
Original Article

Research Network of Tehran Defined Population: Methodology and Establishment

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Abstract

Background: We need a defined population for determining prevalence and incidence of diseases, as well as conducting interventional, cohort and longitudinal studies, calculating correct and timely public health indicators, assessing actual health needs of community, performing educational programs and interventions to promote healthy lifestyle, and enhancing quality of primary health services. The objective of this project was to determine a defined population which is representative of Tehran, the Capital of Iran. This article reports the methodology and establishment of the research network of Tehran defined population.

Methods: This project started by selecting two urban health centers from each of the five district health centers affiliated to Shahid Beheshti University of Medical Sciences in 2012. Inside each selected urban health center, one defined population research station was established. Two new centers have been added during 2013 and 2014. For the time being, the number of the covered population of the network has reached 40000 individuals. The most important criterion for the defined population has been to be representative of the population of Tehran. For this, we selected two urban health centers from 12 of 22 municipality districts and from each of the five different socioeconomic of Greater Tehran. Merely 80000 individuals in neighborhoods of each defined population research station were considered as control group of the project.

Findings: Totally we selected 12 defined population research stations and their under-covered population developed a defined population which is representative of Tehran population.

Conclusion: a population lab is ready now in metropolitan of Tehran.

Keywords: Defined population, Population Lab, Research network, Social determinants of health.

Introduction

Nowadays some important matters are felt in the field of public health and medical services regarding to research, statistics indicators, health needs, quality of health care in urban health centers (UHC), and medical education.

We briefly

describe each of them in the following section.

Regarding research, most studies in the field of public health and even clinical medicine are descriptive. Data are collected from clients or patients in a limited time and with low participation rate, when they refer for medical services. Consequently, this approach is not proper for determining prevalence and incidence, as well as interventional, cohort and longitudinal studies. It is obvious that determining the prevalence and incidence of diseases without defining the population at risk is not possible. Moreover, research on referral patients, suffers from a variety of selection bias, especially for advanced stages of diseases.

Health related indicators and need assessment are essential for health management. At present time, statistics indicators don't reflect the whole reality because most of them are derived from people's demands instead of actual needs. However, a high proportion of health needs is related to the risk factors which are not often recognized by the public. Even if all the needs turn into demands, they cannot be completely met. The national survey of utilization of health services have shown that 31% of the needs among all age groups were not met. This proportion among persons above 65 years of age reached 35%. In addition, the mean referral frequency to general practitioners (GPs) and dentists is reported 2.2 and 0.29 per year, respectively (1). The frequency of periodic visits to dentists for prevention is at least two times a year. However, in practice the number of visits, due to various reasons is approximately less than one-seventh.

It is estimated that just one-fourth of actual health requirements of all ages are understood and demanded at the proper time. In such conditions, a major part of health service delivery is affected by market condition which is probably under the influence of companies exploiting the situation. Market condition subtly and indirectly imposes its domination on the health care system. It affects people's demands in a way that they seem like actual urges. The pressure of public demand and consequently politicians, and also bureaucratic resource allocation, oblige the decision makers of health system to comply with the set condition. However, it is inconsistent with social justice and public health. It consequently gives rise to a competition among health system managers, in spending resources as well as providing unnecessary expensive third-level services. This competition results in higher incomes of medical equipment manufacturers and pharmaceutical companies. Although patients with chronic diseases especially at old ages may benefit from this condition, the level of public health decreases. Instead, fulfilling real, more feasible and desperate needs among the first level of prevention and health promotion are of greater priority. For example, although only about 11% of mothers (2) benefit from caesarian-section (CS), this rate in private hospitals was up to 75% in Iran (3). However, an increase of such rate to 17% in Sweden is considered as too much (2). This means that for all unnecessary CSs, the required infrastructure, manpower, and financial support of governmental insurance companies are provided. On the other hand, many essential services for prevention and health promotion in the field of fertility and maternal health care are not completely performed, due to lack of manpower and resources. This situation applies

not only to the prioritizing expensive and unnecessary treatments, but also to the education of human resources in the field of medicine. The Ministry of Health, instead of training required manpower in technician and Bachelor of Science degree in the major of Family Health, attempts to train midwives or GPs that either there are no job opportunities for, or not enough facilities exist for their employment.

