Abstract

Introduction and Objectives: The necessity of responding to the increasing welfare, physical, mental, social, and spiritual demands of people in one hand. Therefore, this study aims to prioritize the environmental health programs in Kashan from the Society’s perspective and compare it with the priorities of other involved groups.

Methodology: This is a cross-sectional study which is carried out qualitatively and quantitatively in August and September, 2016. Some surveys are done with higher than 18 years old citizens of Kashan as a sample. This study has 727 participants, including 560 random samples from those people who are covered by 15 urban health care centers, environmental health experts (50), faculty members of Kashan Health School (14), city managers (29), and Non-Governmental Organization members (74). The study tools are self-regulation questionnaires with 74 questions. SPSS 16 software along with Kolmogorov-Smirnov Test, Repeated Measure, Mann-Whitney Test, and Kruskal-Wallis Test are used for data analysis and binary comparisons.

Results: The first priority of the society is “health control of hospitals, clinics and health care centers” with the mean score of 4.47. The comparison of perspective of under study groups on 15 programs indicated that there is no significant difference between all groups for 13 programs (PV >0.05).

Conclusion: Since there are many adjacent ideas regarding environmental health in Kashan between different groups, all the programs should be taken into consideration. Moreover, society’s perspective about environmental health prioritization can be relied on.

Keywords: Communicable diseases, Demand, Environmental health, Evaluation, Public participation, Prioritization
Introduction

The environment, and human’s health and hygiene are definitely the most challenging issues of human societies in the third millennium. Among them, environmental health includes different dimensions of human health which are caused by environmental factors. They refer to those theoretical and practical evaluations which potentially influence human health. In fact, general health and welfare of the society can be provided in a healthy environment; so that the most important contribution of environmental health to the society is providing healthy resources along with a healthy environment. Not paying attention to these issues can cause a lot of problems for human health in the societies. In the environmental health program, the influential factors on the transmission of diseases are controlled. These factors are food resources, water, wastewater, garbage, health facilities, insects and rodents, air pollution control, use of toxins and disinfectants, health educations, etc.

According to the high importance of environmental health and lack of resources in the health system, prioritization of environmental health through the society accompanied with suitable plans and necessary interventions are so significant. Prioritization refers to fair and logical distribution of limited resources among different demanders; it is considered to be one of the most important duties of health planning. Those kinds of prioritizations which are based on the selection of limited resources are related to what we should do and not to do. Society’s environmental health and its prioritization have two main presuppositions: (1) in spite of high environmental health demands, the required resources are limited; (2) in spite of the similarity of demands to each other, their intensity and their spatial-temporal prioritizations are different. Various studies indicated that some of the health demands which are proposed by the society include water, air, wastewater, garbage, and food health. On the other hand, the priorities which are presented by the society are different from those presented by experts; it indicates that the society’s priority should be focused on, since the evaluation of environmental health from the perspective of society can improve and reinforce the local health services. Such kind of studies can be so important for local decision makings, since each society has unique objectives, facilities, resources, history and future potentials; moreover, people’s priorities are different based on their age, education, income, employment, and living place.

The results of evaluation analysis of social demands in developed countries indicated that chronic non-communicable disease, main demands of health services, free check-up, health education, unhealthy life styles, environmental problems, and cardiovascular diseases and their risk factors, such as smoking, physical inactivity, and unhealthy diets are the main prioritized risk factors. In the studies which are carried out on the priorities of our country, environmental health issues such as road surface asphalts, inappropriate disposal of debris, and smoking are introduced as the main priorities of the society. Therefore, due to the limited resources and differences among the priorities of the society and the experts, public participation in the prioritization process is so significant.

The previous internal studies indicated that the evaluation of social perspectives in health and treatment networks can contribute to the identification of strong and weak points of an specific area along with its potentialities; these identifications can be used in health improvements. Various studies on different societies of the country indicate multiple prioritizations which is a natural issue. For example, the main environmental health priorities of Azarbayjan district of Tehran are insects, rodents, stray animals, air pollution, inappropriate garbage collection, non-separated and non-recycled garbage, and building burnout. The main environmental health priorities of Gonabad are inappropriate garage collection, dirty roads, inappropriate drinking water, inappropriate chlorination of cisterns, inappropriate legal actions of health officers with violating shopkeepers, and selling expired food resources. The main environmental health priorities of Chahestaniah district of Bandar Abbas are lack of an appropriate sewage network and sewage flow in some parts of the city, inappropriate road asphalt, dirty roads, keeping livestock in residential places, and presence of insects and rodents. The main environmental health priorities of Hormuz Island are expired food resources, inappropriate supervision of the production and distribution of food resources, unfamiliarity of the people with proper food storage methods, the presence of color in drinking water, garbage problems, and the presence of insects and rodents.

