Using Corel Draw In Modern Mapping (Application In Geographical Health Mapping)

Husam Saheb Al-Tuama & Shatha Abdullah Rasheed
Department of Geography, College of Arts, University of Baghdad, Baghdad, Iraq

Abstract:
The development of the mapping from traditional methods (manual) to the modern drawing methods (Computer) is an important step in the mapping, as the modern digital maps play a big role in the geographical analyses in all branches. There are many software in this field have been used such as Corel Draw which is used for geographical health mapping, through which has been mapping the Prevalence of cancer infections in Iraq based on the Central Statistical Organization data taken from the Ministry of Health data which showed the number of cancer diseases in all area of Iraq for 2005 and 2006, through drawing two maps and use the methods of circles and survey shading in the cartographic representation. After analyzing the two maps we observed that the highest number of infections in cancer diseases was in Baghdad and these numbers are increasing in (Karkuk, Baghdad, Basrah, Babil, Najaf) and these numbers are decreasing in (Arbil, Sulaymaniyah, Anbar).
Key words: modern mapping, Corel draw, health mapping

رسم الخرائط الحديثة باستخدام برنامج Corel Draw

حسام صاحب الطعمة و شذى عبد الله رشيد
قسم الجغرافية، كلية الآداب، جامعة بغداد، بغداد، العراق

الخلاصة
يعد تطور رسم الخرائط من الطرق التقليدية (اليدوية) الى رسمها بالطرق الحديثة (الحاسب الآلي) خطوة مهمة في رسم الخرائط ، اذ أصبحت اليوم الخرائط الرقمية الحديثة لها دور كبير في التحليلات الجغرافية في كل الفروع ، وهناك برامج كثيرة في هذا المجال تم استخدام برنامج Corel Draw للتطبيق في رسم خرائط الجغرافية الصحية والتي من خلالها تم رسم خرائط انتشار الاصابة بالامراض السرطانية في العراق من خلال بيانات الجهاز المركزي للاحصاء نقلاً عن بيانات وزارة الصحة والتي تبين اعداد الاصابات بالامراض السرطانية في محافظات العراق لعامي 2005 و 2006 ومن خلال رسم خارطتين واستخدام طريقتي الدوائر والتظليل المساحي في التمثيل الخرائطي تم تحليل الخارطتين فتبين ان اعلى عدد للاصابة كان في محافظة بغداد وان نسبة انتشار الامراض السرطانية تزداد في محافظات (كركوك ، بغداد ، البصرة ، بابل ، النجف) وتقل في محافظات(اربيل ، السليمانية ، الانبار) .

1. Introduction:

The history of maps is directly related to the history of human beings itself on earth. The evidences and researches indicate that human beings used the graphic language before writing as communication language between them, and among the things that drawing was the maps and diagrams. The common nature of the human beings are driven him to the drawing and photography some of the geographical phenomena like mountains, rivers and trees ...etc. primitively on the walls of caves and on

the sand, which develops later as drawings on a sheet of mud, wood, animal skins, and papyrus, because it is easier to transfer and save them in safe places, because of their importance.

It is the beginnings of drawing in general and the beginning of mapping, as the ancient civilizations were mapped the lands they own or under their control and so the cartography was developed and became one of the important science which had its rules, and started many disciplines get benefit from the maps in their respective fields, including geography, which has become the science who cannot be separated from the maps. By the ends of the last century the mapping develop from using of inking pens and paper to use a computer and mapping software, and the resulting maps known as the modern maps.

Through our research we found that despite the large number of modern mapping software, but not all of this software had the same graphic features and the Corel Draw software had a large ability of the drawing and design of modern maps and in our search we used this program in geographic health mapping.

2.The Mapping Concept and its Development:

The map is considered an important means of expression, which consider the language of the geography and an important tool of geographer and through the use of map it is easily to clarify and analyze the natural geographical phenomena, human resources and the representation of numbers and statistics are visible it, so it has become a vital necessity in our world because it is a tool applied in the fields of the various work due to association with a number of aspects of working life and scientific.