Another problem is the quality of health care in UHCs. Services that are currently provided in health centers are only a part of the perceived needs and demands. In addition, they are delivered in an irresponsible and unresponsive way which lacks respect for patients' rights. Thus, they are far from desirable quality. Three of the most important involved factors are; lack of financial resources, manpower problems such as shortage or irrelevancy with duty, inconsistency between centers' activities and real needs of people. In addition, external and internal mismanagement of the health system increases problems. Undoubtedly, the latter issues cannot be solved in the short term at all centers and for all their covered population.

Finally, the problem is the clinical education of medical students in the specialty and subspecialty hospitals. These hospitals are appropriate only for residential or fellowship programs, not for medical students. It is obvious that students should be trained in a similar place that they should play a role in after graduation.

In summary, the most essential needs are as the following:

- a. Provision of the infrastructure of research especially for determining the prevalence and incidence, longitudinal and interventional studies as well as Health System Research and Community-Based Participatory Research
- b. Calculation of correct and timely health indicators and surveillance,
- c. Estimation of actual health needs of community,

- d. Implementation of educational programs and interventions to promote healthy lifestyle,
- e. Screening and following up for treatment,
- f. Implementation of referral system,
- g. Providing qualified preventive health care and determining the optimal service delivery pattern,
- h. Providing requirements of participatory research between research centers, Ministry of Health, and health related organizations in both national and international settings,
- i. Provision of the requirements of education in the field for medical students group as well as initial training for health workers as well as continuous education,

In order to fulfill the mentioned needs, the objective of this project was to determine a defined population which is representative of Tehran, the Capital of Iran. To start this project, 10 defined population research stations (DPRS) were established inside 10 UHCs in 10 of 22 municipality districts in Tehran in 2012.

This article reports the methodology and establishment of the research network of Tehran defined population.

Similar studies in the country

Two programs have been conducted, in the country, that are noted briefly:

1. Tehran Lipid and Glucose Study conducted by the Research Institute for Endocrine Sciences. The study included 17000 residents of the district 13 in east of Tehran and has started in 1997. The objective of this study was to investigate risk factors of atherosclerosis. In addition, the study has aimed to conduct interventional studies for initial prevention of the disease and to make necessary lifestyle changes among the population, as well as planning for secondary and tertiary preventing measures (4).

Specific differences between the present project and Tehran Lipid and Glucose Study include:

A- In terms of topic, this study considers all aspects of health. Thus, it provides the infrastructure of research for all research centers and affiliated faculties for screening

programs, risk factors assessment, and following up for treatment.

B- Geographically, all parts of Tehran were included in the study. This study covered the population of 10 UHCs located in north, west, east, south, and center of Tehran. In terms of population, it included more people, merely 40,000 individuals, compared to the Tehran Lipid and Glucose Study. The latter item is of remarkable importance due to the socioeconomic status of residents of Tehran.

C- The extent of the covered population provides the possibility of disease surveillance, accurate and timely calculation of statistics indicators such as birth, marriage, divorce, death, migration, and morbidity indices.

D- Due to use of extensive facilities of health centers network covered by the Vice chancellor of Health Affairs and contribution of voluntary community health worker (5), project cost is to its minimum. In addition, due to people referral to these centers, fewer problems exist in terms of communication and public participation.

2. The Program of Population Research Centers, administered by the Deputy of Research and Technology of Ministry of Health was started in medical universities of Iran in 2000. The main objective of this project was conducting a community-based participatory research for determining their perceived needs. Universities all over the country and their covered populations are various in terms of socioeconomic status. In addition, the number of topics suggested by public was limited and focused mainly on the field of environmental health. Thus, each of the universities all over the country, in practice conducted studies restricted to environmental health. The most active university was Tehran University of Medical Sciences. They chose the district 17 of Tehran as their field of study. To conduct the study 1121 households in 64 clusters were

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selected in 2001(6). In subsequent years, the district 17 was considered as the major station of Community based Health Research Center affiliated to Tehran University of Medical Sciences (7). Other universities conducted studies in provinces of Arak (8 & 9), Kerman (10), Gorgan (11), Chaharmahal and Bakhtiari (12), Gonabad (13), Dena (14), Bandar Abbas (15) and Aliabad (16). This program lacked a defined population and did not continue.