The above-mentioned studies are carried out using interviews and qualitative methods with the aim of recognizing and prioritizing health demands of the societies; however, environmental health programs are presented in top-down approaches by the experts of Ministry of Health. These approaches can be different based on the main priorities of the society. These differences include various ideas of the involved managers, university specialists, executive experts, and non-governmental organization members; therefore, a question will be raised in this regard: How different are the perspectives of the society with other involved groups? Can we count on the perspectives of the society for environmental health priorities? Due to the importance of prioritization in decision making and recognition of financial and human resources, and due to the positive results of public participation in health measures, this study aims to “prioritize health programs in Kashan from the society’s perspective in comparison with...
the prioritizations of other involved groups such as city managers, environmental health experts, faculty members, and non-governmental organization members”.

**Materials and Methods**

This is a cross sectional study which was carried out in Kashan in August and September, 2016. First a list of executive programs and activities of environmental health in the primary health care services were provided from environmental health regulations and guidelines issued by Ministry of Health and Medical Education of Iran. Table 1 shows the list of under prioritization programs.

| Number | Program                                                                 | Abbreviation |
|--------|-------------------------------------------------------------------------|--------------|
| 1      | Program of environmental health of hospitals, health care centers, and clinics | PEHH         |
| 2      | Program of emergency health and work environment                        | PEHW         |
| 3      | Program of escalation of inspections and supervision                    | PEIS         |
| 4      | Program of food hygiene control                                          | PFHC         |
| 5      | Program of solid waste management                                        | PSWM         |
| 6      | Program of water and wastewater control                                  | PWWC         |
| 7      | Program of smoking control                                               | PSC          |
| 8      | Program of hygiene of rays, control of radiography and radiotherapy centers | PHRC         |
| 9      | Program of environmental health monitoring of public service centers     | PPSC         |
| 10     | Project of healthy city - healthy village                                 | PHCV         |
| 11     | Program of natural disaster management (earthquake, flood, storm etc.)   | PNDM         |
| 12     | Program of air pollution management                                      | PAPM         |
| 13     | Program of without-caretaker dogs’ control                               | PWCD         |
| 14     | Program of retailers’ health education                                   | PRHE         |
| 15     | Program of insects and rodents’ control                                  | PIRC         |

Next an expert panel to prepare a questionnaire was hold with 12 members consist of 2 faculty members of the Environmental Health Engineering Department of Kashan Health School, 3 health experts of Deputy of Health of Kashan University of Medical Sciences, 2 active members in the field of health and environment from Non-Governmental Organizations (NGOs) of Kashan, 2 city managers from Kashan Health Council, and 3 layman experts. The expert panel members were selected with purposive sampling method. In the panel, the executive and activity programs were analyzed. The output of this panel was a questionnaire including 72 queries in the frame work of 15 environmental health programs dictated by the Ministry of Health and Medical Education of Iran. After that the options of the prepared questionnaire were graded by the participants. Where grade 1 for “very low priority”, grade 2 for “low priority”, grade 3 for “medium priority”, grade 4 for “high priority”, and grade 5 for “very high priority” were allocated. Later on, the scientific validity of the questionnaire was evaluated by a method which has been proposed by Polite; therefore, Content Validity Index (CVI) was evaluated by 10 experts (6 environmental health experts, 1 statistician, and 3 layman experts). CVI of each question (I-CVI) was evaluated based on its compatibility with the main objective. subsequently, the CVI of the whole questionnaire (S-CVI) was evaluated by the calculated mean scores for those questions with less than 70% I-CVI, by recollecting the expert’s ideas the I-CVI was improved to 78%, and S-CVI was improved to 90% in the same manner. Moreover, the internal consistency method was used for reliability evaluation of the questionnaire (by Cronbach Alpha). The Cronbach Alpha for whole of the tool was calculated equal to 0.976. Finally, the questionnaires were filled by 727 participants in 5 groups as Table 2.
Collected data were analyzed in SPSS16 software media by Kolmogorov-Smirnov Test, Repeated Measure Test, Mann-Whitney Test, and Kruskal-Wallis Test and Binary Comparisons was done. The mean score of each environmental health program was calculated from the mean score of their related questions.

### Results

Due to the high effect of environmental health programs on get public participation, increasing public satisfaction and square distribution of resources, the researchers scored the 15 environmental health programs dictated by Environmental Health Center of Ministry of Health and Education of Iran by 4 different groups in comparison to Kashan society samples.

