire and they were asked to provide any additional ideas or revisions to the existing ones. Lastly, by revising the collected data in the second round and rejecting items with less than 50% agreement rate and accepting those above 75%, the structured questionnaire for round three was compiled. This questionnaire, including 40 obstacle-related items and 18 suggested strategies for implementing CDSS in hospitals, was sent to participants. Finally, based on participants' consensus 6 obstacle and 5 strategies categories were identified which will be discussed in the following parts.

Results:

The sample population included 90 physicians and 90 nurses with response rates of 78%, 88% and 97% in the first, second and third rounds.

The findings of present study which investigated barriers in and strategies for implementing CDSS in hospital indicated the most significant barriers in implementing CDSS in Shahid Mohammadi hospital based on mean agreement rate on each item separately and the mean agreement rate across all items in each group, which are listed in details in Table 1 and Table 2. These are:

Table 1. Human, structural and financial barriers in implementing CDSS according to priorities put forward by the participants

Category	Priority No.	Title	Priority No.	Title
Human barriers	1	Lack of a mental and emotional relationship between patients and physicians	2	Limiting physician decision making when the system is deciding
	3	Over-considering physical data and ignoring patient's mental and spiritual status	4	Lack of trust to a software-generated treatment
	5	Lack of physician trust in the software being up-to-date	6	Lack of human resources to implement the system
	7	Lack of physician trust in software treatment	8	Lack of staff trust in implementation of system by the administration
	9	Complications of human-machine interaction	10	Staff's resistance to change
	11	Lowering patient-physician interaction		
Structural barriers	1	ignorance of a wide variety of diagnostic and therapeutic strategies for solving complicated problems	2	Covering a small area ogf medical science
	3	Lack of flexibility of the system	4	Lack of comprehension of relationships between body by computer systems
	5	Ignorance of medicines prescribed by the system	6	Not considering different body structures in different humans
	7	Ignorance of constitutional differences between humans	8	Ignorance of recurrences of diseases in patients
	9	Not considering organ movements inside human bodies	10	Ignorance of congenital disorders that are not diagnosable prior to surgery
	11	Increased workload	12	Lack of suitable data
	13	Lack of Information for making clinical and therapeutic decisions		
Financial barriers	1	High cost of installing this system	2	High cost of system operation and support
	3	High cost of staff training		

Table 2. Technical, environmental and legal barriers in implementing CDSS according to priorities put forward by the participants

Category	Priority No.	Title	Priority No.	Title
Technical bariers	1	integration of data from different sources	2	Time-consuming nature of inputting initial data in the system
	3	The great amount of time needed for installing CDSS in hospitals	4	Problems in coding patient information
	5	Lack of interoperability between different systems	6	Technical problems of patients
	7	Lack of integration of different systems for accessing complete patient data	8	Lack of access to statistical functions and formulae to make diagnoses using algorithms
	9	The possibility of system crashes and viruses		
Environmental barriers	1	Lack of national infrastructures	2	Lack of supporting policies in the governments
	3	Very low speed of staff training		
Legal barriers	1	Ignorance of legal issues and patient rights		

Table 3. Structural, technical, financial, human and environmental strategies in implementing CDSS as prioritized by the participants

Category	Priority No.	Title	Priority No.	Title
Structural barriers	1	using accredited scientific sources for the system database	2	Different sensitivities of body organs must be given to the system
	3	Having access to a variety of data for making strategic decisions	4	Determining the urgency of treatment
	5	Having strong installation teams	6	Managing and supervising CVSS operation contracts
Technical bareriers	1	establishment of an operating agency to cover the technical aspects of disease and medicine databases as well as treatment protocols while providing services to software developing companies	2	Constant updating of databases by operating organization
	3	Providing the system with comprehensive information regarding human anatomy and physiology	4	Having the possibility to record and trend data regarding health care organizations in a unified patient file
	5	Constant update and support for the system		
Finiancial barriers	1	allocating adequate budget to support system installation costs by the government	2	Dedicating enough funds for financial support of the system by the hospital
Human barriers	1	system operation training to human resources	2	Informing the patient about the system
Environmental barriers	1	government support for system installation	2	Hospital's support of the system installation
	3	Enforcing patient support regulations		

Priority 1, human barriers: lack of a mental and emotional relationship between patients and physicians was the most significant problem in this group.