Materials and Methods

Ethics

The project was approved by Ethical Committee of Shahid Beheshti University of Medical Sciences. The study protocol conforms to the ethical guidelines of the "World Medical Association Declaration of Helsinki-Ethical Principles for Medical Research Involving Human Subjects" adopted by the 18th WMA General Assembly, Helsinki, Finland, June 1964, as revised by the 64th WMA General Assembly, Fortaleza, Brazil, October 2013.

Setting

Tehran has 22 municipality districts which according to the health delivery system, have been distributed among the three governmental medical universities which are Shahid Beheshti University of Medical Sciences (SBMU), Iran University of Medical Sciences (IUMS), and Tehran University of Medical Sciences (TUMS). The north and east parts of Tehran are covered by SBMU, west by IUMS and south by TUMS.

The implementation phase of the project has begun in early 2012. At that time two Vice Chancellors in Health Affairs of IUMS and SBMU had been merged. Therefore, 16 out of 22 municipality districts of Tehran were covered by Vice Chancellor in Health Affairs of SBMU. Six remaining municipality districts in south of Tehran (districts 10, 11, 16, 17, 19, 20) were covered by TUMS. The district 15 has

been divided to two parts. The northern part is covered by SBMU and southern by TUMS.

The 16 mentioned districts and the northern part of the district of 15 has been distributed among five district health centers (DHC), whose names are Shemiranat (district 1), North (districts 3, 4, 7, 8), East (districts 12, 13, 14, 15), North-West (districts 2, 5, 6), and West (districts 9, 18, 21, 22) of Tehran. The first three ones were affiliated to SBMU and the two later ones were affiliated to IUMS before the establishment of the project. We have selected two UHCs from each of the five DHCs for establishing 10 DPRSs. The covered population of these 10 UHCs develops a defined population.

The criteria for selecting health centers were as the followings:

- All together be representative of population of Tehran
- Having diversity in terms of socioeconomic status

- Selecting only one UHC of each municipality district
- Selection should be made from all five DHCs
- Having the minimal migration rate from and to districts covered by each UHC
- Not being located in the suburbs
- Possessing enough facilities

In order to meet the defined criteria, particularly the criterion of representing the covered population, we used the findings of The Urban Health Equity Assessment and Response Tool (Urban HEART) of Tehran (17). According to this study, Tehran is divided into five socioeconomic areas, which are North, East, West, Center, and South.

To make the defined population be representative of population of Tehran, we selected two municipality districts from each of the five mentioned socioeconomic areas in 2012 (Table 1). Later in 2013, the station of district 3 and in 2014 the station of district 7 were added. Therefore, the number of DPRSs reached 12 (Figure 1).

Table1. Categorization of Tehran municipality districts according to socioeconomic areas and selected municipality districts

Area	municipality districts (n=22)						Selected Districts (n=10)		
North	1	2	3	6			1	6	
Center	9	10	11	12			9	12	
East	4	7	8	13			4	8	
West	5	21	22				5	21	
South	14	15	16	17	18	19	20	15	18

The DPRSs are located in two rooms inside UHCs. A room is for research assistant and the other separate room for midwife in order to provide family health services. The

Participants

Each UHC in Tehran provides primary health services to a population of 10000 to 40000 families. About 10% of covered population of

headquarters of the DPRSs is located in the district 3 as shown in figure 1 with a green bullet.

each selected UHC was covered by its DPRS as intervention group. Twenty percent of the population of neighborhoods of each DPRS was considered as control. In

