# Frequency of unemployment among epileptic patients in Tikrit, Iraq

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## معدل تواتر العاطلين عن العمل بين المرضى المصابين بالصرع في تكريت، العراق

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**خلاصة:** الصرع من الأمراض المزمنة التي تصيب جميع الأعمار والتي تؤدي إلى مضاعفات طويلة الأمد مثل اضطراب قابلية الاستخدام أو التوظيف. وقد قام الباحثون بتقدير معدل البطالة بين مئة من مرضى الصرع الذين يراجعون عيادات طبية عمومية في تكريت. وقد كان المعدل الإجمالي للعاطلين عن العمل 33% وكان أكبر بمقدار يعتد به إحصائياً لدى مرضى الصرع الذين لم تتم السيطرة على أعراض المرض لديهم والذين بدأ الصرع لديهم في سن باكرة.

ABSTRACT Epilepsy is a chronic illness that affects all ages and which has long-term complications, such as impairment of employability. We estimated the unemployment rate among 100 epileptic patients attending two public medical clinics in Tikrit. The overall rate of unemployment was 33%. The rate was significantly greater in those whose epilepsy was not controlled and those in whom the age at onset of epilepsy was younger.

**Fréquence du chômage chez des épileptiques à Tikrit (Iraq)**

RESUME L'épilepsie est une maladie chronique qui touche tous les âges et qui comporte des complications à long terme, telle la diminution de l'employabilité. Nous avons estimé le taux de chômage chez 100 épileptiques qui consultent dans deux dispensaires médicaux publics à Tikrit. Le taux de chômage global s'élevait à 33 %. Ce taux était considérablement plus important chez les patients dont l'épilepsie n'était pas contrôlée et ceux qui étaient plus jeunes au moment du déclenchement de l'épilepsie.

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## Introduction

Epilepsy is the term used to describe recurrent seizures present over months or years, often with a stereotyped clinical pattern. A seizure is defined as an abrupt alteration in the cortical electrical activity manifested clinically by a change in consciousness or by motor, sensory or behaviour symptoms.

Unfortunately epileptic individuals are unwanted by employers and factories, although their illness can be treated and controlled, and their illness is not their fault or their choosing. In addition to society's attitude, epileptics may have problems gaining employment because of inadequate training or preparation, although the majority of patients with epilepsy show no deterioration of intelligence. As a result, some epileptic individuals have difficulty finding work and often have to accept employment at level far below their potential capacity. Social acceptance of people with epilepsy is often a considerable problem for the individuals and their relatives [*1*].

Many factors may affect the employment state in epileptics, such as control of seizures, age at onset, duration of illness, type of therapy, severity and frequency of fits.

This study was conducted to determine the frequency of unemployment among people with epilepsy in our area and to determine the relation between unemployment and other variables such as age at onset of the condition, sex, residence, frequency of seizures, duration of illness and type of therapy.

## Methods

We conducted a descriptive study of epileptic patients attending two public medical clinics in Tikrit City over the period from July to the end of September 1997. The sample consisted of 100 patients (52 males and 48 females). The patients were already known to be epileptic and had been diagnosed by other physicians. Patients with other neurological disorders and those less than 18 years of age were excluded from the study.

A specially designed questionnaire was used to obtain information about the illness and the employment state. The data were collected through interviews with the patients or their relatives. Factors that might have an effect on employment state, such as the age at onset of epilepsy, frequency and control of seizures, duration of illness and type of therapy, were investigated.

Statistical analysis was carried out using simple descriptive statistics and the chi-squared test to derive *P*-values.

## Results

Of the 100 epileptic patients, 33 were unemployed. About 38% of male patients and 27% of female patients were unemployed ($P = 0.22$). The unemployment rate in patients whose epilepsy was uncontrolled (with recurrent fits) was 43% whereas only 19% of patients with controlled epilepsy (fit free) were unemployed ($P = 0.01$). Unemployment was higher in those patients receiving polytherapy (44%) than those receiving monotherapy (31%) ($P = 0.31$). The patients living in rural areas had an unemployment rate of 42% compared with 25% among those living in urban areas ($P = 0.76$) (Table 1).

The age at onset for 72 patients ranged between 10 years and 39 years, for whom the unemployment rate was between 24% and 32%. The youngest level of age at onset (0–9 years) was associated with a 57% unemployment rate ($P = 0.01$) (Table 2).

Table 1 **Factors affecting the employment of 100 patients with epilepsy**

| Factor | Employed No. | % | Unemployed No. | % | $\chi^2$ (*P*) |
|---|---|---|---|---|---|
| *Sex* | | | | | 1.46 (0.22) |
| Male | 32 | 62 | 20 | 38 | |
| Female | 35 | 73 | 13 | 27 | |
| *Control of seizures* | | | | | 6.38 (0.01) |
| Controlled | 34 | 81 | 8 | 19 | |
| Uncontrolled | 33 | 57 | 25 | 43 | |
| *Type of therapy* | | | | | 1.00 (0.31) |
| Monotherapy | 58 | 69 | 26 | 31 | |
| Polytherapy | 9 | 56 | 7 | 44 | |
| *Residence* | | | | | 3.14 (0.76) |
| Urban | 39 | 75 | 13 | 25 | |
| Rural | 28 | 58 | 20 | 42 | |

Daily or weekly occurrence of fits was associated with 100% unemployment, but patients with one fit or fewer per month were all employed ($P = 0.00$) (Table 3).