Priority 2, structural barriers: ignorance of a wide variety of diagnostic and therapeutic strategies for solving complicated problems was the most significant problem in this group.

Priority 3, financial barriers: high cost of installing this system was the most significant problem in this group.

Priority 4, technical barriers: integration of data from different sources was the most significant problem in this group.

Priority 5, environmental barriers: lack of national infrastructures was the most significant problem in this group.

Priority 6, legal barriers: ignorance of legal issues and patient rights was the only influential factor in this group.

The most significant implementation barriers for the CDSS are as follows with detailed information in Table 3:

Priority 1, Structural strategies: using accredited scientific sources for the system database was identified as the most important solution.

Priority 2, Technical barriers: establishment of an operating agency to cover the technical aspects of disease and medicine databases as well as treatment protocols while providing services to software developing companies were identified as the most important barriers.

Priority 3, Financial barriers: allocating adequate budget to support system installation costs by the government was identified as the most important solution.

Priority 4, Human barriers: system operation training to human resources was identified as the most important solution.

Priority 5, Environmental barriers: government support for system installation was identified as the most important solution.

Conclusion:

The current study emphasized on identifying barriers in and barriers for implementing CDSS with the most significant obstacle being identified as human factor and the best solution being structural in this hospital according to the participants.

In human barriers, the most significant was a lack of a mental and emotional relationship between

patients and physicians while the least important was lowering patient-physician interaction which are in contradiction with the findings of Raggad et.al. Since they suggested time and coding factors as the most significant ones (27). This may be due to a weakness of informatics infrastructures in Iran and a lack of CDSS-trained physicians and nurses. However, the findings of this study are in line with those of Holbrook, et.al. In a study that assessed the success of CDSS, since they too pointed at human factor as being the most important obstacle. They mentioned that using computer systems and reducing the level of eye contact with patients might appear improper and rude, hence causing patient resistance and reluctance (28). The findings of this study are also in conjunction with those of Safdari, et.al. Who conducted a systematic review of the effectiveness of CDSS in health care system and suggested organizational commitment, personnel commitment and team work between caregivers as the most important barriers in implementing CDSS. They also posited that the operators must be informed of the fact that these systems can both be a time-saving apparatus and a device to facilitate access to evidence-based scientific databases and instructional material (29).

In the structural barriers group as the second-most significant ones, ignorance of a wide variety of diagnostic and therapeutic strategies for solving complicated problems was the most influential one which is further supported by the findings of Frakaro, et.al. That pointed to factors like system design, user interface, installation strategy, assessing its effectiveness in patient satisfaction, costs and unforeseen consequences (30).

Moreover, in a study titled the role of DSS in healthcare, Omidian, et.al. Stated that coding patient data is one of the most significant challenges in implementing a CDSS in the country and suggested patient data to be categorized under standardized classifications to be used in calculations in the correct way. They also considered standardization of medical concepts to be really time-consuming and costly and emphasized on resolving them at the first stage of implementing CDSS (31).

One of the most important strengths of this project was a practical assessment of strategies for implementing CDSS in hospitals by asking the ideas of the two main groups influenced by this system who considered structural barriers as the most significant with using accredited scientific sources for the system database as the first priority. Other researchers also agreed with these viewpoints and mentioned that CDSSs are responsible for human lives and their decisions are significant for human health, so it is of utmost importance that evidence-based sources are used in making clinical decisions (32-34). This study also considered the importance of evidence-based sources of data.

