

Public attitudes and knowledge toward epilepsy in ismailia governorate

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Objective

This study was conducted to find out knowledge and attitudes toward epilepsy among a sample of people living in Ismailia governorate in Egypt.

Patients and methods

A cross-sectional survey was conducted by using a face-to-face interview; 840 respondents were included, among whom 420 were from an urban area – Sheikh Zayed district – and 420 were from a rural area – Abu-Sultan village. The survey instrument was a 26-item questionnaire in Arabic form that was designed to evaluate knowledge and attitudes with respect to epilepsy.

Results

Of the 840 respondents, 91.2% had heard of or read about epilepsy, 24.8% knew someone with epilepsy, and 30.7% had witnessed a seizure. According to the respondents, the main cause of epilepsy was psychological disease (63.7%), followed by evil spirits (Jinn) (49.5%) and a form of insanity (47.4%). Approximately 70% of the respondents (70.7%) agreed that the intelligence of an epileptic patient is below average. About three-quarters of the respondents (74.6%) believed that epilepsy cannot be cured. More than 50% of the respondents believed that an epileptic patient could not get married (57.5%), nor have a child (58.7%). About 80% of the respondents refused to marry an epileptic patient (77.7%) or to marry their child to an epileptic patient (83.0%). Fifty-nine percent of the respondents would not offer a job to a person with epilepsy, and 41.1% refused working with an epileptic patients. The negative attitudes toward an epileptic person were more common among rural, female, less-educated, and elderly respondents.

Conclusion

Public perception of epilepsy is lacked and needs attention. The study revealed that practices and knowledge toward epilepsy were limited, especially with respect to epilepsy's cause, manifestation, and management. Continuing effective educational interventions would be needed to improve the appropriate understanding of epilepsy, and to ameliorate the social discrimination and misconceptions against epilepsy.

Keywords:

attitudes, knowledge, epilepsy

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Introduction

Nearly 80% of people with epilepsy (PWE) are found in developing countries, where epilepsy remains a major public health problem, not only because of its health implications but also for its social, cultural, psychological, and economic effects (Njamnshi *et al.*, 2010a, 2010b; Yemadje *et al.*, 2011).

It is well known that patients with epilepsy are socially discriminated on the grounds of widespread negative public attitudes and misconceptions. This discrimination against epileptic patients could also be because of the lack of knowledge and understanding about epilepsy (Aydemir, 2011).

Wrong perceptions and beliefs about epilepsy create serious negative social and psychological consequences

for PWE, such as fear, humiliation, and limitations in social interactions. One of the greatest challenges facing the optimal management of epilepsy is stigma and discrimination (Daoud *et al.*, 2007; Tuan *et al.*, 2007).

Persons with epilepsy are shunned and discriminated against with regard to education, employment, and marriage, because epilepsy is seen as a highly contagious illness. Assessment of deficiencies in knowledge and attitude among the general community would help press the point and identify the foci for increasing awareness and removing misinformation and

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false beliefs about epilepsy in a more targeted and effective manner (Ramasundrum *et al.*, 2000).

This discrimination against epileptic patients could also be because of the lack of knowledge and understanding about epilepsy (Olafsson and Hauser, 1999).

Patients and method

This study is a descriptive cross-sectional household study carried out to assess the awareness, knowledge, and attitudes toward epilepsy of a sample of people living in Ismailia governorate. The study was conducted at two randomly selected geographic areas of Ismailia governorate, including one urban area (Sheikh Zayed district) and a rural area (Abu-Sultan village).

This cross-sectional household survey (door-to-door survey) was applied to urban and rural people living in Ismailia governorate.

The calculated sample size was 840 respondents (420 from urban and 420 from rural areas). They were obtained by random preselection of specific blocks of household identified on local published maps.

Survey questionnaire

The survey instrument is a 29-item questionnaire in Arabic translated form designed to evaluate knowledge and attitudes with respect to epilepsy that had been used in recent studies (Jacoby

et al., 2004; Onwuekwe *et al.*, 2009; Aydemir, 2011; Yemadje *et al.*, 2011).