The map can be defined as the representation of different forms of the environment phenomena at a certain drawing scale. The map covers a small area at a large scale or vice versa (representing the entire globe with small-scale) [1].

The map in the simplest of what is signified by a picture of part of the earth's surface seen from the top, which took place at the horizontal level with some of the words and expressions written on the map to denote the phenomena it represents [2].

Since the development of mapping and until recent decades of the last century, these mapping were hand-drawing, known as the conventional maps (traditional maps): which can simply defined as the maps drawing manually in all stages and by using tools and traditional methods in drawing (pens inking, lead, colors, and the different kinds of rulers …. etc.).

Afterward the development of mapping and the appearance of the modern maps concept, which required the development of computer software, which motivated the specialists of mapping to orient their experience towards the use of these software, the drive keys that motivate the scientists to the use of computer software in the work of the maps in two areas[3]:

1. Drawing maps by scientists whom wish to see the results of modeling quickly, or to display data from large archives easily in digital form, such as census schedules, and here there was not a great interest in quality.
2. Scientists of mapping, which they are seeking to, reduce the cost and time of map production and dissemination.

So the computers are new tool (with high power and high flexibility of response), has been added to the old tools (traditional materials) of mapping such as paper, ink and pencil which used by the oscilloscope map since generations ago. The computer had its ability to improve the role of cartographer in several areas as it used to perform tasks more difficult and tedious in the design of maps, so the cartographer becomes free to use his time in other creative things related to the development of this science [4].

3. The Modern Maps (Digital Maps)

The Modern maps known as digital maps which can be defined as the maps that the computer intervention at every stage of produced, drawing and updated of the map, and the objective of these software are transferring features of hand-drawing image or map to the numeric values with the possibility of storage and re-displayed at any time through the computer which is the highest degree of measurement and design which prepared by computer software according to the systems and grid of coordinates [5].

The digital maps can be defined as maps drawing by computer through software whether these maps are displayed on the screen or printed on paper [6].

The use of computer technology enabled the mapping automatically and rapidly through the digital data processing in an easily way with guaranteed to carry out necessary mathematical or statistical operations as well as the possibility of choosing the appropriate symbols and drop it

in an easy and fast way, thus encouraging testing several designs in order to reach the optimum and best design [7].

Thus the aims of using the computer software and digital methods in the science of maps to speed up the producing of maps and increase accuracy and reduce the cost, which yield to use the analytical potential of the software, so the mechanism involved in many stages of map production, even in traditional systems of mapping [8].

The digital maps are prepared in accordance with the following steps [9]:

A - Mapping the geography of the land or part of using satellite imagery, or drones.

B - Numerical coding of the topography map.

C - Drawing a map in the form of points and lines by computer.

D– Process the map by computer to display in the form of a live picture which simulates the reality to a large degree of symmetry.

4. Corel Draw Software

Corel Draw Software is the most important and most powerful graphic software by which it can carry out different design, because of this software are characterized by different features and drawing tools which enable the user to use many of the forms, graphics, multi Arabic fonts and characters that stored in that software, which enable the user to prepare the documents and graphics, whether it is simple or complex through acquire basic and professional skills to use the various tools within the program [10].

The software helps the users to drawing and imagine the design he/she want from start to the end in a great professional and wonderful way, allow the users to design the animation images and add special effects to these images and Update on images to add touches of beautiful art, and the most importantly is the wonderful design which is characterized by this software, which allow the user to show all his/her ideas professionally to be reality light and work with all capacity of users because these ideas have been applied very professionally in the world of design and graphics. The software has the capabilities and features which made it superior for all other software that had the same tools [11]. The following figure shows the contents of the Corel draw window:-