One of the limitations of this study was that it only considered the ideas of physicians and nurses in one hospital and the priorities put forward by them are not generalizable to the whole country. In fact, agreement or contradiction of the findings of this study with similar existing ones is highly dependent on the environment and maturity of informatics systems. As an instance, the most significant obstacle in implementing CDSS in this hospital was from humans while the best solution was structural according to the participants of this study, whilst another study in an organization with a different level of informatics system maturity would yield different outcomes, putting technical (35), financial (36-38) or other barriers (39) in higher ranks as barriers of implementing CDSS with varying barriers accordingly.

Implementing CDSS in hospitals and healthcare facilities is to some extent capable of reducing hazards facing people in society, yet highly dependent on goal-oriented management and effective installation of the systems in aforementioned organizations. Thus, in order to install these systems successfully, it is of crucial importance to consider challenges that physicians and nurses introduced before, in the process of and after implementing CDSS or any other informatics system. Since the most significant obstacle in implementing CDSS in this study was found to be human factor, hospitals can take advantage of the barriers suggested in all 5 categories here namely, system operation training to human resources, engaging staff in the system selection process and using evidence-based databases in CDSS while removing fundamental barriers, to implement these systems.

Acknowledgment:

This article was extracted from a Master's degree thesis from Azad University of Bandar Abbas. The authors would like to extend their gratitude to those physicians and nurses who patiently filled out the questionnaires in three Delphi rounds.

References:

1. Parshutin S, Kirshners A. Research on clinical decision support systems development for atrophic gastritis screening. Expert Systems with Applications. 2013;40(15):6041-6046.
2. Boukhanovsky A, Bubak M. High Performance Computations for Decision Support in Critical Situations: Introduction to the Third Workshop on Urgent Computing. Procedia Computer Science. 2014;29:1644-1645.
3. Holbrook A, Thabane L, Keshavjee K, Dolovich L, Bernstein B, Chan D, et al. Individualized electronic decision support and reminders to improve diabetes care in the community: COMPETE II randomized trial. Canadian Medical Association Journal. 2009;181(1-2):37-44.
4. Chaudhry B, Wang J, Wu S, Maglione M, Mojica W, Roth E, et al. Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. Annals of Internal Medicine. 2006;144(10):742-52.
5. Dexter PR, Perkins S, Overhage JM, Maharry K, Kohler RB, McDonald CJ. A computerized reminder system to increase the use of preventive care for hospitalized patients. New England Journal of Medicine. 2001;345(13):965-970.
6. Piazza G, Rosenbaum EJ, Pendergast W, Jacobson JO, Pendleton RC, McLaren GD, et al. Physician alerts to prevent symptomatic venous thromboembolism in hospitalized patients. Circulation. 2009;119(16):2196-2201.
7. Sobieraj DM. Development and implementation of a program to assess medical patients' need for venous thromboembolism prophylaxis. American Journal of Health-System Pharmacy. 2008;65(18):1755-1760.
8. Piazza G, Goldhaber SZ. Computerized Decision Support for the Cardiovascular Clinician. Circulation. 2009;120(12):1133-7.
9. Sequist TD, Gandhi TK, Karson AS, Fiskio JM, Bugbee D, Sperling M, et al. A randomized trial of electronic clinical reminders to improve quality of care for diabetes and coronary artery disease. Journal of the American Medical Informatics Association. 2005;12(4):431-437
10. Durieux P, Nizard R, Ravaud P, Mounier N, Lepage E. A clinical decision support system for prevention of venous thromboembolism: effect on physician behavior. JAMA. 2000;283(21):2816-21.
11. Moja L, Kwag KH, Lytras T, Bertizzolo L, Brandt L, Pecoraro V, et al. Effectiveness of computerized decision support systems linked to electronic health records: a systematic review and meta-analysis. American journal of Public Health. 2014;104(12):e12-e22.
12. Böttiger Y, Laine K, Andersson ML, Korhonen T, Molin B, Ovesjö M-L, et al. SFINX—a drug-drug interaction database designed for clinical decision support systems. European Journal of Clinical Pharmacology. 2009;65(6):627-633.
13. Kaushal R, Shojania KG, Bates DW. Effects of computerized physician order entry and clinical decision support systems on medication safety: a systematic review. Archives of Internal Medicine. 2003;163(12):1409-1416.
14. Romano MJ, Stafford RS. Electronic health records and clinical decision support systems: impact on national ambulatory care quality. Archives of Internal Medicine. 2011;171(10):897-903.
15. Griffey RT, Lo HG, Burdick E, Keohane C, Bates DW. Guided medication dosing for elderly emergency patients using real-time, computerized decision support. Journal of the American Medical Informatics Association. 2012;19(1):86-93.
16. Garcia-Jimenez A, Moreno-Conde A, Martinez-Garcia A, Marin-Leon I, Medrano-Ortega FJ, Parra-Calderon CL. Clinical Decision Support using a Terminology Server