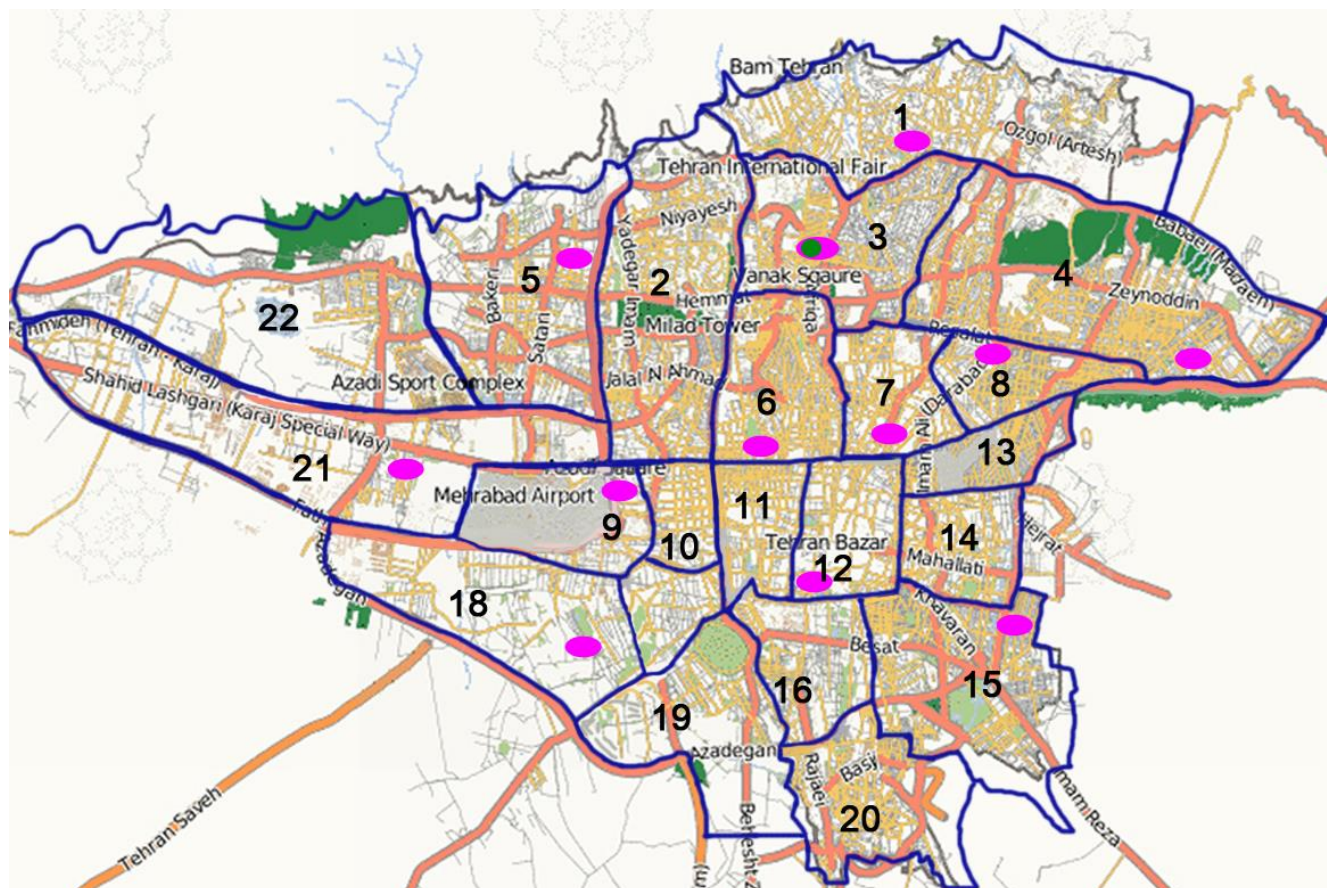


Figure1- Geographical location of defined-population research stations of Social Determinants of Health Research Center

total, about 120000 individuals have participated in this project: 40000 and 80000 individuals for intervention and control groups, respectively.

To implement the project, the following steps were taken:

Preliminary and preparation stages

- Forming a strategic committee with the aim of policy making, setting objectives and formulating executive strategies. The members of strategic committee included the heads of five DHCs of North, North-West, East, West, and Shemiranat, Vice Chancellor in Health Affairs of SBMU, Vice Chancellor in Research and Technology of SBMU, the head and two representatives of Social

Determinants of Health Research Center (SDHRC) of SBMU.

- Signing a cooperative agreement between the heads of the five DHCs and Vice Chancellor in Health affairs of SBMU on one side, and the head of SDHRC and Vice Chancellor in Research and Technology on the other side. Contents of the agreement were in reference to imposing obligations and support to the project.
- Holding consultation meetings with all health managers and experts of Vice Chancellor in Health Affairs, In order to justify the program, attract participation and get cooperation.
- Holding consultation meetings with experts of districts health centers and the heads of

chosen UHC in order to justify the program, coordinate and attract participation.

