



The approach of futures studies based on scenario planning: A case study of health services in Sanandaj City, Iran

Kumars Ahmadi¹, Farid Yousefinejad¹, Rozhin Mehrabani², Mehran Amini³

1 Department of Management, School of Management, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran

2 Social Determinants of Health Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran

3 Multidisciplinary Doctoral School of Engineering Sciences, Szechenyi Istvan University, Gyor, Hungary

Original Article

Abstract

BACKGROUND: Futures studies is a managerial tool which is also regarded as a soft knowledge to gather the information on what may happen in the future or what is more likely to happen mainly to reduce risk factors. This study aims to identify the favorable future and the most probable occurring scenarios concerning the demands in the healthcare services and medical treatments in Sanandaj City, Iran.

METHODS: In this study, environmental monitoring, Delphi method, and scenario planning were utilized. To determine the drivers of content and the periphery, we used a non-structured questionnaire. A total of 12 experts in the field of medicine, management, sociology, psychology, and economics as well as health care management participated in the study.

RESULTS: In the present study, in order to calculate the scenario planning and relative data analysis, we reflected on the morphology between the key factors that influenced the health care. Two important uncertainties were identified: the quality of service by suppliers and the level of attitudinal knowledge of the clients. In addition, using a cross (matrix) method, we were able to identify four passable future scenarios.

CONCLUSION: Based on the findings and results of this study, Apple Health Scenario, where two uncertainties of suppliers' services of a qualitative increase status, and the increasing level of knowledge and attitude of health applicants, have the best conditions. Consequently, a favorable future will be required for health services, health and medical treatment and other future prospects will not be desirable for this matter.

KEYWORDS: Future, Planning Techniques, Health Services

Date of submission: 12 July 2018, **Date of acceptance:** 19 Sep. 2018

Citation: Ahmadi K, Yousefinejad F, Mehrabani R, Amini M. **The approach of futures studies based on scenario planning: A case study of health services in Sanandaj City, Iran.** Chron Dis J 2019; 7(4): 279-87.

Introduction

Since the human has tried to maintain his health and cure his diseases, health system has existed. The health system is all activities which their main purpose is to promote, restore, or maintain health.¹ This system requires proper equipment, financial resources, communication and coordination, and sound management so as to get and

present the services which is responsible for them.²

Futurology is the illustration of future with a distinct and scientific methodology and is widely used in the field of health.³ Futurology is an applied field, the speed in future research is of great importance and significance. If the organizations do not create the future, their competitors will make the future fast and there will no longer be an opportunity for us in the future. According to Hermann Kahn, there will not be any free future.⁴ Futurology is a process enabling an organization to create its suitable

Corresponding Author:

Farid Yousefinejad

Email: faridrozhin@yahoo.com

and preferable future by innovation.⁵ Foresight and futurology do not foresee, but introduce believable future.⁶ Futurology enables managers to link their clear outlook with the current day's issues and topics.⁷ According to Slaughter, futurology is among those disciplines transforming conventional laws.⁸ The power of futurology is that it can link diversities and uncertainties and point to the opportunities and damages.⁹ Nowadays, any organization or institution that does not plan for itself will be planned by others and the planning will not take place in the favor of our interests, benefits, and values, yet it will be a future in the direction and favor of the planners' interests.¹⁰ The complexities of today's world and its dynamism have led to the ineffectiveness of previous planning methods.⁸ Having a plan and strategy to implement them is of the needs and necessities of guaranteeing the survival and development of organizations; success in this direction requires the cooperation of all internal and external factors of the organizations that, given the precise and practical recognition of the internal, regional, and global situation, must be done and achieved.¹¹ Today, strategic and long-term planning of organizations without the use of futurology science is not effective enough and does not meet all future conditions.¹² Various factors affecting request and demand for health treatment services include: demographic characteristics, disease outbreaks, health policies, gender distribution, age pyramid, population growth rate, health insurance expansion, gross domestic product (GDP) and per capita income (PCI), knowledge and medical technology development process, and cultural characteristics of society.¹³ According to United Nations (UN) human development reports, the share of health and treatment costs in GDP of developed countries is often higher than developing countries.