The questionnaire is in two parts: the first part elicited demographic information including name, age, sex, education, occupation, and history of epilepsy or seizures among family members.

The second part elicited knowledge and awareness of existence of epilepsy, attitudes toward epilepsy, employment, social activities, and first-aid measures and management of epilepsy.

Ethical considerations

An oral consent was taken from all the participants before taking any data or carrying out any investigations. Acceptance of ethical committee of faculty of medicine Suez Canal University was obtained on 5 June 2012.

Results

Demographic characteristics

A total of 840 respondents were interviewed; 420 (50%) were from Sheikh Zayed district (urban area) and 420 (50%) were from Abu-Sultan village (rural area). They were 485 (57.7%) men and 355 (42.3%) women. Their ages ranged from 18 to 79 years: 377 (44.9%) were less than 40 years and 463 (55.1%) were greater than 40 years, with a mean age of 36 ± 7.25 years. Their levels of education were 231 (27.5%) illiterate/read and write, 358 (42.6%) basic/secondary education, and 251 (29.8%) university/postgraduate education (Tables 1–6).

Table 1 Public attitude toward epileptic patients in Ismailia governorate

| Attitude items | Both areas [n (%)] (N=840) | Rural area [n (%)] (N=420) | Urban area [n (%)] (N=420) |
|---|-------------------------------|-------------------------------|-------------------------------|
| Not appropriate for marriage | 483 (57.5) | 288 (68.6)* | 195 (46.4) |
| Not appropriate for having children | 493 (58.7) | 306 (72.9)* | 187 (44.5) |
| Refusing marrying an epileptic person | 653 (77.7) | 360 (85.7)* | 293 (69.8) |
| Refusing marrying his son/daughter to an epileptic person | 697 (83.0) | 381 (90.7) | 316 (75.2) |
| Refusing their child to play with an epileptic friend | 436 (51.9) | 305 (72.6)** | 131 (31.2) |
| Should not live alone | 723 (86.1) | 365 (86.9) | 358 (85.2) |
| Could not get a high academic grade | 592 (70.5) | 344 (81.9)* | 248 (59.0) |
| Could not participate in social activities | 488 (58.1) | 299 (71.2)* | 189 (45.0) |
| Could not participate in sports activities | 546 (65.0) | 367 (87.4)* | 179 (42.6) |
| Refusing working with an epileptic person | 346 (41.1) | 239 (56.9)* | 107 (25.5) |
| Refusing offering a job to an epileptic person | 495 (58.9) | 316 (75.2)* | 179 (42.6) |
| An epileptic person cannot work as | | | |
| Driver | 806 (96.0) | 413 (98.3) | 393 (93.6) |
| Teacher | 549 (65.4) | 306 (72.9) | 243 (57.9) |
| Police office | 736 (87.6) | 387 (92.1) | 349 (83.1) |
| Industrial worker | 637 (75.8) | 317 (75.5) | 320 (76.2) |
| Physician or scientist | 556 (66.2) | 315 (75.0) | 241 (57.4) |

*Significant ($P < 0.05$). **Highly significant ($P < 0.01$).

Table 2 Public knowledge of causes of epilepsy, form of epileptic attacks, and intelligence of epileptic patient in Ismailia governorate