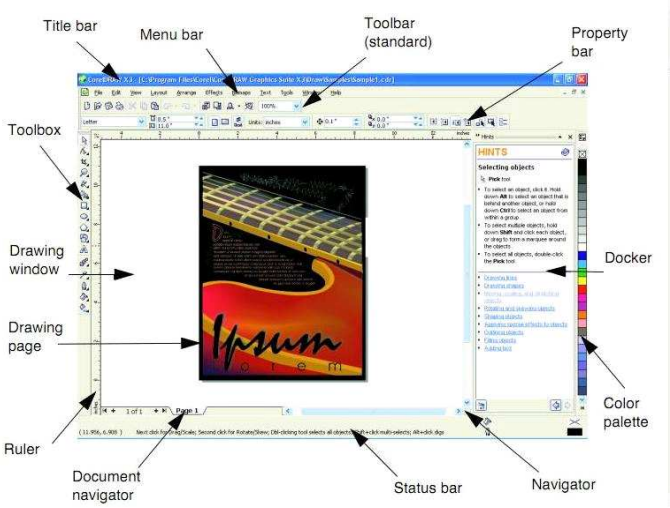


Figure 1- The Contents Of The Corel Draw Window

5. Geographical Health Mapping

The health geography is a branch of human geography, which specialized in studying the geographical distribution of diseases, and highlighting the relationship between these distribution and the environmental elements (natural and human) and evaluate their negative effects on human life in all aspects, and to find a way of how to prevent diseases through health services necessary for treatment, and [12].

Since the mapping includes all branches of geography, the maps of distribution included health mapping of disease and its distribution. During the last decades of the twentieth century the health mapping have changed from manual drawing to the types of maps that drawing by computer using different software like other types of maps. Gopps was the early scientists who use computer to draw the health maps in 1968 as he presented a research of mapping disease, Armstrung introduced in 1972 a research on the computer and mapping geographical health [13].

6. Application Of Mapping The Prevalence Of Cancer In Iraq

Corel Draw was used to draw modern maps of health geography through the study of the distribution of injuries of cancer diseases in the governorates of Iraq for 2005 and 2006 as shown in Table No. (1) taking into account estimates of population numbers for the same two years to extract the rate of Prevalence of infections with cancer diseases for each (10000) people in each governorate.

The maps No. (1) And (2) display the numbers of injuries of cancer diseases in each governorate by representing it as a circle type, while the percentage of cancer infections for each (10000) people have been represented in a survey shading type within three graded categories. The red dark color indicate the governorates of the most prevalent cancer diseases distribution, pink color indicate the governorates of the medium cancer diseases distribution, and light pink color indicate the governorates of less prevalent cancer diseases distribution. This was done by dividing the number of people infected by cancer diseases to the population (according to estimates of the population by Central Statistical organization in each of these years for each (10000) people).

These maps shows the possibility of analysis in health geographic, the results showed that the number of cancer diseases infections are high in the governorate of Baghdad, despite these numbers are low in 2006 in comparison with these numbers in 2005 significantly, followed by the governorate of Babil in 2005, whereas in 2006 the governorates of Ninawa and Basrah has increased the number of injuries. Whereas the lowest number of injuries in the governorates of Anbar, Dahuk, Arbil, and Muthanna in 2006 illustrated by small circles represented on the map. Since the numbers are high for the injuries may be in the governorates where the numbers of the population is high which is normal, and was in proportion to the Prevalence of disease, it is clear to us that the highest proportion of the Prevalence of the disease in 2005 is in the governorates of (Baghdad, Najaf, and Karkuk) which recorded more than (7 per 10000) people then in the governorates of (Babil, Karbala, and Diwaniyah), the governorates of (Arbil and Sulaymaniyah) are recorded the less prevalent of the cancer diseases among the governorates which was at less than (2 per 10000) people. In 2006 the governorate of Karkuk recorded the highest rate for the Prevalence of cancer diseases which was more than (9 per 10000) people, followed by Basrah governorate. While the governorates of (Anbar and Arbil) recorded the less prevalent which were less than (2 per 10000) people.