On the other hand, in Iran, increasing population and demand for health care and

inadequate income resources of the country's healthcare sector to meet the increasing costs of health care have caused serious problems and crises for Iran's healthcare management. Governmental resources are limited, and there is no possibility to increase them in the short run, regarding the issued reports by the Central Bank of Iran, the price index of the health sector in the 1990s had the most increase.¹⁴ The purpose of this study was to present a futuristic approach to the health care sector of Sanandaj City, Iran, and to present and introduce the possible scenarios or future prospects of this focal issue. The health department can illustrate its strategic planning so that if any of the scenarios occur, they will suffer the least damage and can have the best use with the least damage in any probable event or maybe misfortune of the future.

Materials and Methods

In this research, the environmental monitoring method, inspired by documentary studies was used to collect theoretical foundations and the Delphi method was used along with interviews and non-structural questionnaires to collect information, or the same influential factors, and drivers of these influential factors from the experts, and the scenario method and the Schwartz model were used to introduce and present four credible and probable scenarios in which 15 experts in the fields of medicine, management, sociology, psychology, and economics, and experienced managers in the health and treatment center of Sanandaj were tested in three rounds of Delphi accompaniment. Finally, 12 experts participated fully in all three rounds.

Sampling was non-probabilistic, definite, and judgmental. The research was qualitative regarding the strategy, in terms of the purpose it was applied, in terms of method it was descriptive and from the exploratory and survey branch, and regarding the time of data collection it was multi-sectional. In order to

create a scenario, it is necessary to identify and designate key uncertainties by observing factors with high impact and high unpredictability so that we can create a matrix,¹⁵ and based on steps 4 and 5 of the Schwartz model, a two-by-two matrix will be formed to introduce four scenarios in four houses. The Schwartz model encompasses eight main steps: 1) clarifying the main focus of the scenarios (the main question), 2) reviewing past changes to identify driving trends and forces in progress, 3) identifying future changes and driving forces of known changes, 4) identifying key uncertainties, 5) creating a logical framework based on identified uncertainties, 6) fertilizing main features and developing narratives for each scenario, 7) identifying the themes for each of the scenarios of the organization, and 8) defining indicators and guidance signs.¹⁶ According to the Schwartz eight-step approach, we collected information using expert opinions. We determined key agents by using ideas of certified and expert people with sufficient information about health, medical, and treatment services. In terms of literature in this research, expert is someone with at least 10 years of continuous work of experience in the subject.

Results

Based on above-mentioned methodology along with environmental monitoring, 4 subsets were obtained: the way of influencing of driving factors (Table 1), interactive impacts analysis (Table 2), factors with high impact and unpredictability (Table 3), and recognizing uncertainty factors (Table 4). These features led the research to the following finding and 4 scenarios (Figure 1). Identified factors which

eventually reached 51 factors were asked from professionals according to the Delphi method and the views were passed to other members. Then the opinions of the experts collected and turned into a single list, once again were given to all the members and the next step started. This method was used for all stages and the output of each stage was the result of consensus among all the members. After identifying the key factors, a list of their stimuli or their influential forces was prepared and after identifying the best ones regarding uncertainty and comprehensive effects, an inclusive matrix was formed. In the matrix, members by regarding the 10-year horizon of scenarios, tried to set it up and their final opinions turned into a single form accepted by all of the members and was inserted into Excel software. Then the software by processing, wrote down the abstract of the results gotten through main idea and the paradigm of the interviewee members.

For valuing, the Likert spectrum with a scale of 1 up to 9 was used, but in terms of categorization based on the severity, this was done in a predetermined way.

20 out of identified 51 factors affecting demand for services were of high impact, accounting for about 39% of the factors and can be prioritized, preferred, and regarded in sectorial decision-making and policy-making, so that the decisions can be effective and efficient enough. 23 out of the 51 identified factors affecting demand for services were of high influence, accounting for about 45% of the factors, and can be applied in decision-making, policy-making, and efforts to increase productivity and improve the qualitative and quantitative level of offered services, so that the decisions are more realistic and logical.⁸

Table 1. Driving factors influence

The driving factor empowers and boosts another driving factor			The driving factor has no effect on the other one	The driving factor weakens another driving factor		
Strong boost	Great boost	Low boost	Not related	Low weakening	Great weakening	Strong weakening
+3	+2	+1	0	-1	-2	-3

