

Evaluation of an Urban Phase of the Specialized Care Program for Diabetes in Iran: Providers' Perspectives

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ABSTRACT

Background: To develop and implement more effective programs of health care delivery to prevent and control diabetes, Iran has developed and implemented the urban phase of the specialized care program for diabetic's patients. Deeply understanding the views and experiences of various stakeholders in this program can assist policy makers to identify the program's strengths and weaknesses and enable them to develop action plans. Hence, the present study aimed to evaluate the planning and establishing of this program from the perspective of providers.

Methods: A qualitative study was applied using documents review and face-to-face semi-structured interviews with the program leads and relevant executive managers of the local medical universities. Thematic analysis was used to analyze the data.

Results: Three main themes and nine subthemes were explored, including program planning (the content and the strengths, weaknesses, and corrective measures), implementation (executive mechanisms at the university level, establishment of referral system, collaboration between deputies of health and treatment, information dissemination mechanisms, satisfaction measurement and strengths, weaknesses and corrective measures), and result (implementation results).

Conclusions: The urban phase of the specialized care program for diabetic's patients has been a good base to improve continuity of care, which emphasizes on controlling and prevention of occurrence or progression of chronic complications of diabetes. This model can also be used for better management of other chronic disease. However, there are still issues that should be considered and improved such as allocation of guaranteed resources, more trained health professionals, and more evidence based guidelines and protocols, better collaboration among medical universities' deputies, clearer payment system for program evaluation and better information management system.

Keywords: Diabetes mellitus, integrated delivery systems, Iran, program evaluations

INTRODUCTION

Now-a-days, noncommunicable diseases are the most important human health threat over the world.^[1,2] Progressively increasing burdens of such diseases, especially in low- and middle-income countries,^[3] has triggered one of the main challenges for health care systems.^[4] Diabetes is one of the most common of these diseases with the global epidemic rapidly spreading. According to the available statistics, 366 million people in the world suffer from diabetes and it is estimated to reach 552 million by 2030.^[5]

Iran also faces a vast and dramatic increase in the diabetic population, which has about doubled within the past few years, compared with current encountered outbreaks. Based on Iranian noncommunicable disease risk factor info base, 9.73% of individuals between the ages of 25-64 in 2007 were hyperglycemic.^[6]

The findings of a study conducted by Haghdoust in 2011 showed that the average medical costs per capita in Iran was equal to \$843 with \$412 (49%) of the costs related to diabetes complications. The average per capita indirect cost of disease was calculated as \$865, equivalent to 19% of an Iranian national's per capita income. In total, approximately 7.8% of total health care costs were spent on control of type 2 diabetes which, with the surge of the disease and its complications, will continue to rise.^[7]

The World Health Organization suggests that to prevent and control diabetes, countries should develop and make comprehensive policies and plans.^[8] Iran's health system has also prioritized development of necessary policies and programs for the prevention and control of diabetes. The first step toward this priority was developing the 'diabetes prevention and control program' in the country by Ministry of Health and Medical Education (MOHME). This program aimed to identify and screen the at risk population of over 30 years of age, living in rural areas. The evaluation of the program revealed that control of complications and follow-up of patients in a context of a referral system had not been adequately considered.^[9]

In revision of the first program, the shortcomings were resolved. This modified program implemented at the start of 2010 in major cities for the first time

in the country. With the passage of 2 years since the implementation of this program, understanding and re-examining the views and experiences of the providers are necessary. This study aimed to discover such viewpoints in order to assist policy makers to identify strengths and weaknesses and provide corrective measures to improve the program. To better understand the related processes, a brief explanation about Iranian health system and the modified program is necessary.