to improve Patient Safety. Stud Health Technol Inform. 2015;210:150-154.

17. Haut ER, Lau BD, Kraenzlin FS, Hobson DB, Kraus PS, Carolan HT, et al. Improved prophylaxis and decreased rates of preventable harm with the use of a mandatory computerized clinical decision support tool for prophylaxis for venous thromboembolism in trauma. Archives of Surgery. 2012;147(10):901-907.
18. Kucher N, Koo S, Quiroz R, Cooper JM, Paterno MD, Soukonnikov B, et al. Electronic alerts to prevent venous thromboembolism among hospitalized patients. N Engl J Med. 2005;352(10):969-977.
19. Lecumberri R, Panizo E, GOMEZ-GUIU A, Varea S, GARCÍA-QUETGLAS E, Serrano M, et al. Economic impact of an electronic alert system to prevent venous thromboembolism in hospitalised patients. Journal of Thrombosis and Haemostasis. 2011;9(6):1108-1115.
20. Shahsavarani AM, Abadi EAM, Hakimi Kalkhoran M, Jafari S, Qaranli S. Clinical Decision Support Systems (CDSSs): State of the art Review of Literature. International Journal of Medical Reviews. 2015;2(4).
21. Bu D, Pan E, Walker J, Adler-Milstein J, Kendrick D, Hook JM, et al. Benefits of information technology–enabled diabetes management. Diabetes Care. 2007;30(5):1137-1142.
22. Kucher N, Puck M, Blaser J, Bucklar G, Eschmann E, Lüscher T. Physician compliance with advanced electronic alerts for preventing venous thromboembolism among hospitalized medical patients. Journal of Thrombosis and Haemostasis. 2009;7(8):1291-1296.
23. Ash JS, McCormack JL, Sittig DF, Wright A, McMullen C, Bates DW. Standard practices for computerized clinical decision support in community hospitals: a national survey. Journal of the American Medical Informatics Association. 2012;19(6):980-987.
24. Bonnabry P, Despont-Gros C, Grauser D, Casez P, Despond M, Pugin D, et al. A risk analysis method to evaluate the impact of a computerized provider order entry system on patient safety. Journal of the American Medical Informatics Association. 2008;15(4):453-460.
25. Safdari R, Ghazisaeidi M, Jebraeily M. Electronic Health Records: Critical Success Factors in Implementation. Acta Informatica Medica. 2015;23(2):102-104.
26. Tamblyn R, Huang A, Perreault R, Jacques A, Roy D, Hanley J, et al. The medical office of the 21st century (MOXXI): effectiveness of computerized decision-making support in reducing inappropriate prescribing in primary care. Canadian Medical Association Journal. 2003;169(6):549-56.
27. Raggad BG. Decision support system: use IT or skip IT. Industrial Management & Data Systems. 1997;97(2):43-50.
28. Holbrook A, Xu S, Banting J. What factors determine the success of clinical decision support systems? AMIA Annual Symposium Proceedings. 2003;2003:862.
29. Safdari R, Karami M, Mirzaee M, Rahimi A. A systematic review of decision support systems: Effects on health care. Journal of Payavard Salamat. 2013;7(1):56-70. [Persian]
30. Fraccaro P, Plastiras P, Dentone C, Di Biagio A, Weller P. Behind the screens: Clinical decision support methodologies–A review. Health Policy and Technology. 2015;4(1):29-38.
31. Omidian Z, Hadianfard A. The Study of Clinical Decision Support Systems Role in Healthcare (1980-2010). Jentashapir Journal of Health Research. 2011;2(3):1-13. [Persian]
32. Moja L, Liberati EG, Galuppo L, Gorli M, Maraldi M, Nanni O, et al. Barriers and facilitators to the uptake of computerized clinical decision support systems in specialty hospitals: protocol for a qualitative cross-sectional study. Implementation Science. 2014;9(1):105.
33. Montgomery AA, Fahey T, Peters TJ, MacIntosh C, Sharp DJ. Evaluation of computer based clinical decision support system and risk chart for management of hypertension in primary care: randomised controlled trial. BMJ. 2000;320(7236):686-690.
34. Sim I, Gorman P, Greenes RA, Haynes RB, Kaplan B, Lehmann H, et al. Clinical decision support systems for the practice of evidence-based medicine. Journal of the American