Table 2. Interactive impact analysis

Variables		Healthcare tariffs		Life expectancy		The quality of the infrastructure		Prioritizing individual health		Security attitude to the province		Supervising of relevant institutions		IT capacity	
		Much	Low	Much	Low	Optimal	Undesirable	Low	Much	Low	Much	Enough	Not enough	Appropriate	Inappropriate
Healthcare tariffs	Much			-2	+2	0	0	+3	-3	-1	+1	-2	+2	-1	+1
	Low			+2	-2	0	0	-3	+3	+1	-1	+2	-2	+1	-1
Life expectancy	Much	-1	+1			+2	-2	-3	+3	0	0	+1	-1	0	0
	Low	+1	-1			-2	+2	+3	-3	0	0	-1	+1	0	0
The quality of the infrastructure	Optimal	0	0	0	0			0	0	+3	-3	0	0	+1	-1
	Undesirable	0	0	0	0			0	0	-3	+3	0	0	-1	+1
Prioritizing individual health	Low	+3	-3	-3	+3	0	0			0	0	0	0	-1	+1
	Much	-3	+3	+3	-3	0	0			0	0	0	0	+1	-1
Security attitude to the province	Low	0	0	0	0	+1	-1	0	0			0	0	0	0
	Much	0	0	0	0	-1	+1	0	0			0	0	0	0
Supervising of relevant institutions	Enough	0	0	0	0	0	0	0	0	+1	-1			+2	-2
	Not enough	0	0	0	0	0	0	0	0	-1	+1			-2	+2
IT capacity	Appropriate	+2	-2	0	0	+2	-2	0	0	+3	-3	+1	-1		
	Inappropriate	-2	+2	0	0	-2	+2	0	0	-3	+3	-1	+1		

IT: Information technology

Table 3. Factors with high impact and unpredictability

The degree of affinity between factors	Factors with high impact and unpredictability
51.40.39.37.31.27.16.13.9.7.2.1	Costs and tariffs for health services for the general public and citizens
50.46.45.31.28.27.24.23.18.17.14.11.6.2.1	Life expectancy and the number of elderly people in Sanandaj
37.36.34.27.26.22.18.15.8.2	Quality of transportation infrastructure in Sanandaj city
46.41.37.28.21.18.14.13.12.7.6.4.3.2.1	A culture of personal health priority in the families of Sanandaj
35.30.29.27.23.20.19.17.14.10.2.1	A security attitude to the province as an investment rejection factor in private sector in the health part
51.43.42.29.17.13.11.2.1	Supervision of relevant institutions in the context of health services
41.27.26.25.16.11.10.9.4	IT capacity for providing health services and treatment

IT: Information technology

Table 4. Uncertainty table

The name of the key uncertainties	Factors with high impact and unpredictability	Number
Key uncertainty 1: Qualitative status of service providers	Costs and tariffs for health services for the general public and citizens Imagination of security attitude to the province as an investment rejection of private sector in the health sector Quality of transportation infrastructure in Sanandaj City Use of IT capabilities to provide health services and treatment Reduction of suitable monitoring in health sector	1
Key uncertainty 2: The status of the level of knowledge and attitude of the applicants	Life expectancy and the number of elderly people in Sanandaj Spreading the culture of priority to personal health in Sanandaj households	2

IT: Information technology

Out of the 51 identified factors affecting demand for services were moderate in intensity, accounting for about 16% of the factors and can be used in decision-making and policy management of the sector, covering the various dimensions of the phenomenon and focal research question. 2 out of the 51 identified factors had a high degree of unpredictability, namely the inability to detect whether or not the agents are done, accounting for about 4% of all the factors and can be the focal point of attention in decision-making and policy management in the sector having a large share in future shuffling of the focal point. 12 out of the 51 identified factors affecting demand for services were highly unpredictable, accounting for about 24% of

factors, and can be used in decision-making and policy-making to make and adopt more realistic decisions. 22 out of 51 identified factors influencing demand for services had a moderate unpredictability rate, accounting for about 43% of the factors that can be considered for increasing productivity in this section, and the various dimensions of the phenomenon and the focal point of the research can be covered.

To create scenarios, it was necessary to identify, introduce, and designate key uncertainties by observing and contemplating factors with high impact and unpredictability in order to create a matrix, and regarding the Schwartz model, a two-by-two matrix for introducing four scenarios in four houses should be shaped and formed.