Health system in Iran

In Iran, MOHME is mandated to fulfill the goal of attaining the highest level of health through designing and implementing a national level health policy. Yet, MOHME delegates its implementation to medical universities across the country. The president of a medical university is the highest health authority in the province, who is in charge of public health, health care provision in public facilities, and medical education. Among seven deputies of every medical university, the health deputy is responsible for primary and public health care. Furthermore, the main responsibilities of treatment deputy refer to secondary and tertiary care. The coordination of these deputies is essential to health promotion and guarantee continuity of care. These deputies were earlier separated, but then were merged in one deputy named health deputy for a while and again returned to former structure.^[10]

National diabetes program in Iran

The first national program for prevention and control of diabetes, merged into the primary health care (PHC) of the health system in 2004. Identifying and screening at risk population of over 30 years of age, living in rural areas, was the main goal of this program.^[9,11] In this program, due to separation of activities of the health and treatment deputies of the universities in the operational level, the significant weaknesses of the program as identified in an evaluation conducted in 2010, pertained to the referral system and control of complications.^[11]

The second program was developed once the limitations and weaknesses of first one were addressed. In addition, plans to control the disease in highly vulnerable groups implemented that is, the inhabitants of the cities with a population of >1 million people. One of the important strength

of the revised program, which is titled urban phase of the specialized care program (USCP) for diabetics' patients, was the more focus on coordination and collaboration of health and treatment deputies. This can help to maintain the health care system continuum by providing a referral feedback system from levels of specialized treatment back to PHC. To provide required services, three separated levels were defined in the USCP: Level 1 (selected urban health centers responsible for initial screening, continuous follow-up, and patient care), Level 2 (specialized hospitals) and Level 3 (sub-specialized centers). In terms of risk factors for diabetes mellitus, evaluation and screening was conducted in the population for individuals aged 30 years or over living in urban areas. Based on the results of the screening, prediabetic and diabetic individuals were placed namely in special group. For evaluation of having complications in major organs (kidneys, eyes, heart and blood vessels, and nerves), patients are assessed annually under a referral system using predefined services. In addition, hospitals should provide feedback to first level in primary care settings. In as much as the supervision systems of these two sections are carried out by two independent deputies, close cooperation of two deputies is one of the main prerequisite to implement the program. Figure 1 presents the map of the delivery of services under USCP.^[12]

The USCP, incorporating seven universities was launched in the beginning of 2010 in six metropolises with a population of over million people each (first phase universities) and continued expansion to cover a population of over 20 million people with incorporation of 16 universities by the end of the year 2012 (second phase universities). To harmonize the implementation of the program among providers a manual guide was developed and distributed among USCP agents. It consists of seven parts including executive and supervisory levels, job descriptions, procedures and workflow of referral and care in specialized levels, the flowchart of specialized services providing of the referral system, the methods of monitoring, evaluation indicators, and payment system.^[12]

METHODS

To gain more in-depth understanding of experiences of relevant providers a qualitative program evaluation approach was employed.^[13] Data were gathered using face to face semi-structured interview and relevant document reviews. Purposive sampling was used and continued until reaching data saturation. Fourteen semi-structured individual interviews were conducted with key informants including 12 USCP leads and two treatment executive managers of medical universities. They were selected on the basis of their organizational