| Attitude items | Both areas [n (%)] (N=840) | Rural area [n (%)] (N=420) | Urban area [n (%)] (N=420) |
|--|----------------------------|----------------------------|----------------------------|
| Causes of epilepsy | | | |
| Birth defect | 223 (26.3) | 101 (24.0) | 122 (29.0) |
| Neurological disease | 322 (38.3) | 70 (16.7)** | 252 (60.0) |
| Hereditary | 338 (40.2) | 162 (38.6) | 176 (41.9) |
| Alcohol or drug abuse | 216 (25.7) | 9 (18.8) | 137 (32.6) |
| Evil spirits (Jinn) | 416 (49.5) | 318 (75.7)** | 98 (23.3) |
| Punishment from God | 206 (24.5) | 182 (43.3)** | 24 (5.7) |
| Psychological disease | 535 (63.7) | 209 (49.8)* | 326 (77.6) |
| A supernatural power | 38 (4.5) | 31 (7.4) | 7 (1.7) |
| Contagious disease | 335 (39.9) | 239 (56.9)* | 96 (22.9) |
| Form of insanity | 398 (47.4) | 301 (71.7)* | 97 (23.1) |
| Form of epileptic attack | | | |
| Foaming from the mouth | 269 (32.0) | 102 (24.3) | 167 (39.8) |
| Loss of consciousness | 396 (47.1) | 134 (31.9)* | 262 (62.4) |
| Screaming | 446 (53.1) | 336 (80.0)** | 110 (26.2) |
| Convulsion | 489 (58.2) | 67 (39.8)** | 322 (76.7) |
| Changes in behavior | 401 (47.7) | 327 (77.9)** | 74 (17.6) |
| Periods of amnesia | 151 (18.0) | 77 (18.3) | 74 (17.6) |
| Intelligence of epileptic patient | | | |
| Normal intelligence | 96 (11.4) | 30 (7.1) | 66 (15.7) |
| Below average | 594 (70.7) | 327 (77.9) | 267 (63.6) |
| Above average (genius) | 70 (8.3) | 37 (8.8) | 33 (7.9) |
| Uncertain | 80 (9.5) | 26 (6.2) | 54 (12.9) |

*Significant ($P<0.05$). **Highly significant ($P<0.01$).

Table 3 Public attitude toward management of epileptic patients in Ismailia governorate

| Attitude items | Both areas [n (%)] (N=840) | Rural area [n (%)] (N=420) | Urban area [n (%)] (N=420) |
|---|----------------------------|----------------------------|----------------------------|
| Can epilepsy be cured | 627 (74.6) | 359 (85.5) | 268 (63.8)* |
| Source of treatment | | | |
| Cupping | 222 (26.4) | 153 (36.4) | 69 (16.4) |
| Medical doctor | 441 (52.5) | 115 (27.4) | 326 (77.6)** |
| Holy Quran | 419 (49.9) | 264 (62.9) | 155 (36.9)* |
| Prayers | 139 (16.5) | 79 (18.8) | 60 (14.3) |
| Zamzam water | 136 (16.2) | 91 (21.7) | 45 (10.7) |
| Witchcraft–Sheikh | 411 (48.9) | 309 (73.6) | 102 (24.3)** |
| The need use of antiepileptic drugs | 536 (63.8) | 197 (46.9) | 339 (80.7)** |
| Need life-long drug treatment | | | |
| Knowing how to help during the seizure | 347 (41.3) | 141 (33.6) | 206 (49.0) |
| Ever performed first-aid seizure management | 306 (36.4) | 130 (31.0) | 176 (41.9) |
| First-aid seizure management | 229 (27.3) | 98 (23.3) | 131 (31.2) |
| First-aid seizure management | 286 (34.0) | 108 (25.7) | 178 (42.4) |
| Take them away from danger | 229 (27.3) | 92 (21.9) | 137 (32.6) |
| Put a spoon or cloth in the patient's mouth | 180 (21.4) | 97 (23.1) | 83 (19.8) |
| Force some medicine down the patient's throat | 392 (46.7) | 304 (72.4) | 88 (21.0)** |
| Hold arms/legs or tie them down | 138 (16.4) | 70 (16.7) | 68 (16.2) |
| Lying patient on his/her side | | | |
| Smelling eau de cologne or onion | 396 (47.1) | 319 (76.0) | 77 (18.3)** |
| Put a little water on his face | 396 (47.1) | 318 (75.7) | 78 (18.6)** |

*Significant ($P<0.05$). **Highly significant ($P<0.01$).