Organizing manpower

- Appointing managers of DHCs of North, North West, East, West and Shemiranat as directors to govern in their affiliated DPRSs
- Appointing the manager of each chosen UHC as head of its DPRS
- Selecting a midwife among UHC midwives to be the family health care provider of each DPRS
- Attracting participation of available voluntary community health workers
- Employing a research assistant with a Bachelor degree in midwifery or public health for each DPRS

Criteria for selecting research assistants of DPRSs:

- A woman, preferably married
- Having work experience in UHCs
- Being sociable, patient and affable
- Having motivation and interest in research
- Having basic skills of computer driving
- Preferably living close to the DPRS

Providing equipment and software for data recording

- Providing a computer, a printer and a scanner for each DPRS
- Providing two separate phone lines for each DPRS
- Providing an ADSL line (1028 KB) for each DPRS
- Providing appropriate office equipment

The practical stage

- Providing the map of the district in which each DPRS is located
- Defining the catchment area of each DPRS with a population of 1000 families

- Draw a detailed sketch plan of streets, alleys, buildings and building floors with numbers and postal codes
- Visiting the families of the DPRS covered area at the door of their house with accompany of voluntary community health workers to carry out census for defined population, collect preliminary demographic data of families, Identify and attract participation of new voluntary community health workers, announce the project and attract participation to utilize UHCs services while interviewing mothers
- Holding meetings in order to justify and attract participation of UHCs health workers regarding project aims and process
- Recording preliminary demographic data of the covered families on the data software
- Determining the health status and health needs including prevention and treatment of the covered families subgroups
- Referring those with health care needs to other levels of service among the health system

The process of health services for clients

All health services for the covered population are provided through DPRS. To receive health care services, clients should first refer to the room of research assistants. At that time, research assistant find the opportunity to communicate with the covered population and especially provide face-to-face educations as well as collecting health-related data. For complementary education, reliable nonprofit books which inform parents about pregnancy, childbirth, post-partum period, infant and child feeding, and child growth are lent. These books are published by the Ministry of Health, universities and Breastfeeding Promotion Society. Some copies of these books are placed in the showcases at the entrance of UHCs.

Interventional measures

The research objectives of this project depend mostly on the active participation of the covered population. Our main goal is to make clients feel that a familiar and sympathetic

person in the health center is there at their service. For attracting participation and increasing reliance, the following measures were taken (Table 2).

Table 2- List of necessary measures in order to enhance participation of mothers among the covered population

Previous Status	Interventional measures
Unspecified working hours	Presenting working hours of each center
Receiving clients generally in an inappropriate manner	Receiving clients properly and politely
The first encounter occurred with receptionist and cashier who are below high school diploma or at most diploma and were generally men	The first encounter occurs with an affable, trained and female health worker with at least associate degree
There were two or more midwives in a room	Allocating a separate room for each midwife with the aim of ensuring privacy respect of clients
No men were allowed	Encouraging men to accompany their spouses
Too much time was wasted to receive services	Possibility of making appointments in advance to lower average waiting time
Face to face education to clients was impossible due to crowd in the care room	Delivering face to face education and introducing electronic resources for further information
Passive care	Encouraging clients to refer timely and following them up in case of delayed referral (active care)

Two new telephone lines were provided for each DPRS. One of them was allocated to the covered families which was given to parent in times of conducting census and collecting demographic data. The other phone line was dedicated to the research assistant for follow ups.

Decision making and evaluation

Strategic committee meetings are held once every four weeks. In these meetings new suggestions are made, problems are mentioned and reports are delivered to take new measures. In order to demonstrate the potentials of the project and gain cooperation, a meeting was held with attendance of authorities of the Ministry, the university and research centers. Moreover, to coordinate and monitor the proper implementation of the project, strategic committee meetings are periodically held once

every two months in each of the DPRSs with the participation of the UHCs heads. In these meetings, the head of each UHC reports the progress of the project, makes new suggestions and mentions problems in practice. After discussing issues, new decisions are made. Moreover, evaluation of their performance, as well as completing checklists, is carried out continuously by perceptible and imperceptible visits.

Further information

All contents such as DPRSs objectives, geographical locations, staff names, addresses, and contact numbers are available from the website of SDHRC: <http://sdh.sbmu.ac.ir>
 For communicating with the DPRSs and deliver daily and monthly operational performance reports and instructions, a blog is also designed

on the website of the SDHRC. This blog is only available to the stakeholders.