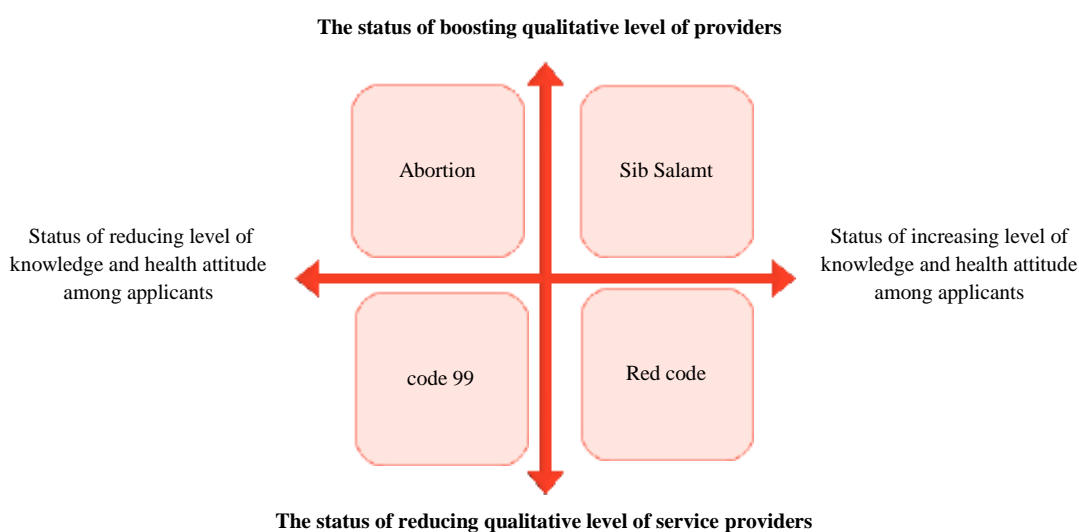


Figure 1. The cross-scenario method

Three types of connections may exist between driving factors:

1. A driving factor boosts another driving factor
2. A driving factor weakens another driving factor.
3. A driving factor has no effect on the other one.

Considering the plurality and multiplicity of identified factors, each of them can be valid in decision-making, but because the purpose would be scenario planning and formulating, so distinguishing and highlighting factors with impact severity and unpredictability is of high importance.

At this stage, a conceptual belt must be elegantly made so that one can find similarities between the factors with a lot of impact and very high unpredictability in the terms of value, usage, etc., so that a key category can be attained.

In scenario-writing or scenario-making as an art, one should be able to make a sort of collage and pair-matching in the creation of the alignment and aggregation of the identified, yet unpredictable, factors, so that through aggregation and combination, one can attain two to three vital key uncertainties. As can be seen in table 4, some uncertainties will turn the future of the focal issue into a few segments.

Discussion

As it can be observed in figure 1, in scenario 1 (Sib Salamat): Sanandaj in 2025, with the support of the public sector and private sector investment, is supposed to be able to improve and upgrade its transportation infrastructure. Aviation development can also attract health tourist especially from the Kurdistan region, the development of information technology (IT) infrastructure can make it easier to receive services and there may be an increasing tendency of domestic and foreign applicants to receive services in Sanandaj. Improvement of infrastructure, especially adding the rail transport, can result in some kind of improved

PCI and an increase in the welfare level of households, resulting in more budget allocations from the household basket to health and treatment; more community attention to oral health has caused an increase in demand and development of dental services, especially 24-hour (overnight) services.¹¹ The good functioning of the health sector, government support policies, the development of public and private insurance, the government's attention to reducing legal barriers and service matching and coordination, changing the way of look and idea toward this province, and government investment in the province has attracted private sector investment in all areas especially the healthcare sector. The conditions in the past ten years can increase the population over 65 in the city of Sanandaj, demanding their own unique health services.¹³ A fair hearing and people's understanding about the fairness of this investigation in medical misdiagnosis can give the community more confidence and trust in this section. The charity, given the government supportive and persuasive policies and advent of the culture of charity people for building hospitals, can do better in making service centers and providing services to less-privileged classes. Choosing the name of the scenario is also based on the desired situation and is, with regard to the key uncertainties associated with a healthy diet (apple), a symbol of community health and the suitability of the service provision.¹⁰