Medical Informatics Association. 2001;8(6):527-534.

35. Trivedi MH, Daly EJ, Kern JK, Grannemann BD, Sunderajan P, Claassen CA. Barriers to implementation of a computerized decision support system for depression: an observational report on lessons learned in "real world" clinical settings. BMC Medical Informatics and Decision Making. 2009;9:6.

36. Saronga HP, Dalaba MA, Dong H, Leshabari M, Sauerborn R, Sukums F, et al. Cost of installing and operating an electronic clinical decision support system for maternal health care: case of Tanzania rural primary health centres. BMC Health Serv Res. 2015;15:132.

37. Dalaba MA, Akweongo P, Williams J, Saronga HP, Tonchev P, Sauerborn R, et al. Costs Associated with Implementation of Computer-Assisted Clinical Decision Support System for Antenatal and Delivery Care: Case Study of Kassena-Nankana District of Northern Ghana. PLOS ONE. 2014;9(9):e106416.

38. Dalaba MA, Akweongo P, Aborigo RA, Saronga HP, Williams J, Blank A, et al. Cost-effectiveness of clinical decision support system in improving maternal health care in Ghana. PLOS ONE. 2015;10(5):e0125920.

39. Lugtenberg M, Weenink JW, van der Weijden T, Westert GP, Kool RB. Implementation of multiple-domain covering computerized decision support systems in primary care: a focus group study on perceived barriers. BMC Med Inform Decis Mak. 2015;15:82.

شناسایی موانع و راهبردهای پیاده‌سازی سیستم پشتیبانی تصمیم در تصمیم‌گیری پزشکان بیمارستان

زهرا علی قنبری [۱] علی علیزاده [۲] فرید خرمی [۳]

[۱] دانشکده مدیریت، دانشگاه آزاد اسلامی، واحد بندرعباس، بندرعباس، ایران. [۲] گروه آموزش بهداشت، دانشگاه علوم پزشکی هرمزگان، بندرعباس، ایران. [۳] گروه فناوری اطلاعات سلامت، دانشگاه علوم پزشکی هرمزگان، بندرعباس، ایران.