Figure 1 indicates the environmental health priorities from the society sample’s perspective. In this group there are 560 Kashan citizens with higher than 18 years old as participants. Based on this group perspective the program of environmental health of hospitals, health care centers and clinics (PEHH) with a mean score of 4.47 has the first priority. The program of insects and rodents’ control (PIRC) with a mean score of 4.00 has the last priority in this group.

| Group name                        | Number of participants | Participants characteristics and selection                                                                                                                                                                                                 |
|-----------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Society samples                   | 560 (77.03%)           | Proportion to the people covered by each of the 15 urban health centers family samples were selected by systematic random sampling method and one of the family members with more than 18 years old filled the questionnaires. |
| Faculty members                   | 14 (1.44%)             | Total faculty members with more than 5 years working history from Environmental Health Engineering, Occupational Health Engineering, Public Health and Statistics and Epidemiology Departments of Health School of Kashan University of Medical Sciences |
| Environmental health experts      | 50 (6.88%)             | The questionnaires were distributed between environmental health experts employed in Kashan University of Medical Sciences in their intermittent cession and the questioner requested the participants to fill that. |
| Non-Governmental organization members | 74 (10.77%)       | The questionnaires were distributed between members of active Kashan NGOs (Jamiiyat Kavir Sabz, Jamiiyate Hamyaran Salamat, Jameeh Eslami Nabinaian, Anjoman Nojom Sepehr, Anjoman Organi Kashan, Moasseseh Pishgiri as Etyad) in their intermittent cession and the questioner requested the participants to fill that. |
| City managers                     | 29 (3.99%)             | The questionnaires were distributed between members the Health Council of Kashan and the questioner requested the participants to fill that.                                                                                             |
Figure 2 shows the environmental health priorities from the perspective of NGOs. In this group, there are 74 participants. As can be seen, the program of environmental health of hospitals, health care centers, and clinics has the highest priority with a mean score of 4.61 and the program of Retailers health education has the last priority with a mean score of 4.04.

Figure 3 indicates the environmental health priorities from the perspective of city managers of Health Council of Kashan. This group has 29 participants. It is observed that PEHH has the highest priority with a mean score of 4.50. The PIRC has the last priority with a mean score of 3.76.

Figure 4 shows the environmental priorities from the perspective of Kashan environmental health experts.
Figure 4 shows the environmental priorities from the perspective of environmental health experts of Kashan University of Medical Sciences, including the experts of health care centers, health assistant, and employed experts in the University of Medicine. This group has 50 participants. According to the perspective of environmental health experts, the program of water and sewage control has the highest priority with a mean score of 4.54 and Retailers health Education has the last priority with a mean score of 3.78.

Figure 5 shows the environmental health priorities from the perspective of faculty members of Kashan Health School. The participated in this group were 14 faculty members of hygiene school of Kashan University of Medicine. The emergency health and work environment program have the highest priority with mean score of 4.71, and program of insects and rodents control has the lowest priority with the mean score of 3.78.

Environmental health priorities of Kashan from perspective of different participant groups are compared in Table 3.

Table 3. Ranking of the environmental health programs in Kashan from the perspective of the five participants groups

| Environmental health programs | Society samples | NGOs | City managers | Health experts | Faculty members |
|------------------------------|----------------|------|---------------|----------------|-----------------|
| PEHH                         | 1              | 1    | 1             | 2              | 2               |
| PEHE                         | 2              | 3    | 2             | 11             | 1               |
| PEIS                         | 3              | 2    | 3             | 3              | 3               |
| PFHC                         | 4              | 7    | 7             | 4              | 5               |
| PSWM                         | 5              | 6    | 4             | 10             | 6               |
| PWWC                         | 8              | 11   | 5             | 1              | 4               |
| PSC                          | 7              | 5    | 6             | 8              | 8               |
| PHRC                         | 6              | 4    | 11            | 9              | 11              |
| PPSC                         | 9              | 9    | 10            | 7              | 7               |
| PHCV                         | 10             | 10   | 8             | 6              | 9               |
| PNDM                         | 11             | 8    | 9             | 5              | 13              |
| PAPM                         | 12             | 12   | 13            | 12             | 12              |
| PWCD                         | 13             | 15   | 12            | 13             | 10              |
| PRHE                         | 14             | 14   | 14            | 15             | 14              |
| PIRC                         | 15             | 13   | 15            | 14             | 15              |
Table 4 indicates the mean and standard deviation of scores assigned by participants in different groups (society, NGOs, experts, managers, and faculty members) to questions for 15 executive environmental health programs. The comparison shows that there is no significant difference between groups for 13 programs ($PV>0.05$). On the contrary, there is a significant difference between the society, experts, faculty members, city managers, and NGOs opinion for two programs (PIRC & PEHW).