Scenario 2 (curettage/abortion): It is 2025. In the past ten years, due to changing attitudes towards the province, good investment can be made in the health sector. Communicational infrastructures are supposed to be developed and road transport is easier and less costly. Adding the rail transportation to Sanandaj transport infrastructure improves conditions. By developing IT infrastructure, a good basis for providing health services can be created. By providing adequate supervision and a

perceived sense of justice in issues and problems caused by medical errors, community assurance, trust, and confidence to service providers in this sector has been increased. Reducing costs and tariffs of this section helps poor people in the community use cheap services significantly.^{9,10} However, due to the lack of prioritization of health and health issues in Sanandaj households, the opportunities and facilities are left unused; although facilities and health centers are available to the general public at low cost and kind of cheap price, because of the lack of attention to the issue of health, fewer people try to use these facilities. Failure to do so reduces the life expectancy and number of elderly people which has lowered this group's demand for services. Although there are good conditions in the field of health, but due to the lack of importance of this issue for the community, this section of health provision is not used suitably and the incentive for families to receive oral care, especially for their children may be diminished. Although in recent years PCI may be increased in citizens of Sanandaj, this may not change much in terms of household spending on health issues; due to the lack of promotion of community health awareness, there is lack of proper use of appropriate conditions. This status quo is as an embryo gone because of ignoring the opportunity and lack of awareness.¹⁰

Scenario 3 (red code): In 2025, over the past 10 years, the attention is supposed to be drawn to the health issues among the various strata and layers of society significantly. Families attach great importance to health and treatment issues, especially in the health of infants and children. This attention of public to health issues increases life expectancy and the number of people over 65 years. The prevalence of a culture of prioritizing to individual health in households of Sanandaj may increase the demand for health care. Periodic check-ups may become a common

custom and the level of health knowledge in households may increase and improve significantly in the past decade. In general, this upgrading of the cultural and informational level of the community regarding the health issues can lead to a significant increase in health services demand comparing to past years, yet lack of legal protection by the government has caused a lot of problems for the individuals in this sector. The lack of infrastructure development may seriously damage the provision of services in this sector. Regarding reducing the health care costs and providing insurance services, the government may not provide good services as a trustee. In the past decade, the inappropriate distribution of services and the lack of establishment of hospital facilities and equipment that should be accountable and responsive to the needs of the province, can send patients to neighboring provinces or the center of the country; the lack of change in attitude towards the province can reduce the attraction of investors in various areas, especially health and treatment. Inadequate supervision in this area can reduce the sense of perceived fair hearing by the public. Regarding establishing non-governmental organizations (NGOs) and utilizing the capacity of the charities, there is not a decent performance, and the hospitality's benefactor might not be paid much attention. Despite the proper demand in the health sector market, these factors may cause the opportunities created be wasted one by one, imposing double costs on households of Sanandaj and missing the opportunities, as the scenario name suggests this concept.¹⁷

Scenario 4 (code 99): It is 2025. Provincial infrastructure, especially in transportation, might not be well-developed. Road transport is not well developed, it is not possible to transport by railways, and air transportation is also facing ups and downs. IT infrastructure is not well developed, and the lack of change in attitude towards the province reduces

investment. And by the lack of investment in the public sector in infrastructure, the private sector might not be willing to invest in Sanandaj healthcare sector. Due to the lack of development in the transport infrastructure debate, the willingness of physicians and specialists to attend and work in Sanandaj can be diminished, and in terms of attracting tourism therapy, opportunities might also be lost, and even demand for health services in the province may be overflowed into other cities of the country. Opportunities might also be lost in the field of dental and oral health services and psychological and counseling services, and the demand for this section may not be adequately addressed and met. Despite the rising life expectancy of the elderly, special attention might not be paid to meeting the needs of this group. In the upcoming years, due to population aging resulted by an increase in the population of the 1980s, we may face a torrent of elderly and middle-aged healthcare recipients which by considering present situations, we may not be able to meet the needs of this generation in the future.¹⁸ There are also many problems in the area of perceived justice in medical misdiagnosis cases. Insurance might not be effective over the past few years, and the penetration rate of insurance, especially supplementary insurance, might not have a growing and increasing trend. Considering the above-mentioned issues, to solve the problem in the coming years, by taking short-term measures to solve the current problems and long-term planning, conditions for meeting and responding to health and treatment demands shall be provided. The latent and potential demand due to lack of awareness and underdevelopment of infrastructure and facilities can be considered as a threat to the future of the health market and, as it is derived from the title of the scenario, the referenced situation is similar to the ill patient in urgent need of help maintaining his vital signs.¹⁹