Table 1- Number Of Injuries Diseases And Cancer Prevalence Estimates Of The Population In The Provinces Of Iraq For The Years 2005 And 2006

Governorates	year 2005			year 2006		
	Number of cases of cancer	Population estimates	Prevalence rate per 10000	Number of cases of cancer	Population estimates	Prevalence rate per 10000
Ninawa	659	2637327	2.49	1589	2722930	5.83
Karkuk	632	870098	7.26	856	885950	9.66
Diyala	497	1464437	3.39	326	1511823	2.15
Anbar	391	1379322	2.83	229	1431717	1.59
Baghdad	5006	6726432	7.44	3393	6902842	4.91
Babil	1045	1544679	6.76	1064	1597291	6.66
Karbala	549	819376	6.70	495	852963	5.80
Wasit	299	1001615	2.98	281	1032838	2.72
Salahaddin	259	1162490	2.22	394	1207210	3.26
Najaf	744	1011597	7.35	691	1045862	6.60
Diwaniyah	578	937261	6.16	507	963543	5.26
Muthanna	191	574351	3.32	242	594350	4.07
Dhiqar	440	1518962	2.89	557	1566901	3.55
Maysan	243	782826	3.10	419	803253	5.21
Basrah	754	1835399	4.10	1441	1873642	7.69
Dahuk	263	483106	5.44	234	494191	4.73
Arbil	278	1440590	1.92	238	1490695	1.59
Sulaymaniyah	291	1773100	1.64	703	1832440	3.86

Source: Central Statistical Organization, Annual Statistical Abstract, 2005 and2010

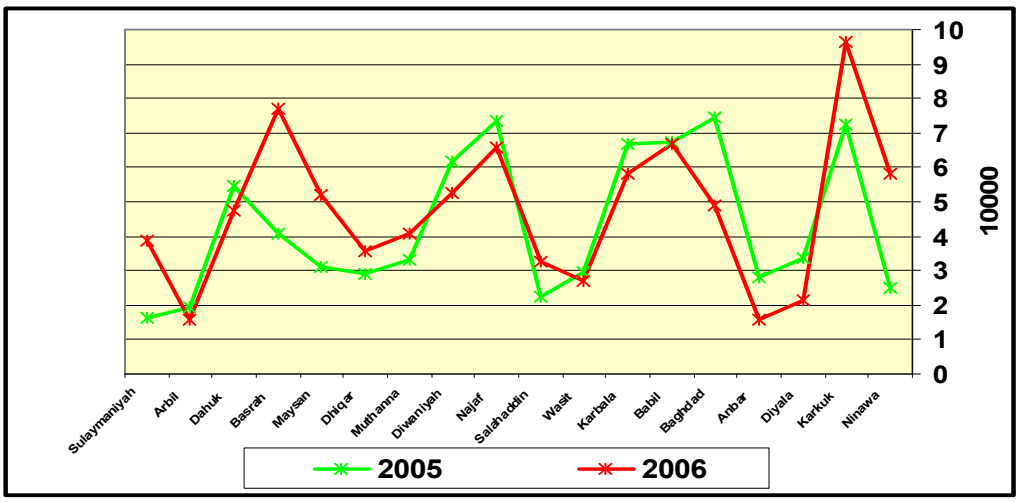
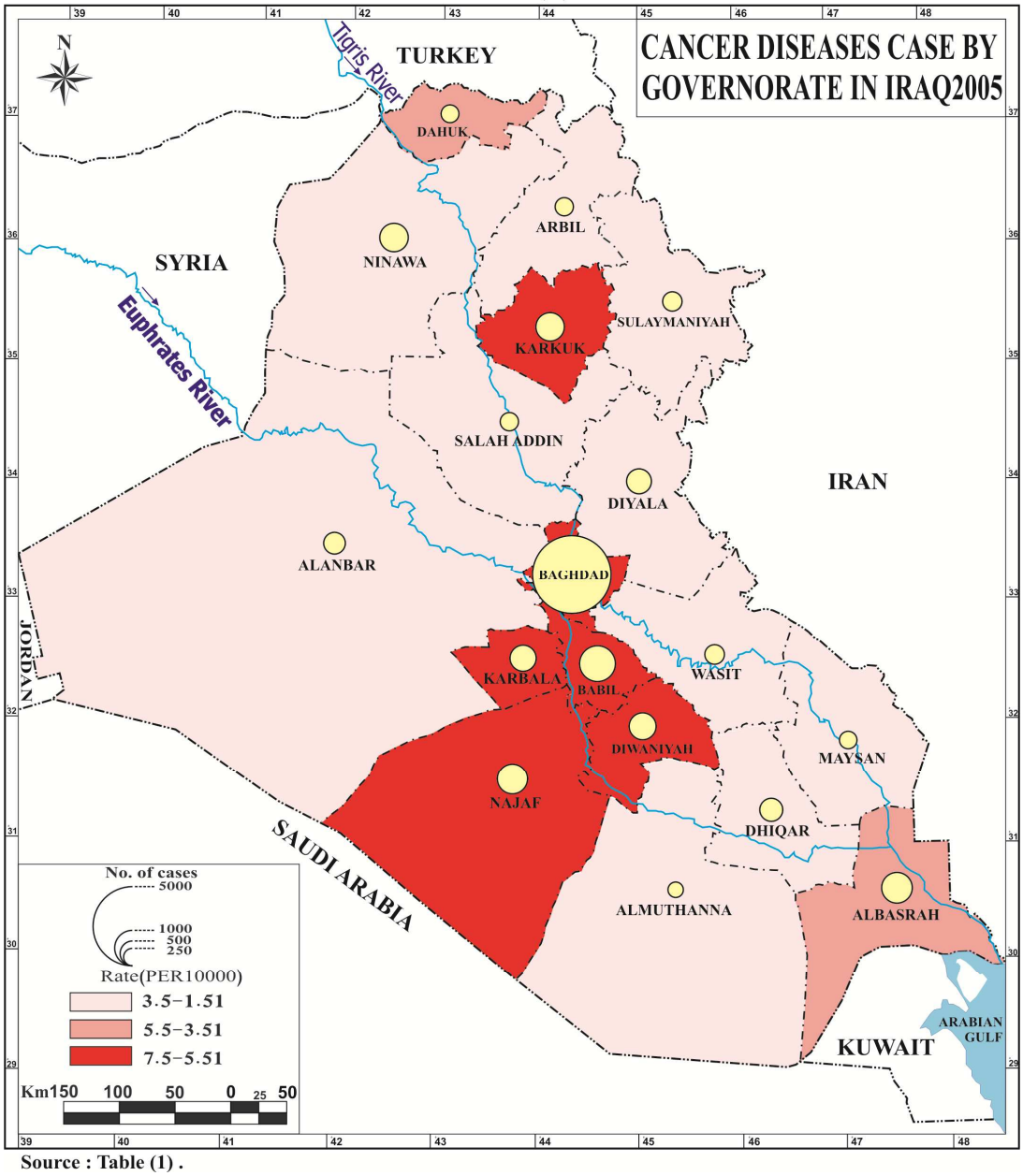