Table 4. The mean of scores assigned by different participants to Kashan environmental health programs

| Program | Society | NGOs | Experts | Faculty members | City managers | P-Value |
|---------|---------|------|---------|-----------------|---------------|---------|
| PWWC    | Means   | 4.24 | 4.24    | 4.54            | 4.49          | 4.31    | 0.589  |
|         | SD      | 0.70 | 0.80    | 0.84            | 0.42          | 0.66    |
| PPSC    | Means   | 4.23 | 4.29    | 4.21            | 4.33          | 4.11    | 0.489  |
|         | SD      | 0.68 | 0.61    | 0.49            | 0.61          | 0.66    |
| PFHC    | Means   | 4.28 | 4.32    | 4.36            | 4.37          | 4.24    | 0.954  |
|         | SD      | 0.71 | 0.85    | 0.49            | 0.46          | 0.62    |
| PNDM    | Means   | 4.15 | 4.30    | 4.26            | 4.19          | 4.18    | 0.653  |
|         | SD      | 0.78 | 0.74    | 0.53            | 0.60          | 0.71    |
| PIRC    | Means   | 4.00 | 4.05    | 3.74            | 3.78          | 3.76    | 0.026  |
|         | SD      | 0.97 | 0.74    | 0.71            | 0.50          | 0.77    |
| PHCV    | Means   | 4.19 | 4.26    | 4.25            | 4.28          | 4.20    | 0.996  |
|         | SD      | 0.81 | 0.72    | 0.68            | 0.50          | 0.85    |
| PHRC    | Means   | 4.25 | 4.38    | 4.20            | 4.23          | 4.09    | 0.522  |
|         | SD      | 0.75 | 0.65    | 0.64            | 0.69          | 0.88    |
| PEHH    | Means   | 4.47 | 4.61    | 4.52            | 4.53          | 4.50    | 0.79   |
|         | SD      | 0.64 | 0.50    | 0.59            | 0.61          | 0.56    |
| PAPM    | Means   | 4.13 | 4.17    | 3.98            | 4.21          | 4.00    | 0.527  |
|         | SD      | 0.83 | 0.76    | 0.79            | 0.58          | 0.94    |
| PSC     | Means   | 4.25 | 4.35    | 4.20            | 4.30          | 4.31    | 0.558  |
|         | SD      | 0.82 | 0.72    | 0.62            | 0.56          | 0.77    |
| PSWM    | Means   | 4.27 | 4.33    | 4.15            | 4.35          | 4.33    | 0.444  |
|         | SD      | 0.74 | 0.60    | 0.64            | 0.45          | 0.53    |
| PRHE    | Means   | 4.02 | 4.04    | 3.68            | 4.14          | 3.96    | 0.168  |
|         | SD      | 0.92 | 0.85    | 0.97            | 0.77          | .090    |
| PWCD    | Means   | 4.08 | 4.04    | 3.76            | 4.28          | 4.06    | 0.061  |
|         | SD      | 1.10 | 1.17    | 0.91            | 0.61          | 0.96    |
| PEIS    | Means   | 4.32 | 4.43    | 4.42            | 4.52          | 4.34    | 0.733  |
|         | SD      | 0.80 | 0.76    | 0.65            | 0.58          | 0.79    |
| PEHW    | Means   | 4.38 | 4.41    | 4.08            | 4.71          | 4.43    | 0.016  |
|         | SD      | 1.07 | 0.62    | 0.79            | 0.45          | 0.67    |

Table 4 shows the binary comparisons of program of insects and rodents’ control with emergency health and work environment program. This table presents that there is a significant difference between the perspectives of NGOs and experts about the control program of insects and rodents ($PV<0.05$). In the emergency health and work environment program, there is a significance difference between the perspective of society with experts, NGOs with experts, experts with faculty members, and experts with city managers ($PV<0.05$).
Discussion

In this study, a total number of 15 environmental health programs were prioritized based on the perspective of 5 groups. According to Table 4, there is statistically no significant difference between different groups for 13 programs out of 15 ones (PV>0.05). It means that the main priority of three groups (social, NGOs and city managers) is PEHH. It is noticeable that PEHH is the second priority for two other groups. So, there is a similarity for Kashan environmental health program prioritization by different groups. The first priority of two other groups is PWWC (by health experts) and PEHW (by faculty members).