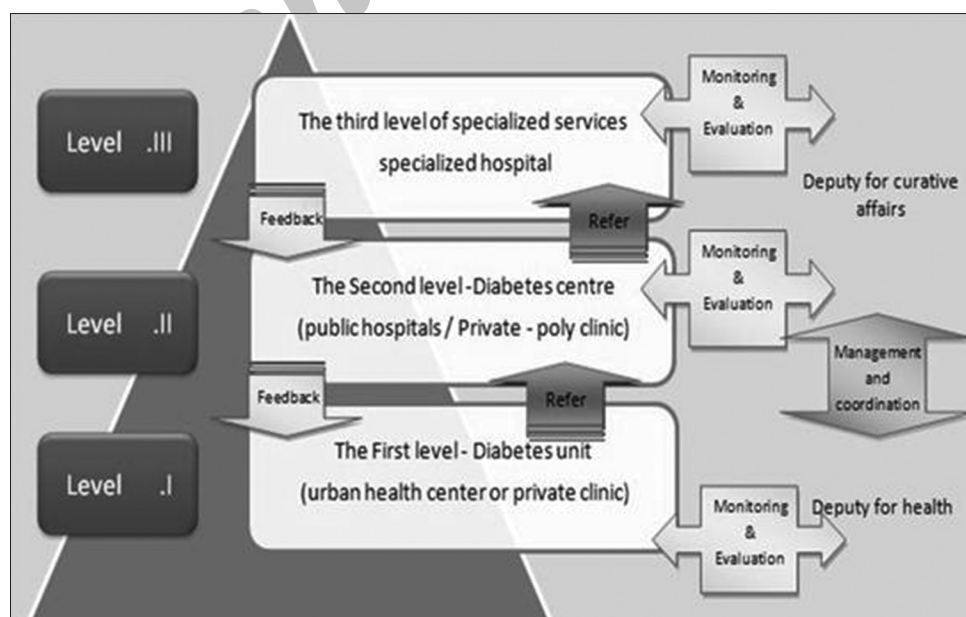


Figure 1: The map of the delivery of services under USCP

positions. Table 1 presents more details about interviewees. All interviews were conducted by one of the research team (MG). Participants were informed about study details in advance. They were asked their viewpoints and experiences about the USCP importance and consequences, manual guide, detailed implementation process, main shortages, and strengths. Interviews took between 30 and 45 min to complete and were conducted at the workplaces of interviewees. All interviews were audio-typed and transcribed verbatim and read several times by research team. Ethical issues were considered assuring confidentiality. Upon transcription, texts were reviewed by participants and authenticity of the statements was confirmed. Relevant documents including work plans, progress reports, audit and inspection reports, annual reports, official feedbacks, site visit notes and protocols were purposively selected and reviewed. These documents were used to answer study questions and as a resource for data triangulation and increase the comprehensiveness and validity of study. There was no difficulty in access to these documents. Documents were analyzed using content analysis elucidating key pattern and themes. Due to the polished nature of published documents, their content was cross-checked with data deriving from interviews, if appropriate.

Interview data analysis was performed using thematic analysis method, which seeks to identify, analyze, and report patterns (themes) across a dataset. This approach uses inductive and deductive coding to identify categories (codes) and patterns (themes) in the data.^[14] Transcriptions were read and codes and themes were derived manually from original data. Content was encrypted under three overall themes and nine subthemes (titles). The member check strategy was used during a national conference program session and comments were incorporated in the final analysis and it helped to ensure that the findings were congruent with participants' perceptions, beliefs, and opinions.

RESULTS

The findings related to the analysis of providers' views to the status of USCP implementation identified three overall themes (planning, implementation, and results) and nine subthemes which will be discussed below [Table 2].

Table 1: Interviewees characteristics

Interviewees	Characteristics	Frequency
Position	USCP leads	12 (85.7)
	Treatment executive managers	2 (14.2)
Sex	Male	1 (7.2)
	Female	13 (92.8)
Job experience	10-20 years	8 (57.1)
	20-30 years	6 (42.9)

Table 2: The extracted themes and subthemes

Theme	Subtheme
Planning	The content
	The strengths, weaknesses, and corrective measures
Implementation	Executive mechanisms at the university level
	Establishment of referral system
	Collaboration between deputies of health and treatment
	Information dissemination mechanisms
	Satisfaction measurement
Result	Strengths, weaknesses and corrective measures
	Implementation results

Planning

The content of USCP instruction

Almost all participants were aware of the USCP instruction. The majority believed the objectives, strategies, procedures, and referral work flow had been well-defined and highly applicable. Approximately, half of respondents stated that contents relating to executive and supervisory levels, task descriptions and service process flow charts were clear. A number of respondents commented contents pertaining to monitoring and controlling have been well-compiled to an extent.

Strengths, weaknesses, and corrective measures

One of the strength of the program, in the view of participants, was the development, compilation and communication of applicable instruction of the USCP. Instruction was relatively transparent and rational and able to help and guide executives to run the program.