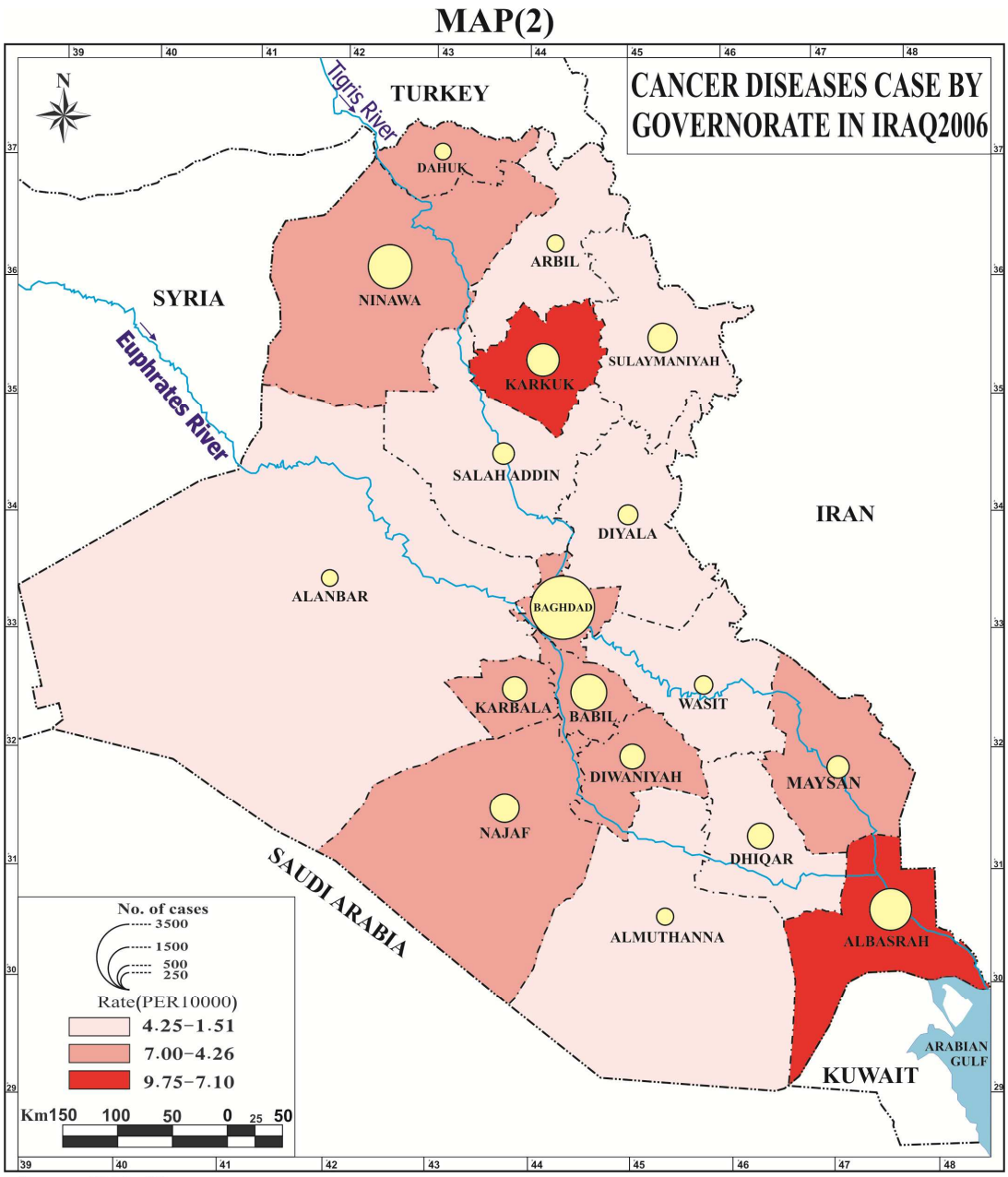
Figure 2- Prevalence Rate Per 10000 By Governorates In Iraq 2005 And 2010