The program of water and wastewater control includes qualitative control of tap water, bottled water, cisterns, etc., also the qualitative control of sewages lies in this program. This program has been determined as the third priority of environmental health by several studies in Iran during 2008-2013.\(^{12}\)

While the PEHW has been determined as the first priority by faculty members and is the second priority of society samples, city managers, and NGOs, it falls into the eleventh priority from the perspective of experts.

Since the PEHW, considers the public requisitions and complaints from poultries, stockyards and slaughter of livestock in the public paths it needs a high cooperation of all the city managing systems. The presence of city managers as the main demanders of this program makes it easier to be executed. Pour M et al. highlighted the importance of cooperation in executing the programs in their study.\(^{31}\)

Escalation of inspections and supervisions is the third priority of 4 groups out of 5 ones. Our findings are compatible with the results of Molaie A et al. study in Hormuz Island in Iran which, stated that the first environmental health priorities in the Island are more supervision on food production and distribution centers, notice to health of food products, guide to use of poisons and sprays for insects and rodents, intercommunion to solve the urban waste difficulties, without-caretaker dogs and other animals.\(^{29}\) Also, our findings are compatible with the results of study by Delshad A et al. in Gonabad which showed that the first priority is preventing the sale of expired food products in the retail sales and wholesales.\(^{27}\)

Program of Retailers Health Education focused on the education of employees and employers of food product and distribution centers. This program has been ranked as the 14\(^{th}\) priority of 15 mentioned program by 4 groups of participants. It is the last priority of environmental health experts. The reason can be related to this fact that the experts dissatisfy from educational methods in this program.

In spite of other studies that the program of insects and rodents’ control was one of the most important environmental health priorities of society in our research it is the last priority.\(^{26, 29}\) The low priority of this program in our study can be related to local properties of Kashan such as dry climate. Fewer insect and rodent species live in this kind of climate. Moreover, newly built buildings and reconstruction of old buildings can be another reason for this issue.

There are a few studies about the comparison of different perspectives on environmental health priorities. Yasini et al. stated that according to academic members the main priorities in Yazd are addiction, inappropriate roads asphalt, and air pollution. Also, according to social representatives and health volunteers the main priorities in Yazd are inappropriate roads asphalt as well as traffic.

| Group                        | Program of insects and rodents’ control | Program of emergency health and work environment |
|------------------------------|----------------------------------------|--------------------------------------------------|
| Society with Non-government  | 0.78                                   | 0.97                                             |
| Society with expert          | 0.013                                  | 0.004                                            |
| Society with faculty members | 0.14                                   | 0.08                                             |
| Society with city manager    | 0.09                                   | 0.9                                              |
| Non-government with expert   | 0.013                                  | 0.014                                            |
| Non-government with faculty members | 0.08                              | 0.08                                             |
| Non-government with city manager | 0.05                           | 0.8                                              |
| Expert with faculty members  | 0.9                                    | 0.003                                            |
| Expert with city manager     | 0.8                                    | 0.02                                             |
| Faculty members with city manager | 0.8                            | 0.13                                             |
related problems. According to the governmental and NGOs experts the main priorities are health problems of bread and bakeshops, addiction and inappropriate roads asphalt. Addiction and inappropriate roads asphalt are the main priorities from the standpoint of all participants too.32

The study of Ashtiani R et al. in Arak indicated that there is a significant difference between the perspective of society and experts about the prioritization of social problems.33 This difference can be related to the direct involvement of people with these problems; while, the perspective of experts is mostly under the influence of their scientific trainings, broadsheets, and financial and human resources.

A comparison between the results of this study and the similar researches in other places around the world such as Buenos Aires Argentina, Nigeria, Tulsa United States, and Northern Ireland, shows that despite existing similar economic, social, cultural, healthcare and environmental problems but the prioritization of these problems is different. It is may be related to their social, economic, and cultural characteristics. The latter proves that refer to public opinion is an appropriate tool for prioritization.34 41

Conclusion

This study which was carried out with the aim of prioritization of health programs in Kashan from the society’s perspective in comparison with the perspective of other involved groups showed that there are mutual perspectives of different participant groups about the execution of environmental health programs in Kashan and the society prioritization about these programs can be more focused on. The three-fold priorities of this group are mainly of the software and manageable types which are indicative of a good level of knowledge among people regarding their main health needs. The environmental health of hospitals and health care centers is the main priority of this group; more considering the customers complaints and public demands is the second priority which includes the personal health of employees in the food production and distribution centers, serious monitoring of essential requirements for foods storage, and providing the sanitary condition for these centers and other public. Increasing the planned and intrusive inspections in working and non-working times especially holidays, Nowrouz and Golabgiri season (rose watering festival about May and first half of June) are the third priorities of the society perspective.

Conflict of Interest: None

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