"Participant 13: Compilation of executive instruction, program monitoring and surveillance guidelines at university and the national level are one of the good points of this program."

A majority of respondents considered the facilities provided for the patients as strength of the USCP planning. In universities comparisons, most first phase universities despite being unsatisfied with the payment system in comparison to the other sections of the program, in discussing the strengths of the program believed clarification of costs, compared to similar programs, is one of the strengths of USCP. Surprisingly, second phase universities believed that managerial mechanisms and collaboration between health and treatments deputies were the USCP strengths.

Other strong points of the USCP were development and availability of referral forms and data collection sheets, which facilitated broad and vast supervision, more so cited by first phase universities who a while operated without instructional guidelines and reporting forms. The review of official feedbacks also showed this issue.

“Participant 3: Costs have been calculated for each and every step; forms were designed and all referral and statistic forms were provided.”

The major challenge and weakness of the USCP, was in the payment system. Most of the participants believed that payment system should be revised as they didn't perceive it as a robust procedure. Inadequate attention to some expenses related to purchase of equipment or medical inpatient facilities, lack of personnel remuneration, inappropriate payments to private sector (nongovernmental) that provide services (once the governmental capacities is not enough), and also vagueness in some parts were most weaknesses pointed by respondents. Internal audit and progress reports also significantly highlighted such a limitation. Another weakness of the USCP referred to program monitoring and evaluation. On this basis, the participants, while supporting well-structuring the instruction framework overall, suggested revision and editing instructions, especially in payment system, monitoring and evaluation as essential. They believed that some changes could improve effectiveness and resolve shortcomings.

Participants believed, in revision of the payment system, the following areas should gain greater priority: The method to pay some costs such as medicines and para clinical services, funding for purchasing of equipment and remuneration of personnel involved (in providing services).

In addition, in revision of the program evaluation indicators, the use of more rational, easier and less number of indicators in main and important area, and separation of the health and treatment deputies' indicators would be conducive. Revision of referral forms, simplification of report forms, and provision of training courses and setup of a software recording and reporting system are matters proposed by some participants. They also stressed that software provided for the program should cover both two involving deputies and also reports provided by MOHME's IT office also highlighted that a comprehensive database should be developed.

Implementation

Executive mechanisms at the university level

From participants' perspective, major executive mechanism for second and third phase of USCP implementation consisted of setting up and equipping (providing the necessary physical space, equipment and human resources required) of selected specialized centers. It was approximately cited by all participants.

Participants emphasized on the importance of meetings with deputy of health or even university president to move forward program. Several universities, also, pointed to holding training and orientation courses with involved personnel, monitoring of both health and treatment deputies and use of potential of the private sector in this regard.

“Participant 6: Joint monitoring with the health (department), face to face education and incorporation of a social system would benefit implement the program.”

“Participant 14:....incorporation of the private sector, in our opinion, is needed. In this way, our executive responsibilities would decrease and we could pay more attention to supervision.”

Establishment of referral system

Most participants verified establishing a referral mechanism and feedback procedure among the three levels of the program at their respective universities. Only a limited number of participants reported failure in establishing the system with almost all of these participants being from universities that had just recently implemented the program. Based on documents review, only in one university involved in the first phase the referral system had not been established.

The participants believed that to establish a successful referral system, an effective collaboration between health and treatment deputies and inter-sectoral coordination are crucial. Some participants cited geographical division of urban areas and their linkage with centers of level two, along with promulgation (maps with introductions to the unit) a solution to the establishment of referral system. While other participants proposed further solutions such as putting limitation for patients to be admitted only through referral mechanism, introducing electronic registration, providing free laboratory tests, and visits to specialists.