Patients who had had epilepsy for more than 30 years had a 75% unemployment rate, while those who had had the illness for 0–4 years had a 22% unemployment rate ($P = 0.09$) (Table 4).

## Discussion

Many of the findings of our study are comparable with international figures with some differences. Carroll found that 36% of epileptics were in training or employment [*2*]. Callaghan noted that the unemployment rate in epileptic males (34%) compared poorly with an unemployment rate of 13% for all males in society [*3*]. This demonstrates that people with epilepsy still experience major problems getting employment [*4*].

Awaritefe and colleagues noted that in Nigeria epilepsy is regarded as a highly infectious and serious disease [*5*]. As a result, epileptic individuals suffer untold social deprivation and discrimination in education, employment, housing and marriage [*5*]. In another study, the unemployment rate for economically active individuals with epilepsy was reported to be 46% compared with 19% for an age- and sex-matched control population [*6*]. However, other studies have shown that there are only slight differences (not significant) in the employment status of epileptic individuals and those not suffering from epilepsy [*7,8*]. We unfortunately do not have the figures of the local unemployment rate for the population at large, but probably the rate has been increasing over the past few years because of the current situation in our country.

The lower rate of unemployment in females compared with males may be due to the fact that many of them regard their

Table 2 **Frequency of unemployment in relation to age at onset in 100 patients with epilepsy**

| Age at onset (years) | Employed No. | % | Unemployed No. | % | Total No. |
|---|---|---|---|---|---|
| 0–9 | 9 | 43 | 12 | 57 | 21 |
| 10–19 | 23 | 68 | 11 | 32 | 34 |
| 20–39 | 29 | 76 | 9 | 24 | 38 |
| 40–59 | 6 | 86 | 1 | 14 | 7 |

$\chi^2_2 = 8.14$, P = 0.01.

work as housewives as a job. However, the difference between the employment rates of males and females, in our study, was not statistically significant.

The earlier the onset of epilepsy, the greater the likelihood of complications; one such complication is low educational achievement and little training, which exacerbates the problem of unemployment. Thus, the earlier the onset of epilepsy, the less the likelihood of getting a job. Elwes et al. showed that people with epilepsy were more likely to be unskilled manual workers [*6*]. The correlation between early age at onset and unemployment was statistically significant in our study ($P = 0.01$).

Table 3 **Frequency of unemployment in relation to seizure occurrence in 58 patients with uncontrolled epilepsy**

| Seizure occurrence | Employed No. | % | Unemployed No. | % | Total No. |
|---|---|---|---|---|---|
| Daily | 0 | 0 | 3 | 100 | 3 |
| Weekly | 0 | 0 | 8 | 100 | 8 |
| Fortnightly | 3 | 30 | 7 | 70 | 10 |
| Monthly | 20 | 74 | 7 | 26 | 27 |
| > Monthly | 10 | 100 | 0 | 0 | 10 |

$\chi^2_4 = 28.29$, P = 0.00.

Table 4 **Frequency of unemployment in relation to duration of illness in 100 patients with epilepsy**

| Duration of illness (years) | Employed No. | % | Unemployed No. | % | Total No. |
|---|---|---|---|---|---|
| 0–4 | 18 | 78 | 5 | 22 | 23 |
| 5–9 | 13 | 76 | 4 | 24 | 17 |
| 10–14 | 22 | 73 | 8 | 27 | 30 |
| 15–19 | 7 | 64 | 4 | 36 | 11 |
| 20–24 | 4 | 44 | 5 | 55 | 9 |
| 25–29 | 2 | 33 | 4 | 66 | 6 |
| >30 | 1 | 25 | 3 | 75 | 4 |

$\chi^2_6 = 10.95$, P = 0.09.

The employment rate increases in a direct proportion with a decrease in the frequency of seizures. Jacoby and colleagues noted that there was a clear relation between current seizure frequency and employment status [*9*] as was also shown in our study ($P = 0.01$). In another study, Jacoby reported that when seizures are well controlled and uncomplicated by other handicap, people with epilepsy do not generally experience problems with employment [*10*]. Collings and Chapel also showed that good employability was related to low seizure severity and good seizure control [*11*]. We found the same as our patients with controlled epilepsy had a statistically significant lower rate of unemployment ($P = 0.01$).

Regarding therapeutic aspects, whether patients receive monotherapy or polytherapy is not likely to affect the employment rate as such but through the control of sei-

zures. Polytherapy adds to more side-effects of drugs and indicates that the epilepsy is poorly controlled so that physicians have to prescribe more than one drug. In fact, our patients on monotherapy had a lower rate of unemployment. The higher rate of unemployment in rural areas may be due to greater misconceptions and misunderstandings of epilepsy in these areas. This can lead to late diagnosis and treatment resulting in more complications that make employment very difficult.

Likewise, the longer the duration of the illness, the greater the complications and disability, i.e. chronicity of the disease is theoretically an important factor in increasing unemployment rate. Our figures did not confirm this hypothesis, possibly because of the small number of patients in each category in our study.

## Conclusions and recommendations

Unemployment as a result of epilepsy is a real problem in our society and people with epilepsy need medical care and better education. The social misconceptions about epilepsy should be corrected through the mass media and other means. A rehabilitation programme for epileptic patients is needed and should include psychological, social and occupational aspects. Epileptic clinics should also be established in the major hospitals.

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