Discussion

Although the majority (91.2%) of respondents had heard about epilepsy, they were found to have little or inadequate knowledge about some aspects of this

chronic condition, such as the causes, clinical manifestation, and treatment of epilepsy.

The majority (63.7%) believed that it is a psychological disease, 49.5% believed that it was because of evil spirits

Table 4 Comparison between the knowledge of illiterate and read and write, basic and secondary educated, and university and postgraduate respondents of the knowledge of causes of epilepsy, form of epileptic attack, and intelligence of epileptic patients in Ismailia governorate

| Knowledge items | Illiterate and read and write [<i>n</i> (%)] (<i>N</i> =231) | Basic and secondary education [<i>n</i> (%)] (<i>N</i> =358) | University and postgraduate [<i>n</i> (%)] (<i>N</i> =251) | <i>P</i> -value |
|--|---|---|---|-----------------|
| Causes of epilepsy | | | | |
| Birth defect | 25 (10.8) | 142 (39.7) | 56 (22.3) | 0.026* |
| Neurological disease | 15 (6.4) | 95 (26.5) | 212 (84.5) | **0.009 |
| Hereditary | 62 (26.8) | 194 (54.2) | 82 (32.6) | *0.035 |
| Alcohol or drug abuse | 18 (7.8) | 142 (39.7) | 56 (22.3) | *0.039 |
| Evil spirits (Jinn) | 212 (91.8) | 171 (47.8) | 33 (13.1) | **0.002 |
| Punishment from God | 156 (67.5) | 45 (12.6) | 5 (2.0) | **0.001 |
| Psychological disease | 118 (51.1) | 237 (66.2) | 180 (71.7) | 0.179 |
| A supernatural power | 25 (10.8) | 9 (2.5) | 4 (1.6) | 0.689 |
| Contagious disease | 172 (74.5) | 137 (38.3) | 26 (10.4) | **0.003 |
| Form of insanity | 183 (79.2) | 175 (48.9) | 40 (15.9) | *0.026 |
| Form of epileptic attack | | | | |
| Foaming from the mouth | 51 (22.1) | 152 (42.5) | 66 (26.3) | 0.051 |
| Loss of consciousness | 88 (38.1) | 112 (31.3) | 196 (78.1) | **0.005 |
| Screaming | 180 (77.9) | 194 (54.2) | 72 (28.7) | *0.039 |
| Convulsion | 35 (15.2) | 239 (66.8) | 215 (85.7) | **0.006 |
| Changes in behavior | 152 (65.8) | 173 (48.3) | 76 (30.3) | 0.125 |
| Periods of amnesia | 27 (11.7) | 60 (16.7) | 64 (25.5) | 0.631 |
| Intelligence of epileptic patient | | | | |
| Normal intelligence | 7 (3.0) | 65 (18.2) | 24 (9.6) | 0.082 |
| Below average | 209 (90.5) | 199 (55.6) | 186 (74.1) | *0.016 |
| Uncertain | 6 (2.6) | 28 (7.8) | 36 (14.3) | 0.761 |
| Uncertain | 9 (3.9) | 66 (18.4) | 5 (1.9) | 0.164 |

N=840. *Significant (*P*<0.05). **Highly significant (*P*<0.01).

(Jinn), and 47.4% mentioned it as an insane disease. These results were more negative when compared with other studies. Only 3% in USA (Canger and Cornaggia, 1985), 8% in Italy (Mecarelli *et al.*, 2011), 1% in Denmark (Jensen and Dam, 1992), and 15% in Hungary (Mirnics *et al.*, 2001) considered epilepsy as an insane disease.

The possible reason behind this misconception could be the education level, as 70% of the respondents in our study were illiterate, and basic and secondary educated.

The study revealed only 38.3% of the respondents believed that the cause of epilepsy was neurological disease, and this concept was among highly educated respondents (84.5%), urban respondents (60%), and those who had family members with epilepsy (72.4%).