Collaboration between deputies of health and treatment

The majority of participants believed necessary cooperation between the two deputies of health and treatment has been developed which was mainly the result of joint meetings and joint monitoring program held by deputies. Reviewing minutes of meetings between deputies also showed better progress of coordination overtime. Development of the joint operational programs, formation of a Joint Committee and the use of common software were other strategies to facilitate more collaboration between two deputies. A participant stated that they set up a joint memorandum between the two deputies aiming to facilitate positive intercommunication.

Information dissemination mechanisms

Participants made reference to the various methods employed in information dissemination and introduction of second and third level services to the community and the target group. The most common method in their view consisted of installation of information boards along with pamphlet preparation and distribution in first level services. Broadcasting through radio and television networks, dissemination through nongovernmental organizations and exhibition in first level units, providing the addresses and telephone numbers of second-level centers were other avenues explored by participants as ways of disseminating information. These methods were cited by participants in almost all universities. The only difference seen was in the use of media outlets, which was referenced more by participants from small universities.

In limited cases, procedures such as preparation of patient educational booklets, educational classes for patients, reporting to members of faculty and treatment staff, creation of websites and dispatch of

short message services through the diabetes center had been used for this purpose. Review of patients' feedbacks documents indicated their partial satisfaction from the provided information. In only one university, active information dissemination had not taken place due to reactive role that first level service providers played.

In order to measure and assess the level of information dissemination and public awareness, methods such as interviews, field visits, use of software, and checklists were employed. The majority of participants considered this process as effective. The number of admitted patients in comparison with the overall patient population across some provinces was satisfactory.

In only one case, the evaluation of information dissemination was considered weak due to its recent and new utilization. A participant, despite having utilized various methods of information dissemination, believed there was no need for it in hospitals and that it was the responsibility of providers at the first level.

Satisfaction measurement

Approximately half of the participants mostly stated having taken necessary measures to determine the extent of patient satisfaction. Different ways such as installation of "patients" comments and "feedback" boxes, preparation and distribution of clientele satisfaction survey forms and visit or case interviews were employed. Based on assessment results, a number of participants expressed some modification of procedures is needed as requested by clients. Some participants also stated that the program success was relatively limited and partial, due to lack of continuous satisfaction polling. In addition, a group despite agreeing with the benefits of satisfaction polling among patients, surprisingly cited time constraints as reasons for not carrying out this measurement.

Given the importance of the satisfaction surveys, participants expressed practical suggestions for better satisfaction monitoring. A common suggestion expressed by interviewees across different universities was the provision of a comprehensive and central satisfaction survey which uses simple and concordant forms to measure patient satisfaction.

"Participant 11: There should be a national and equally composed satisfaction assessment program.

Otherwise, each center will carry out disparate surveys with no comparable results."

Furthermore, in the view of one of the participants, it would be quite useful if satisfaction survey results were available online. A limited number also believed besides patient satisfaction surveys, employee satisfaction surveys were also necessary.

Strengths, weaknesses, and corrective measures

The participants noticed more strengths regarding with implementation of USCP. The majority viewed establishment of a referral system and providing centralized, specialized diabetes care services as one of the strengths of the aforementioned. This issue was highlighted in minutes of meetings in different universities.

Systematic evaluation and better monitoring of the treatment process are further strengths of the program. The positive and constructive interactions between the levels of policy making and implementation, active participation and follow-up of involved personnel in the program, and the commitment and support of senior managers are other referred strengths.

In stating experiences, participants cited several operational obstacles in implementation of the USCP. Highlights of these problems related to hard- and soft-ware resources as stated by the majority of interviewees from various universities and also found in internal and external audit reports. Another part of the problem was related to service providers. Inadequate guidelines and specialized protocols, shortage of nursing, overcrowded hospitals, particularly in out-patient clinics, were dilemmas cited by participants from all participating universities. Reviewing the relevant protocols and guidelines also revealed such a shortage. Insufficient desire by specialists to provide integrated services was a problem cited only by first-phase-implementation universities. A few numbers of participants were uncertain about the continuity and future of the program.

In addition, problems such as widespread cities and dispersal of patients and the lack of belief among patients in services provided by general practitioners (GPs) in first level services in comparison with specialists were referred to by participants mostly from larger universities. These can be grouped in problems-related to patients and society.