Educating research assistants

In order to empower the research assistants of DPRSs, increase their motivation, and discuss problems, a three-hours-empowerment-program runs in the health center every week.

Barriers, problems and limitations

Resistance of experts and staff: Experts of Vice Chancellor in Health Affairs and DHCs have shown the highest resistance against initiation of the project. Health workers in UHCs have shown relatively less resistance. Over time, the resistance was lowered, but still the general cooperation is not enough. Some of the reasons for resistance were as following: First, they found it unfair that only a part of society benefit from health care with higher quality and others be deprived of such services. Second, they considered it non-practical. The third one is the way that the project was proposed. Experts are accustomed to vertical organizational structure. It is not easy to believe that an innovative idea with implementation guarantee can arise from origins other than high level authorities.

The managers of DHCs showed little resistance at the beginning. The main reasons of their opposition were lack of rooms and the extra costs imposed by this project. However, after adequate support by Vice Chancellor in Health Affairs of SBMU, cooperation of the latter authorities has improved. When the Family Physician Program (FPP) was introduced in 2012, the oppositions increased in a way that doubts were raised even among authorities.

FPP approach is to distribute the inhabitants of Tehran geographically between GPs. Although this program started with extensive propaganda and GPs registered themselves in an official database, it stopped due to executive and financial issues (18).

It was thought that FPP would gain what we wanted to accomplish for 1000 families or 40000 individuals, on a larger scale and for 10 million individuals of Tehran. Moreover, they believed that adequate financial resources and support would be dedicated to FPP. However, authors had full confidence that FPP was too ambitious and couldn't be well implemented due to general conditions of the country. In fact, implementation of this program requires alternations of attitudes of decision makers and managers within and outside the health system. In addition, it demands long-term planning which is still not possible to be fulfilled in near future.

Another threat was revival of IUMS. Although its merge was unprofessional, its separation from SBMU caused instability in the implementation program at the five research DPRSs affiliated to IUMS. It seems that the program credibility highly depends on whether the covered population of each DPRS is representative of total population of Tehran. By negotiation and goodwill, the mutual cooperation continues between the two universities with little restrictions. Efforts are directed toward a cooperative agreement so that both universities share equal participation and benefit equally from the merits of the research DPRSs. Nevertheless, the objective is not yet fully accomplished. On the other hand, the current cooperation is fragile.

Another issue is maintaining the assistance of researchers. Considering that the employment authorization has been revoked during recent years, the research assistants are working with hourly contract, without the right of vacation or insurance. Although research assistants work at least two times more than other health workers in UHCs, they receive low wage.

Future plans

(A) Programs for delivering information and attracting support:

- Identifying and employing new voluntary community health workers

- Identifying health centers which provide prevention, treatment, and rehabilitation services and negotiating, attracting their participation, and cooperating with them to introduce those in need among the covered population
 - Introducing and attracting participation of neighborhood councils, local trustees, municipalities and other health involved organizations to support the project
 - Contacting other research centers and faculties to introduce the project, and assess and adapt activities according to their information needs
 - Contacting faculties and their affiliated departments to introduce the project, and assess and adapt activities according to their information needs
 - Negotiating with medical facility members affiliated to the university on admission of referred patients and the possibility of their attendance at DPRSs
 - Negotiation with the Ministries of Health and Welfare and health related organizations on empowering the program and attracting their assistance and participation
- (B) Expanding centers in terms of number and their covered population
- (C) Establishing new research DPRSs in other cities affiliated to the university
- (D) Establishing prevention and health promotion clinics

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REFERENCES

- 1 Naghavi M, Jamishidi HR. Utilization of health services in 2002 of Iran. Vice- chancellor in health, Ministry of health and medical education, first edition, Greater Tehran, Tandis 2005. (Text in Persian)
- 2 Gunnervik C, Sydsjö G, Sydsjö A, Selling KE, Josefsson A. Attitudes towards cesarean section in a

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nationwide sample of obstetricians and gynecologists. *Acta Obstet Gynecol Scand.* 2008; 87(4):438-44.