Only 36.4% of the respondents knew how to help an epileptic patient during the seizure attack, and only 34% of respondents knew that a person having seizure should be moved to a safe place. Incorrect measures such as presenting eau de cologne or onion for the patient to smell, putting a little of water on his face, and holding the extremities of the patient to end the seizures were favored by 47.1, 47, and 46.7% of the participants, respectively. A significant proportion would act dangerously by putting a spoon/cloth in the patient's mouth (27.3%) as a first-aid measure. These practices have their roots in cultural beliefs and misconceptions with respect to epilepsy in the society.

These results were more negative compared with other studies conducted in USA (82.1%) (Canger and Cornaggia, 1985), Canada (78.2%) (Fisher *et al.*, 2005), Germany (76.4%) (Canger and Cornaggia,

Table 5 Comparison between the knowledge of illiterate and read and write, basic and secondary educated, and university and postgraduate respondents of the knowledge of the management of epilepsy in Ismailia governorate

| Management items | Illiterate and read and write [n (%)] (N=231) | Basic and secondary education [n (%)] (N=358) | University and postgraduate [n (%)] (N=251) | P-value |
|---|--|--|--|----------------|
| Can epilepsy be cured | 222 (96.1) | 221 (61.7) | 184 (73.3) | 0.021* |
| Source of treatment | | | | |
| Cupping | 80 (34.6) | 103 (28.8) | 39 (15.5) | 0.333 |
| Medical doctor | 36 (15.6) | 189 (52.8) | 216 (86.1) | 0.006** |
| Holy Quran | 83 (35.9) | 214 (59.8) | 122 (48.6) | *0.048 |
| Prayers | 66 (28.6) | 47 (13.1) | 26 (10.4) | 0.091 |
| Zamzam water | 34 (14.7) | 71 (19.8) | 31 (12.4) | 0.264 |
| Witchcraft–Sheikh | 216 (93.5) | 123 (34.5) | 72 (28.7) | **0.003 |
| The need use of antiepileptic drugs | 202 (87.4) | 138 (38.5) | 196 (78.1) | *0.043 |
| Need life-long drug treatment | 206 (89.2) | 95 (26.5) | 46 (18.3) | **0.009 |
| Knowing how to help during the seizure | | | | |
| Ever performed first-aid seizure management | 78 (33.7) | 125 (34.9) | 103 (41.1) | 0.521 |
| First-aid seizure management | 43 (18.6) | 101 (28.2) | 85 (33.9) | 0.234 |
| Take them away from danger | 83 (35.9) | 125 (34.9) | 78 (31.1) | 0.821 |
| Put a spoon or cloth in the patient's mouth | 43 (18.6) | 94 (26.3) | 92 (36.7) | 0.165 |
| Force some medicine down the patient's throat | 63 (27.3) | 81 (22.6) | 36 (14.3) | 0.094 |
| Hold arms/legs or tie them down | 177 (76.6) | 187 (52.2) | 28 (11.2) | 0.007** |
| Laying patient on his/her side | 35 (15.2) | 77 (21.5) | 26 (10.4) | 0.210 |
| Smelling eau de cologne or onion | 196 (84.8) | 168 (46.9) | 32 (12.7) | 0.002** |
| Put a little water on his face | 192 (83.1) | 165 (46.1) | 39 (15.5) | 0.006** |

N=840. *Significant ($P<0.05$). **Highly significant ($P<0.01$).

Table 6 Comparison between the attitude of illiterate and read and write, basic and secondary educated, and university and postgraduate respondents toward epileptic patients in Ismailia governorate

