

Changes in morbidity and medical care utilization after the recent economic crisis in the Republic of Korea

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Objective To examine and quantify the impact of the recent economic crisis on morbidity and medical care utilization in the Republic of Korea.

Methods 22 675 people from 6791 households and 43 682 people from 12 283 households were questioned for two nationwide surveys that took place in 1995 and 1998, respectively. A separate sample pretest–posttest design was used and we conducted χ^2 test and logistic regression analysis after controlling for the maturation effect of the morbidity and medical care utilization.

Findings The morbidity rates of chronic disease and acute disease increased significantly by 27.1% and 9.5%, respectively, whereas the utilization rates of outpatient and inpatient services decreased by 15.1% and 5.2%, respectively. In particular, the pace of decline in the utilization rate of outpatient services varied depending on the type of disease: morbidity rates for mental and behavioural disorders were 13.7%; for cardiovascular disease, 7.1%; and for injury, 31.6%.

Conclusion After the Republic of Korean economic crisis, the morbidity and medical care utilization rates changed significantly but the degree of change depended on the type of disease or service. The time-dependent relationship between the national economy and the morbidity and medical care utilization rates needs to be further investigated.

Keywords Morbidity/trends; Health services/utilization; Inflation, Economic; Health services accessibility/economics; Chronic disease; Mental disorders/epidemiology; Cardio-vascular diseases/epidemiology; Wounds and injuries/epidemiology; Regression analysis; Republic of Korea (*source: MeSH, NLM*).

Mots clés Morbidité/orientations; Services santé/utilisation; Inflation économique; Accessibilité service santé/économie; Troubles mentaux/épidémiologie; Cardio-vasculaires, Maladies/épidémiologie; Plaies et traumatismes/épidémiologie; Analyse régression; République de Corée (*source: MeSH, INSERM*).

Palabras clave Morbilidad/tendencias; Servicios de salud/utilización; Inflación económica; Accesibilidad a los servicios de salud/economía; Trastornos mentales/epidemiología; Enfermedades cardiovasculares/epidemiología; Heridas y lesiones/ epidemiología; Análisis de regresión; República de Corea (*fuentes: DeCS, BIREME*).

Bulletin of the World Health Organization 2003;81:567-572.

Voir page 571 le résumé en français. En la página 571 figura un resumen en español.

انظر صفحة 571 للاطلاع على الكلمات المفتاحية والملخص باللغة العربية

Introduction

On 3 December 1997, the Republic of Korea was obliged to receive financial support from the International Monetary Fund (IMF) because of a foreign currency crisis. This event marked a national economic crisis that was unprecedented in modern history of the Republic of Korea. After 1995, the economy grew rather sluggishly until the first three quarters of 1997, and this growth rate continued to decline to 3.6%, until the last quarter of 1997 (1, 2) (Fig. 1). However, in the first quarter of 1998 the growth rate had fallen dramatically to -4.6%, and in the fourth quarter of 1998 it had fallen to -5.9%. Only in 1999 did the economy begin to show definite signs of a recovery. Before the economic crisis the economy of the Republic of Korea had been able to maintain a stable unemployment rate, which did not exceed 3%. However, the unemployment rate rose to 5.6% in the first quarter of 1998 and then to 8.4% in the first quarter of 1999. Unemployment then began to respond to the general recovery, but as yet it has not reached its pre-economic-crisis levels.

The health care system of the Republic of Korea can be described as a privately controlled delivery system in combination with a publicly regulated financing system. The national health security system is administered in two tiers: Health Insurance and the Medical Aid programme. As of 1998, Health Insurance was an income-based contributory insurance programme covering 97% of the population, whereas Medical Aid was a government-subsidized public assistance programme for the poor and the medically indigent. Compared with other countries that have national health insurance, the Republic of Korea has a relatively high rate of direct payment because of the limited coverage and high co-payment rate. In 1998, Koreans paid 41.6% of total health care expenditures out of their own pockets. Both hospital and physician services covered by insurance are reimbursed on a fee-for-service basis, which offers a strong incentive to provide extensive services. All health care institutions in the Republic of Korea are legally designated to provide health services to the insured. In the Republic of Korea, the private sector plays a major role in delivering health care