- 3 Hajian K. The trend of cesarean section in public and private centers of Babol, 1994-99. *Journal of The Shahid Beheshti University of Medical*

- Sciences And Health Services 2002;26(3): 179-175.(Full Text in Persian)
- 4 Azizi F, Madjid M, Rahmani M, Emami H, Mirmiran P, Hadjipour R. Greater Tehran Lipid and Glucose Study (TLGS): Rationale and design. Iranian Journal of Endocrinology & Metabolism 2000; 2(6): 86-77. (Full Text in Persian)
 - 5 Saadati N, Azizi F. Social relations in "Greater Tehran prospective survey of lipid and sugar. Journal of The Shahid Beheshti University of Medical Sciences And Health Services 2001;25(3): 153-161. (Full Text in Persian)
 - 6 Majd Zadeh SR, Jamshidi E, Ghajarieh Sepanlou S, Vafaei Zonooz A, Shahandeh Kh, Kamali SH, Efat Panah MR, Zarin Ara AR, Larijani B. A conceptual framework for population research centers: Health promotion programs .Payesh, Journal of The Iranian Institute For Health Sciences Research 2005;4(2): 89-8. (Full Text in Persian)
 - 7 <http://cbpr.tums.ac.ir/page.aspx?id=975>. Accessed 24 Oct 2014.
 - 8 Zarin-far N, Fani A, Chehrei A, Hadi MA, Vahedi S. Evaluation of demographic characteristics of people in Arak population research base, 2006. Arak Medical University Journal (Rahavard Danesh) Summer 2006; 28-35. (Full Text in Persian)
 - 9 Saghebi F, Kahbazi M, Chehrei A, Mobaraki M. Comparison of different ways in drawing population participation of Imam Ali region, Arak 2005. Arak Medical University Journal (Rahavard Danesh) Summer 2006; 7-16. (Full Text in Persian)
 - 10 Shamsi Meimandi M, Haghighi S, Iranmanesh F. Determination of effective factors to increase collaboration and participation among people of Baghodrat Jupari community research base, Kerman. Arak Medical University Journal (Rahavard Danesh) Summer 2006; 46-53. (Full Text in Persian)
 - 11 Semnani Sh, Keshtkar AA. Assessing of equality on health care cost in Gorgan population laboratory study Journal of Gorgan University of Medical Sciences 2003;5(12): 53-59. (Full Text in Persian)
 - 12 Khadivi R, Raeisi R, Habibi Sh, Gaderi S, Shirvani H, Yousefi H, Shams F, Ramazan Nejad P, Habibi A, Hemati A, Bigham H, Rasti S, Moghadasi J. Capacity building for priority setting in Farrokhsahr population. Shahrekord University of Medical Sciences Journal 2006;8: 45-37. (Full Text in Persian)
 - 13 Delshad A, Salari H, Khajavi AJ, Shafaghi Kh, Marouzi P, Mohammad Pour A, Mansourian MR, Atarodi AR, Keramati A, Ekrami A. Certifying of the society felt needs based on community as partner model in Gonabad population lab boundaries. Ofogh-e-danesh, Journal of Gonabad University of Medical Sciences And Health Services 2005;10(4): 22-15. (Full Text in Persian)
 - 14 Rezaei N, Sadeghi HA, Mary Oriad H, Afshoon E. Preliminary need assessment in Dena population research center 2005. Arak Medical University Journal (Rahavard Danesh) 2006; 22-27. (Full Text in Persian)
 - 15 Mahouri Kh, Zare SH, Khorami F. Immunization and growth monitoring status of infants and mothers' awareness regarding this issue in Bandar Abbas population in 2002 Journal of Hormozgan University of Medical Sciences 2006;10(3): 223-230. (Full Text in Persian)
 - 16 Shakiba M., Jokar F., Ramezani M. Determine the Attitude about Community Based Participatory Research in People Residing in Ali Abad .Journal of Medical Faculty Guilan University of Medical Sciences 2008;17(66): 8-14. (Full Text in Persian)
 - 17 Fereshtehnejad S, Asadi-Lari M, Moradi Lakeh M, Vaez-Mahdavi MR, Motevalian, SA, Afkari ME. Estimation of Life Expectancy and its Association with Social Determinants of Health (SDH) in Urban Population of different districts of Greater Tehran in 2008. Teb va Tazkiyeh 2010; 19 (2):25-40. (Full Text in Persian)
 - 18 Majidi A, Loori N, Shahandeh K, Jamshidi E, Majdzadeh R. Are people in Tehran prepared for the family physician program? Int J Prev Med. 2014 Aug;5(8):984-91.