| Attitude items | Illiterate and read and write [n (%)] (N=231) | Basic and secondary education [n (%)] (N=358) | University and postgraduate [n (%)] (N=251) | P-value |
|---|--|--|--|----------------|
| Social activities | | | | |
| Not appropriate for marriage | 182 (78.8) | 157 (43.9) | 144 (57.3) | *0.045 |
| Not appropriate for having a child | 163 (70.6) | 218 (60.9) | 112 (44.6) | *0.049 |
| Refused marrying a person with epilepsy | 201 (87.1) | 279 (77.9) | 173 (68.9) | 0.132 |
| Refused marrying their son/daughter to a person with epilepsy | 221 (95.7) | 293 (81.8) | 183 (72.9) | 0.532 |
| Refused their child to play with a friend with epilepsy | 114 (49.4) | 223 (62.3) | 99 (39.4) | *0.046 |
| Should not live alone | 219 (94.8) | 278 (77.6) | 226 (90.1) | 0.321 |
| Could not get a high academic grade | 186 (80.1) | 264 (73.7) | 142 (56.5) | 0.086 |
| Could not participate in social activities | 169 (73.2) | 163 (45.5) | 156 (62.2) | 0.042* |
| Could not participate in sports activities | 201 (87.0) | 183 (51.1) | 162 (64.5) | 0.029* |
| Job preference for epileptics | | | | |
| Refused working with a person with epilepsy | 146 (63.2) | 114 (31.8) | 86 (34.3) | 0.043* |
| Refused offering a job to a person with epilepsy | 186 (80.5) | 202 (56.4) | 107 (42.6) | 0.028* |
| Jobs people with epilepsy cannot do | | | | |
| Driving | 210 (90.1) | 350 (97.7) | 246 (98.1) | 0.721 |
| Teacher | 226 (97.8) | 206 (57.5) | 117 (46.6) | 0.007** |
| Police office | 217 (93.7) | 290 (81.0) | 229 (91.2) | 0.665 |
| Construction and industrial workers | 143 (61.9) | 249 (69.5) | 245 (97.6) | 0.039* |
| Physician or scientist | 179 (77.5) | 234 (65.4) | 143 (56.9) | 0.071 |

N=840. *Significant ($P<0.05$). **Highly significant ($P<0.01$).

1985), Iceland (54.3%) (Olafsson and Hauser, 1999), and Croatia (66.3%) (Bagić *et al.*, 2009); they would take the epileptic patient away from danger during the seizure attack.

The study revealed only 52.5% of the respondents would recommend a medical doctor as a source of treatment of epilepsy; this percentage was higher among highly educated (86.1%), urban (77.6%), and male respondents (63.7%), and among respondents with family members with epilepsy (65.8%).

On the other hand, 49.4% of the respondents would recommend Holy Quran, 48.9% would recommend witchcraft–Sheikh, and 26.4% would recommend cupping as sources of treatment for epilepsy. Among them, 93.5% of less-educated respondents of rural areas, as well as women, would recommend witchcraft–Sheikh as a source of treatment.

This perception may be in line with beliefs that epilepsy is due to a spell or evil spirit possession. Such misperception was in agreement with a study conducted in Cameroon (Njamnshi *et al.*, 2010a, 2010b), in which God's help, magician healer, and medical doctor were recommended for treatments of epilepsy.

Studies conducted in USA (90.2%) (Canger and Cornaggia, 1985), Italy (86.5%) (Mecarelli *et al.*, 2011), Canada (85.4%) (Fisher *et al.*, 2005), Taiwan (66.9%) (Chung *et al.*, 1995), Croatia (67%) (Bagić *et al.*, 2009), Austria (93.1%) (Spatt *et al.*, 2005), Greece (79.1%) (Diamantopoulos *et al.*, 2006), and Denmark (78.4%) (Jensen and Dam, 1992) would recommend a medical doctor as a main source of treatment of epilepsy.

Unfortunately, 77.7% of respondents would object to marry a person with epilepsy, and 83% would object the marriage of their sons/daughters with a person with epilepsy.

The study revealed unfortunately, a high proportion of urban, highly educated, university and postgraduated, younger respondents and even those who had family members with epilepsy also refused their marriage or the marriage of their sons/daughters to an epileptic patient. These negative attitudes are mostly related to wrong beliefs about the causes of epilepsy. These results were more negative compared with other studies conducted in Seoul (37.8%) (Choi-Kwon *et al.*, 2004), USA (18%) (Canger and Cornaggia, 1985), Hungary (32%) (Mirnics *et al.*, 2001),

Taiwan (28%) (Chung *et al.*, 1995), Italy (13.5%) (Mecarelli *et al.*, 2011), Canada (22%) (Fisher *et al.*, 2005), Croatia (19.1%) (Canger and Cornaggia, 1985), and Denmark (22.4%) (Jensen and Dam, 1992); they refused marrying an epileptic person.