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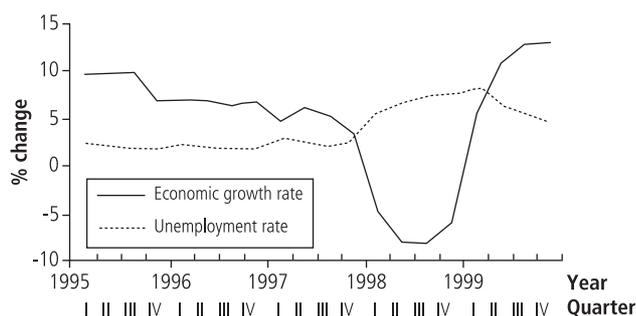
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Fig. 1. Changes in economic growth rate and unemployment rate in the Republic of Korea



Source: Korea Statistical Information System Data Base; Bank of Korea, Statistical Data Base.

services. In 1996, 87% of all hospital beds were private, and 93% of hospitals in the Republic of Korea were owned or operated by private or not-for-profit organizations (3).

The economic crisis produced nationwide changes in the health sector (4). In January 1998, the numbers of outpatients and inpatients in general hospitals fell by 18.7% and 16.1%, respectively, compared with the pre-crisis period of January 1997 (5).

Some findings indicate that an economic crisis affects peoples' health status. Throughout Cuba, Indonesia, and Poland, increased stress, morbidity, suicide, and a shortened life expectancy were observed for those who had experienced or were experiencing economic crises (6–8). Research in Australia, Denmark, England, Finland, and Wales has also shown that there are relationships between economy, unemployment, and health status (9–18).

In this paper, we analyse data from two nationwide surveys of the Republic of Korea conducted in 1995 and 1998. We explore whether or not an economic crisis has an influence on the rates of morbidity and medical care utilization and, on the basis of the results, we show that the impacts of the economic crisis vary depending on the types of medical services and diseases.

Methods

Source of data

This study mainly analysed the data of the National Health Interview Surveys, which were conducted in 1995 and 1998, respectively (19, 20). The Korea Institute for Health and Social Affairs conducted the two surveys on behalf of the Ministry of Health and Welfare. The purpose of the surveys was to estimate the national prevalence of diseases and the medical care utilization and to investigate health-related behaviours in the Republic of Korea.

The first survey was conducted in July 1995 and the second was carried out during November and December, 1998. The methodologies of both surveys were similar in that a stratified multistage random sampling using a face-to-face household survey was used. The interviewers asked a household member to check, from a structured list of diseases, the morbidity and utilization of health care of his/her family members.

We gathered and analysed information on the morbidity of acute and chronic diseases. Chronic disease was

Table 1. Characteristics of study population before and after the economic crisis in the Republic of Korea

Variable	Before (1995)	After (1998)	χ^2 value
Sex			
Male	10 974 (48.4) ^a	21 359 (48.9) ^a	1.49
Female	11 701 (51.6)	22 323 (51.1)	
Age (years)			
0-18	6943 (30.6)	13 014 (29.8)	5.29
19-44	9647 (42.5)	18 897 (43.3)	
45-64	4479 (19.8)	8686 (19.9)	
≥65	1606 (7.1)	3085 (7.1)	
Self-evaluated economic status			
Low	6774 (29.9)	19 071 (43.7)	2079.73 ^b
Middle	14 354 (63.3)	23 905 (54.7)	
High	1526 (6.7)	706 (1.6)	
Total	22 675 (100)	43 682 (100)	

^a Figures in parentheses are percentages.

^b $P < 0.01$.

defined as a disease that lasted for more than three months. All other conditions from which the respondents had been suffering during the two weeks before the interview were defined as acute diseases. We also gathered information on medical care utilization in terms of outpatient and inpatient services. The information related to a period of two weeks and one year for outpatient services and inpatient services, respectively, before the time of interview.

We used the data obtained from the survey of 1995 (22 675 people from 6791 households) and from the survey of 1998 (43 682 people from 12 283 households) to show morbidity and utilization before and after the economic crisis, respectively.