مجله پزشکی هرمزگان سال بیست و یکم شماره دوم ۹۶ صفحات ۱۴۵-۱۳۷

چکیده

مقدمه: *اغلب مسایل در پزشکی مدرن بسیار پیچیده می باشند و دلایل منطقی برای تصمیم گیری های دقیق وجود ندارد. از سوی دیگر حجم مفید اطلاعات پزشکی که حتی با یک محدوده کوچک تشخیصی در ارتباط است، به قدری زیاد می باشد که تصمیم گیری سریع و دقیق را دشوار خواهد ساخت، لذا با توجه به پیشرفت تکنولوژی، نیاز به استفاده از سیستم های پشتیبان تصمیم گیری بالینی در بیمارستانها روز به روز افزایش پیدا می کند. این مطالعه به منظور شناسایی مهمترین موانع پیاده سازی سیستم پشتیبان تصمیم بالینی و پیشنهاد راهبردهای مناسب برای رفع این موانع در یکی بیمارستان های ایران انجام شد..*

روش کار: *این مطالعه کیفی به صورت مقطعی در سال ۲۰۱۵ انجام شد. جامعه آماری مطالعه حاضر ۱۸۰ نفر از پزشکان و پرستاران بیمارستان شهید محمدی شهرستان بندرعباس بود که کارکرد این دو گروه با استفاده از سیستم پشتیبان تصمیم دستخوش تغییرات می گردید. روش انتخاب این دو گروه از طریق نمونه گیری طبقه ای و از ۲۳ بخش مختلف بیمارستان انجام گرفت. در ابتدا موانع و راهبردهای پیاده سازی سیستم پشتیبان تصمیم بالینی در کشورهای دیگر بر اساس یک مطالعه مروری استخراج گردید و بر اساس آن الگوی اولیه طراحی شد و از طریق پرسشنامه و با آزمون دلفی در سه مرحله به نظر سنجی گذاشته شد و نتایج در الگوی نهایی منظور شد. .*

نتایج: *مهمترین موانع پیاده سازی CDSS طبق نظر جامعه مورد مطالعه در شش گروه تقسیم بندی گردید که به ترتیب اولویت شامل موانع انسانی، ساختاری، مالی، فنی، محیطی و قانونی بودند. و راهبردها جهت رفع این موانع به پنج گروه تقسیم بندی شد که به ترتیب اولویت شامل راهبرد های ساختاری، فنی، مالی، انسانی و محیطی بودند..*

نتیجه‌گیری: *از آنجایی که مهمترین مانع برای پیاده سازی CDSS در این بیمارستان مانع انسانی بود، بیمارستان می تواند با استفاده از راهبردهای معرفی شده در پنج گروه ارائه شده در این پژوهش از قبیل توانمندسازی نیروی انسانی قبل از بکارگیری، مشارکت دادن کارکنان در زمان انتخاب سیستم و همچنین استفاده از پایگاه های دانش مبتنی بر شواهد در CDSS، ضمن رفع موانع اولیه، نسبت به بکارگیری این سیستم اقدام نمایند..*

کلیدواژه‌ها: *سیستم پشتیبان تصمیم گیری بالینی، سیستم های اطلاعاتی، انفورماتیک پزشکی، موانع*

نویسنده مسئول:
دکتر علی علیزاده
گروه آموزش بهداشت، دانشگاه علوم پزشکی هرمزگان
بندرعباس - ایران
تلفن: ۹۱۷۷۶۶۰۲۶۶ ۹۸+
پست الکترونیکی:
alizadeh266@gmail.com

نوع مقاله: پژوهشی

دریافت مقاله: ۹۵/۱۰/۲۹ اصلاح نهایی: ۹۶/۴/۲ پذیرش مقاله: ۹۶/۶/۵

ارجاع: علی قنبری زهرا، علیزاده علی، خرمی فرید. شناسایی موانع و راهبردهای پیاده‌سازی سیستم پشتیبانی تصمیم در تصمیم گیری پزشکان بیمارستان. مجله پزشکی هرمزگان ۱۳۹۶؛۲۱(۲): ۱۴۵-۱۳۷.