Conclusion

The results of the scenario portfolio and the statuses fixed by our experts have been brought into four main scenarios under specific names. These scenarios include a complete explanation of the four possible future scenarios and product of all the information and scenarios derived from the cross-scenario method. Based on the aggregation and collage of factors with rankings of the most effective and the most unpredictable, we provided introduction and formulation opportunity of two important uncertainties as axes of scenario including key uncertainty 1: the status of qualitative level of service providers and key uncertainty 2: the status of the level of knowledge and attitude of the applicants. Finally, based on the analysis of the relationships and interactions between the identified drivers and factors as well as the key uncertainties extracted from the story and narrative of each scenario as a possible future for the health services, health and treatment demand in Sanandaj City was investigated. The health department can illustrate its strategic planning so that if any of the scenarios occur, they will suffer the least damage and can use it best and most with the least possible harm in any probable event of future.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This article is taken from a master's dissertation by Farid Yousefinejad (number: 11021215951069) by Sanandaj Branch, Islamic Azad University. The authors would like to thank Dr. Vahid Yousefinejad and everyone who helped.

References

1. Bishop P, Hines A, Collins T. The current state of development: An overview of techniques. *Foresight* 2007; 9(1): 5-25.
2. Bell W. *Foundations of Futures Studies: History, purposes, and knowledge*. Piscataway, NJ:

- Transaction Publishers; 2003.
3. Barton H, Grant M, Guise R. Shaping neighbourhoods: A guide for health, sustainability and vitality. New York, NY: Spon; 2003.
 4. Fink A, Schlake O. Scenario management-An approach for strategic foresight. *Competitive Intelligence Review* 2000; 11(1): 37-45
 5. Chermack TJ, Lynham SA, Ruona WE. A review of scenario planning literature. *Futures Research Quarterly* 2001; 17(2): 7-32.
 6. Groff L, Shaffer R. Complex Adaptive systems and futures thinking: Theories, applications, and methods'. Special Issue *Futures Research Quarterly* 2008; (Special Issue): 5-6.
 7. Morgan MT, Barnett DB. Environmental health. Belmont, CA: Thomson/Wadsworth; 2003.
 8. Paliokaite A. Networking as a route for corporate foresight in SMES [Online]. [cited 2010]; Available from: URL: <https://pdfs.semanticscholar.org/4061/527bb6001346508f7c5a3ec38307d7396fe6.pdf>
 9. Payne J. Researching health needs: A community-based approach. Thousand Oaks, CA: SAGE; 1999.
 10. Pilkington P. Social capital and health: measuring and understanding social capital at a local level could help to tackle health inequalities more effectively. *J Public Health Med* 2002; 24(3): 156-9.
 11. Spear HJ, Kulbok PA. Adolescent health behaviors and related factors: A review. *Public Health Nurs* 2001; 18(2): 82-93.
 12. Day GE, Leggat SG. Leading and Managing in Health Services. Cambridge, United Kingdom Cambridge University Press; 2015.
 13. Strobino DM, Grason H, Minkovitz C. Charting a course for the future of women's health in the United States: Concepts, findings and recommendations. *Soc Sci Med* 2002; 54(5): 839-48.
 14. Voros J. A primer on futures studies, foresight and the use of scenarios [Online]. [cited 2001]; Available from: URL: <https://static1.squarespace.com/static/580c492820099e7e75b9c3b4/t/58abbe7c29687fbaf4a03324/1487650430788/A+Primer+on+Futures+Studies.pdf>
 15. Postma TJ, Liebl F. How to improve scenario analysis as a strategic management tool? *Technol Forecast Soc Change* 2005; 72(2): 161-73.
 16. Slaughter RA. New thinking for a new millennium: The knowledge base of futures studies. London, Routledge; 2002.
 17. Pilkington P. Social capital and health: measuring and understanding social capital at a local level could help to tackle health inequalities more effectively. *J Public Health Med* 2002; 24(3): 156-9.
 18. El Kerdini S, Hooge S. Can strategic foresight and creativity tools be combined? Structuring a conceptual framework for collective exploration of the unknown [Online]. [cited 2013]; Available from: URL: <https://ideas.repec.org/p/hal/journal/hal-00824348.html>
 19. Naidoo J, Wills J. Health promotion: foundations for practice. London, UK: Bailliere Tindall; 2000.