Variables

Dependent variables in this study were morbidity and medical care utilization, and the main independent variable was the economic crisis. Sex, age, and self-evaluated (subjective) economic status were also investigated. We analysed morbidity rates of total, acute, and chronic diseases, together with the medical care utilization rates of total, outpatient, and inpatient services. The data analysed for the utilization rates comprised data on the use of the services by patients with morbidity only. The morbidity rates and medical care utilization rates of outpatient and inpatient services were examined for different diseases — mental and behavioural disorders, cardiovascular disease, hypertension, and injury (consequences of accidents) — because these diseases have been previously studied in connection with unemployment and mortality and/or morbidity.

Statistical methods

The unit of analysis was the individual. We used the χ^2 test and logistic regression methods to compare the morbidity and medical care utilization rates before and after the economic crisis. In all analyses we controlled for potential bias resulting from the phenomenon that the rate of morbidity and utilization increases over time — that is, a maturation effect. This was done by estimating an increasing rate in morbidity and medical care utilization from 1992 to 1995 by using two external data sets. The first data set, *The*

Table 2. Differences in the morbidity and medical care utilization before and after the economic crisis in the Republic of Korea

Characteristics	Before (1995)	After (1998)	χ^2 value	Adjusted χ^2 value ^a
Total population	22 675 (100.0) ^b	43 682 (100.0) ^b		
Morbidity rate				
Total	8925 (39.4)	29 095 (66.6)	4527.6 ^c	3342.4 ^c
Acute	3387 (14.9)	10 646 (24.4)	796.2 ^c	1431.5 ^c
Chronic	6558 (28.9)	24 450 (56.0)	4386.8 ^c	947.0 ^c
Utilization rate^d				
Total	6224 (69.7)	14 814 (50.9)	978.1 ^c	2786.5 ^c
Outpatient	5456 (61.1)	13 372 (46.0)	628.3 ^c	1890.1 ^c
Inpatient	1188 (13.3)	2353 (8.1)	220.0 ^c	2786.5 ^c

^a χ^2 values were adjusted with a maturation effect.

^b Figures in parentheses are percentages.

^c $P < 0.01$.

^d Utilization rates among patients with morbidity.

National Survey on Public Health and Health Related Behaviors of 1992 and 1995 published by the Ministry of Health and Welfare, was used to estimate the increasing rate in morbidity, whereas the other, *The Annual Report of 1992 and 1995* published by Korea Medical Insurance, was used for utilization. The projected morbidity and utilization rates for 1998, which would have occurred if the trends that were evident before the crisis had continued, were obtained by multiplying the morbidity rate and utilization rate for 1995 by the corresponding increasing rates. Then, the projected morbidity and utilization rates for 1998 were compared with those corresponding observed values for 1998.

Data sets were analysed using SAS software (Statistical Analysis System, version 8.01).

Results

Over the period spanning the economic crisis, there were no significant differences in the distribution of sex and age. The proportion of individuals who answered "low" for self-evaluated economic status was significantly higher after the crisis than before it (Table 1).

Table 2 shows the differences in the morbidity and medical care utilization rates. The morbidity rate was 39.4% before the economic crisis and it increased significantly to 66.6% after the crisis. The increase in the morbidity rate was significant in both chronic and acute diseases, and the morbidity rate of chronic disease increased more than that of acute disease (27.1% and 9.5%, respectively). Even after adjusting for the maturation effect, similar significant increases were found in both types of disease.

The total medical care utilization rate declined from 69.7% to 50.9% over the period of the economic crisis. The utilization rates of outpatient and inpatient services also decreased significantly, by 15.1% and 5.2%, respectively. These results remained significant after adjusting for the maturation effect.

Logistic regression analysis was conducted to examine the impact of the economic crisis on morbidity and utilization after controlling for other factors (Table 3). On the

basis of odds ratio, the morbidity rate of total disease was 2.79 times higher after the crisis than before it, and the morbidity rates of acute and chronic diseases were 2.24 and 1.91 times higher, respectively, after the crisis than before it. By contrast, the medical care utilization rates of total, outpatient, and inpatient services among those with morbidity were 0.30, 0.37, and 0.83 times higher, respectively, after the crisis than before it.

In terms of disease-specific changes, the morbidity rates for mental and behavioural disorders, hypertension, and injury had increased significantly, even after controlling for the maturation effect (Table 4). Nonetheless, the utilization rate of outpatient services for patients with mental and behavioural disorders, cardiovascular disease, and injury decreased significantly (by 13.7%, 7.1%, and 31.6%, respectively). The rate for hypertension was found to have significantly decreased by 3.4% after the maturation effect was adjusted for. Interestingly, there was no significant difference in the utilization rate of inpatient services for the above diseases, where measured.