Given USCP implementation, the most comments were concentrated on corrective

measures on the provision and procurement of required resources and efforts causing more collaboration and interaction of involved levels. A number also cited provision of human resources, empowerment of health professional involved in the program and program continuity.

"Participant 1: The program should be continuous and not just limited to year-costs payments should be continuous."

Program result

Implementation results

Results of establishing the program were regarded positively by all participants in the study. In their view, one of the program's main achievements during its implementation has been an integrated approach to prevent diabetes' complications. Documenting the number of diabetic patients and increasing patients' motivation to be referred to centers were issues highlighted by participants, which was also evident in reviewed documents participants believed that continuity of the program could have positive effect and result in better delivery of services. It was stated that implementation of this program could be to pave the way in establishing further referral systems for other chronic diseases in the health system.

Better management of resources was another advantage of USCP implementation, highlighted mostly by first-phase-implementation universities. Reduction of complications and medical expenses, for example prevention of dialysis, were positive consequences commented on by participants.

DISCUSSION

In this study, we tried to answer questions as whether firstly the program has helped to improve care management and second what the facilitators and barriers of USCP' planning and implementation are. These evidences can serve as a useful guide for national and local policy makers to refine the program.

Results of this study have shown that the USCP has provided improved care to diabetics either directly (timely detection of complications, increased speed and improved quality of health care services, reduction/prevention of complications) or indirectly (reduced number of unnecessary referrals, avoided incurring additional costs).

It seems that continued sustention and expansion of the program can benefit the health care system on an even wider level by providing for the establishment of a referral system for other chronic diseases in the country. Some scholars reinforce the effective findings of this study in terms of positive integration of health care facilities for chronic diseases.^[15-17]

Our results highlighted that developing a comprehensive and accurate instruction facilitated the USCP implementation. Such instruction with well-defined goals, strategies, policy, and procedures could increase the providers' awareness and understanding regarding to the philosophy of the program. In addition, this instruction displayed communication and supervisory mechanisms clearly, which resulted in more insight toward program. The important role of staff and organizational awareness and commitment are addressed by Goodwin *et al.*^[17] Furthermore, it was emphasized that outlining the payment system in the instruction relieved concerns over costs wastefulness and financial turnover procedures which inevitably resulted in increased employee motivation.

Along with the finding of Sea Mar's Chronic Care Program for patients with diabetes,^[18] another program strength identified in this study was improved coordination and interaction. As earlier mentioned, attempts were made in the USCP to resolve some limitations related to separation of activities of the health and treatment deputies of the universities in the operational level. Here, through clarification of jobs and responsibilities, illustration of communication lines, breakdown of financial resources and consideration of required credits for each deputy, the interaction between these deputies improved.

Better interaction of deputies resulted more coordination between policy making and operational levels. Furthermore, it provided required support and commitment of senior management. It seems such coordination and interaction helped to integrate the provision of health care services. Hence, it can be concluded inter-sectoral coordination is a prerequisite for successful implementation of programs where health services is provided by a number of different organizations. Similar to this finding, Corrigan *et al.* in their study have reported that

effective internal and external communications were essential in developing an integrated diabetes services. The study confirmed that while all of channels of communication may take some resource to develop and deliver, without those it is not possible to create integrated care services.^[19]

Our results also demonstrated number of USCP's barriers and constraints. Firstly, it became obvious that despite efforts to make a comprehensive planning, paying enough attention to some aspects has been ignored. The USCP's evaluation process was one of these aspects that had not been defined well. This concluded the sheer volume of indicators, which some of them were not relevant and much time and effort was needed in analyzing and reporting of those. In addition, lack of a defined accountability lines for carrying out analysis in the two involving deputies could cause confusion in the gathering and presentation of information. As a result, the evaluation system of USCP should be revised. Slonim *et al.* and Goodwin *et al.* also reported, defining, monitoring, evaluating, and needed adjustments are important to ensure continuous quality improvement of programs.^[17,20] It is suggested that some indicators should be removed or replaced by more effective indicators.