Significantly, half (51.9%) of the respondents refused their children to play or share activities with an epileptic person; even a high proportion of highly educated respondents refused their children to play or share activities with an epileptic person. These results were more negative compared with studies conducted in Seoul (18.10%) (Choi-Kwon *et al.*, 2004), USA (6%) (Canger and Cornaggia, 1985), UAE (7%) (Bener *et al.*, 1998), Italy (11%) (Mecarelli *et al.*, 2011), Hungary (15.70%) (Mirnics *et al.*, 2001), Denmark (13%) (Jensen and Dam, 1992), Germany (9.5%) (Canger and Cornaggia, 1985), Taiwan (18%) (Chung *et al.*, 1995), and Greece (34.3%) (Diamantopoulos *et al.*, 2006).

Significantly, more than half (58.1% and 65%) in social and sport respectively of the respondents in our study believed that an epileptic person should not participate in social or sports activities. This misconception was more common in women, illiterate, and rural respondents. Unfortunately, a high proportion of highly educated respondents had the same concept. These results were more negative than other studies conducted in Denmark (8.7, 12.5%) (Jensen and Dam, 1992), France (6.9, 5.3%) (Nubukpo *et al.*, 2003), Germany (11.6, 10.8%) (Canger and Cornaggia, 1985), USA (6.3, 7.2%) (Canger and Cornaggia, 1985), Turkey (17.3, 15.9%) (Aydemir, 2011), and in a Canadian study (11.6, 13.1%) (Fisher *et al.*, 2005), respectively.

Unfortunately, a majority (70.5%) of the respondents believed that an epileptic person could not get a high academic grade like healthy individuals as the person was not intelligent, as 70.7% of them consider an epileptic patient to have below-average IQ. This negative believes differs from studies conducted in other countries: USA, only 9.7% (Canger and Cornaggia, 1985); Canada, 11.1% (Fisher *et al.*, 2005); Germany, 6.9% (Canger and Cornaggia, 1985); and Malaysia, 14.9% (Hasan *et al.*, 2010).

Significantly, more than the half (58.9%) of the respondents would not offer a job to a person with epilepsy, and 41.1% of them refused working with a person with epilepsy.

These results were more negative compared with other studies conducted in Seoul (37.5%) (Choi-Kwon *et al.*,

2004), USA (9%) (Canger and Cornaggia, 1985), and Italy (15%).

Driving (96.0%) and police officer (87.6%) were regarded as the most unsuitable jobs for epileptic persons in this study. Other jobs rated by the respondents include construction and industrial workers (75.8%), physician or scientist (66.2%), and teacher (65.4%). The result is more negative than UK study (Jacoby *et al.*, 2004) that show police office (46%) and armed forces (57%) are the most unsuitable jobs for epileptic patients. However, it might be necessary that the society recognize that some of these occupations can be done by PWE when the disorder is well under control.

Conclusion

The general Egyptian population in the selected areas had poor knowledge and negative attitudes toward an epileptic person. The majority of the negative attitudes were significantly associated with the misunderstanding of epilepsy.

Recommendations

- (1) Well-organized educational campaigns and media (TV, radio, internet) are needed to improve public perception about epilepsy; efforts to increase public awareness and knowledge are motivated by the expectation that information that reduces the misconceptions and misinformation will improve attitudes and, ultimately, behavior toward PWE and thereby reduce stigma.
- (2) Aggressive and sustained efforts are needed to eradicate this deep-rooted social stigma. It is hoped that the end result would be the provision of a supportive and caring environment in which PWE can live and function better.

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Conflicts of interest

There are no conflicts of interest.

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