Discussion

An economic crisis is likely to increase the unemployment rate, reduce household income, restrict access to medical services, and increase mental stress, thereby resulting in a high rate of morbidity. Unemployment leads to relative poverty, social isolation, the loss of self-respect, a decline in health activities, and a persistent sense of being unemployed, which consequently causes deterioration in personal health. Bartley (1994) explained that not only actual unemployment but also a changing and unstable employment status could affect health (21). Moreover, a study on the relationship between the unemployed and social support found that the unemployed have a lower quality of social support than the employed, thereby aggravating health (22). The unemployed reported a higher level of psychological distress and anxiety or depressive symptoms, and showed a higher rate of mental disorder than the employed (23).

Morbidity rate

The present study was conducted to examine whether or not the previous findings were applicable in the Republic of

 Table 3. Odds ratio for the effect of economic crisis on the morbidity and medical care utilization rate in the Republic of Korea^a

Dependent variables	OR ^b	95% CI ^c
Morbidity rate		
Total	2.79	2.70, 2.89
Acute	2.24	2.10, 2.38
Chronic	1.91	1.84, 1.99
Utilization rate^d		
Total	0.30	0.28, 0.31
Outpatient	0.37	0.35, 0.39
Inpatient	0.83	0.76, 0.91

^a Sex, age, self-evaluated economic status, health insurance type, and maturation were controlled.

^b OR = odds ratio.

^c CI = confidence interval.

^d Utilization rate among those with morbidity.

Table 4. Differences in the disease-specific morbidity and medical care utilization in the Republic of Korea

Morbidity and utilization	Before (1995)	After (1998)	χ^2 value	Adjusted χ^2 value ^a
Mental and behaviour disorder				
Morbidity	148 (0.65)	460 (1.05)	25.9 ^b	17.7 ^b
Outpatient ^c	48 (32.3)	86 (18.6)	10.7 ^b	16.5 ^b
Inpatient ^c	8 (5.4)	19 (4.0)	0.3	0.5
Cardiovascular disease				
Morbidity	262 (1.16)	800 (1.83)	42.5 ^b	3.7
Outpatient ^c	59 (22.3)	121 (15.2)	6.8 ^b	13.9 ^b
Inpatient ^c	19 (7.1)	51 (6.4)	0.1	0.0
Hypertension				
Morbidity	606 (2.67)	1952 (4.47)	129.3 ^b	19.3 ^b
Outpatient ^c	171 (28.1)	481 (24.7)	2.8	13.0 ^b
Inpatient ^c	11 (1.8)	39 (2.0)	0.0	0.1
Injury				
Morbidity ^c	195 (0.86)	677 (1.55)	54.7 ^b	110.5 ^b
Outpatient ^c	175 (89.7)	394 (58.1)	65.2 ^b	106.1 ^b
Inpatient ^d	—	—	—	—

^a χ^2 values were adjusted with a maturation effect.

^b $P < 0.01$.

^c Medical care utilization rate among patients with morbidity.

^d Data were not available.

Korea during times of economic crisis. We found that, over the period of the economic crisis of the 1990s, the morbidity rates significantly increased. In our additional analyses, the morbidity rate for digestive system conditions, which is the most prevalent type of chronic disease in the Republic of Korea, was 13.3% before the crisis but increased to 34.8% dramatically after the crisis.

Utilization rate

The utilization rate of outpatient and inpatient services among patients with morbidity decreased significantly after the crisis. This may sound very strange, given that the Republic of Korea has a national health insurance system. The health system of the Republic of Korea is characterized by its higher rate of cost-sharing than that of any other country, and is approximately 50%. Therefore, accessibility to health services is closely influenced by income. We investigated changes in utilization across different health service providers before and after the crisis. Among the total number of outpatient services, the utilization of hospitals or clinics was 58.1% before the crisis and decreased to 52.8% after the crisis, whereas utilization of pharmacy increased from 37.3% to 43.1% during the time period. Pharmacies had been an important source of primary care until July 2000 when the compulsory separation of prescribing and dispensing of drugs was implemented. Our results showed that people were more likely to use lower priced services during the economic crisis.