Payment system and rewarding mechanisms were issues, which had not been completely considered in USCP' planning. Here, lack of attention and failure to take into account certain costs, incentive mechanism for both administrator and evaluator teams and nongovernmental related costs were addressed. These shortcomings undoubtedly affected optimal implementation of the USCP in such ways as causing constraints on resources needed to run the program, decreeing the staff motivation, and limiting the opportunity to employ nongovernmental sector potential services. As Goodwin *et al.* stated that barriers-related to payment system should be overcome as a fundamental prerequisite.^[17]

The second identified barriers of USCP were a number of limitations related to hardware and software resources of the program. For instance, lack of monetary resources, inadequate equipment and physical spaces were identified as hardware barriers that despite not having a great impact during the early stages of program implementation, but overtime they became evident and could pose

difficulties in program execution in the long run. This limitation is one of the common obstacles encountered in program implementation and as the Rodríguez *et al.* suggested, more and adequate resources are needed to attain and reach the diabetes program's goals.^[21]

Regarding to software resources, the most important barriers was related to providers' competences and skill. It seemed these competences were inadequate, especially at operational level. Hence, as Cramp stated, providers' skills development programs especially through holding more staffs training courses may facilitate better program implementation.^[22]

Furthermore, lack of specialized protocols and guidelines was emphasized as a limitation of program implementation. This limitation could eclipse the clinical effectiveness and quality of care. As the experience of designing and implementing the diabetes program of Lovelace Health Systems in Albuquerque, New Mexico,^[16] mentioned that the development of clear, concise, and usable practice guidelines was one of the important interventions to reach improved outcomes in diseases management, hence, developing practical treatment algorithms is required.

Last but not the least, identified barriers rooted in believes of both care providers and care givers. Lack of belief to accept the services of first level was example of these believes that recognized as program constraints. Such constrains has been reported by some scholars. For example Cramp mentioned to this major area for service improvement for people with diabetes and recommend further education for both health care professional and patients.^[22] Hence, it is needed to take actions to inform and increase awareness and understanding in the general public of the nature of the program. More insight can result more patient involvement and as Bexley experience showed, strong patient involvement led to better diabetes services provision.^[19] Furthermore, enhancing the quality of services at the first level to eliminate or reduce barriers could be helpful. Providing appropriate and effective services will in time, be welcomed by patients and effective in changing the attitudes of public health.

The limitations of qualitative studies should be taken into account. The most area of concern in this study is the issue of generalization. Although, our goal was to expand and generalize theories (analytical generalization) rather than

statistical generalization. In addition, researcher team bias in collection, analyzing and interpretation of data should also be considered. The research team used different strategies such as following research protocol, member check strategy, presentation of findings in two seminars to increase trustworthiness.

CONCLUSIONS

It seems the USCP with the emphasis on the interaction between health and treatment deputies has been instrumental in solving implementation problems by establishing a referral system. It also helped to provide the platform for the effective continuation of the provision of services in order to prevent the occurrence or progression of chronic disease complications with timely diagnosis and treatment. Since, such platform can improved the quality of provided services through empowering personnel at all levels of service delivery and increasing patient satisfaction; taking advantages from the experiences of USCP implementation can be suggested in management of other chronic diseases such as in chronic kidney, respiratory, hypertension, and cardiovascular diseases.

However, it seems the following suggestions could be helpful to continuity and better implementation of USCP:

- More focus to alternatives to integrate involving deputies and better coordination and interaction
- More transparency of payment evaluation systems
- Empowering human resources both at administrative and operational levels through conducting of orientation and educational meetings and developing or adapting existing specialized protocols and guidelines
- Promotion of information management system to collect, analyze and report the needed data, in a timely and accurately manner
- Follow-up of needed both hard- and soft-ware resources to program implementation.

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