MAP(1)



Source : Table (1) .

Figure 3-Cancer Diseases Case By Governorates In Iraq 2005



Source : Table (1) .

Figure 4-Cancer Diseases Case By Governorates In Iraq 2006

7. Conclusions

1. Corel Draw software had the possibility of drawing and representation of modern geographical maps.
2. Corel Draw software had the simplicity and flexibility in the design and the representation of circles and survey shading methods.
3 The digital maps help the scientists in the drawing and analysis of health geographical data.
4. The map of the numbers of Injuries and Prevalence of cancer diseases by the governorates of Iraq in 2005, that the highest rate for the Prevalence of cancer diseases is in the governorate of (Baghdad, Najaf, and Karkuk) which recorded more than (7 per 10000) people, and the lowest percentage recorded in the governorates of (Arbil and Sulaymaniyah) which are less than (2 per 10000) people.
5. The map of the numbers of Injuries and Prevalence of cancer diseases by the governorates of Iraq in 2006, that the highest rate for the Prevalence of cancer diseases is in the governorate of Karkuk, which was more than (9 per 10000) people, and the lowest percentage recorded in the governorates (Arbil and Anbar) which was less than (2 per 10000) people.

8. Recommendations

1. Using Corel Draw software in the preparation and drawing of modern geo-mapping.
2. The necessity to convert geographic data to the geographic digital maps in order to help scientists in the process of geographical analysis.
3. The use of modern digital maps in geographic analysis of health and work to apply the results of the diseases Prevalence analysis in the health centers.

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