However, disease-specific utilization rates of inpatient services were not statistically reduced when diseases such as hypertension, mental and behavioural disorders, and cardiovascular disease, were considered. One of the possible reasons is that inpatient services for these diseases are likely to be less susceptible than outpatient services to an economic crisis.

To find groups that were susceptible to the economic crisis, we performed a subgroup analysis according to age, sex, self-evaluated economic status, and region. The morbidity rate increased in all subgroups, whereas the utilization rate among those with morbidity decreased significantly after the economic crisis. People who were under the age of 64, middle class, male, and lived in urban areas were affected more during the economic crisis.

Considerations

It may be appropriate to close this study with a few reflections. First, for lack of sufficient data, this study did not take into consideration the dynamic nature of the relationship between economic fluctuations and changes in the morbidity and medical care utilization rates. The relationship involves such issues as causality and time-dependency. Second, changes in morbidity and utilization rates between 1995 and 1998 might have been influenced by factors such as environmental changes or policy interventions. However, such influences were probably not serious given that no noticeably distinct event occurred in the Republic of Korea between the two years studied. Third, a bias could have occurred in the comparison of the morbidity rate of acute disease because the two surveys were not conducted during the same season. We investigated the effect of seasonability by comparing the average number of patients claimed to have used the outpatient services from June to July with that from October to December for the government and private-school employees who were enrolled with one of the medical insurance programmes that covered 11.1% for the entire population of the Republic of Korea. From 1991 to 1999, the ratio of these two average numbers ranged from 0.93 to 1.04. Therefore, a small seasonable effect may have existed, but if so, it probably would not have altered the results of the present study. Fourth, proxy respondent bias and recall bias would have occurred in this study. To reduce the potential for these biases, the questions on morbidity and utilization were answered by one who knew the household's health status well, such as the housewife, and with a highly structured questionnaire. If there was a misclassification on the morbidity and utilization it would be nondifferential because the methodologies of the two surveys were similar. Therefore, the effect of the economic crisis on the morbidity and medical care utilization might be underestimated. Nevertheless, it is important to show the significant increase in morbidity and decrease in utilization in this study. Self-reported illness could be subjective, and a significant proportion of these illnesses reported might not have required medical attention. Care should be taken in interpreting the effect of economic crisis on higher morbidity and lower utilization.

This study differs from other studies that have explored the impact of the economic crisis on health. As far as we know, no other studies have used nationwide survey data to study this issue; most studies have employed aggregated data indirectly. In addition, we focused on the general population, not specific subgroups of population like the employed and the unemployed. ■

Conflicts of interest: None declared.

Résumé

Modifications de la morbidité et de l'utilisation des soins médicaux après la récente crise économique en République de Corée

Objectif Examiner et quantifier l'impact de la crise économique récente sur la morbidité et sur l'utilisation des soins médicaux en République de Corée.

Méthodes Deux enquêtes nationales réalisées en 1995 et 1998 ont permis d'interroger respectivement 22 675 personnes dans 6791 foyers et 43 682 personnes dans 12 283 foyers. L'étude de type avant-après était basée sur deux échantillons distincts et l'analyse a été faite par régression logistique et au moyen du χ^2 , après prise en compte de la « maturation » de la morbidité et de l'utilisation des soins médicaux au cours du temps.

Résultats Les taux de morbidité des maladies chroniques et des maladies aiguës ont augmenté significativement, de 27,1 % et 9,5 % respectivement, tandis que la fréquence d'utilisation des

services ambulatoires et des services d'hospitalisation diminuait respectivement de 15,1 % et 5,2 %. La rapidité du déclin de l'utilisation des services ambulatoires varie avec le type d'affection : le taux de morbidité était de 13,7 % pour les maladies mentales et comportementales, 7,1 % pour les maladies cardiovasculaires et 31,6 % pour les traumatismes.

Conclusion A la suite de la crise économique qui a touché la République de Corée, les taux de morbidité et la fréquence d'utilisation des services médicaux se sont considérablement modifiés, mais l'amplitude du changement dépend à la fois du type de maladie et du service. La relation au cours du temps entre l'économie nationale d'une part et le taux de morbidité et la fréquence d'utilisation des soins médicaux d'autre part mérite d'être largement étudiée.

Resumen

Variación de la morbilidad y del consumo de atención médica después de la crisis económica reciente en la República de Corea

Objetivo Examinar y cuantificar la repercusión de la reciente crisis económica en la morbilidad y el recurso a la atención médica en la República de Corea.

Métodos Se encuestó a 22 675 personas de 6791 hogares y 43 682 personas de 12 283 hogares en dos sondeos de ámbito nacional llevados a cabo en 1995 y 1998, respectivamente. El estudio, de comparación pre-post, se basó en dos muestras distintas, y los datos se analizaron mediante regresión logística y empleando la prueba de chi cuadrado, tras tener en cuenta la "maduración" de la morbilidad y del consumo de atención médica.

Resultados Las tasas de morbilidad para las enfermedades crónicas y las enfermedades agudas aumentaron de forma significativa en un 27,1% y un 9,5%, respectivamente, mientras que la

frecuencia de utilización de los servicios ambulatorios y hospitalarios disminuyó en un 15,1% y 5,2%, respectivamente. En particular, el grado de disminución de la tasa de utilización de los servicios ambulatorios dependió del tipo de enfermedad: la tasa de morbilidad para los trastornos mentales y conductuales fue del 13,7%, para las enfermedades cardiovasculares del 7,1%, y para los traumatismos del 31,6%.

Conclusión Tras la crisis económica sufrida por la República de Corea, las tasas de morbilidad y de consumo de atención médica variaron significativamente, pero el grado de variación dependió del tipo de enfermedad o servicio. Es necesario investigar más a fondo la relación temporal entre la economía nacional y las tasas de morbilidad y de consumo de atención médica.

ملخص

التغيرات في معدلات المراضة والانتفاع بالرعاية الطبية بعد الأزمة الاقتصادية التي حدثت مؤخراً في جمهورية كوريا

15.1% وفي خدمات العيادات الداخلية بنسبة 9.5%. وقد تفاوتت سرعة الانخفاض في معدل الانتفاع بخدمات العيادات الخارجية، بشكل خاص، بحسب نوع المرض: إذ وصلت معدلات المراضة بالاضطرابات النفسية والسلوكية إلى 13.7%، وبالأزمات النفسية إلى 7.1%، وبالإصابات إلى 31.6%.

الاستنتاج: بعد الأزمة الاقتصادية التي تعرضت لها جمهورية كوريا تغيرت معدلات المراضة والانتفاع بالرعاية الطبية تغيراً ملحوظاً، تفاوتت بحسب نوع المرض أو الخدمة، ويوصى بإجراء مزيد من الأبحاث حول العلاقة بين الاقتصاد الوطني من جهة وبين معدلات المراضة والانتفاع بالرعاية الطبية من جهة أخرى.

الغرض: احسار وقاسم تأثير الأزمة الاقتصادية التي حدثت مؤخراً على معدلات المراضة والانتفاع بالخدمات الطبية في جمهورية كوريا.

الطريقة: تم استبيان 22 675 شخصاً يتمتعون بـ 6791 أسرة، و 43 682 شخصاً يتمتعون بـ 12 283 أسرة، في إطار مسحين وطنيين أجرياً في عام 1995 وعام 1998. وقد استخدم تصميم مستقل للعينات التي أخذت قبل الإختبار والتي أخذت بعد الإختبار، كما أجري اختبار نسي مربع وتحليل تحوُّلٍ للإمكانيات بعد الحداد شونعد لتأثير التصحح على المراضة والانتفاع بالرعاية الطبية.

الموجودات: لوحظت زيادة منسوبة في معدلات المراضة بالأمراض المزمنة بلغت 27.1% وزيادة في معدلات المراضة بالأمراض الحادة بلغت 9.5%، في حين انخفضت معدلات الانتفاع بخدمات العيادات الخارجية بنسبة

الكلمات المفتاحية: المراضة/التهامات المراضة؛ التضخم الاقتصادي؛ الحصول على الخدمات الصحية؛ اقتصاديات الخدمات الصحية؛ الأمراض المزمنة؛ الاضطرابات النفسية؛ الأيديولوجيا الاضطرابات النفسية؛ تحليل تحوُّلٍ؛ جمهورية كوريا (المصدر: رؤوس الموضوعات الطبية؛ المكتب الإقليمي لمنسق المتوسط)

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