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Knowledge of obstetrician and family medicine doctors in Saudi Arabia about women with epilepsy

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Abstract

Background: Women have a slightly lower prevalence of epilepsy and unprovoked seizures than men; however, women with epilepsy have several exceptional dilemmas, including the use of anti-seizure medications (ASMs) in addition to the effects of ASMs on sexual function, contraception, pregnancy, childbirth, congenital fetal malformations, and breastfeeding. This study assessed the knowledge of obstetricians and family medicine physicians about relevant topics and concerns of women with epilepsy (WWE) in Saudi Arabia.

Results: Out of 108 participants recruited for the study, the largest percentage (62%) was residents, while 17.6% were consultants and the remaining 20.4% were specialists or fellows. In terms of specialty, 61.1% of the participants were obstetricians, while the remaining 38.9% were family medicine physicians. The participants showed varied levels of knowledge about important health issues ranging from 71.3% (ASMs and breastfeeding) to 11.5% (percent of children at risk for major birth defects) for WWE. Knowledge scores of health issues for WWE were significantly higher among obstetricians compared to family medicine physicians (6.16 ± 2.75 vs. 4.29 ± 1.95; $p < 0.001$). Similarly, scores were significantly higher among consultants/fellows compared to residents/specialists (7.27 ± 1.62 vs. 4.65 ± 2.56; $p < 0.001$).

Conclusions: Inadequate knowledge about several vital WWE issues was observed, particularly the hormonal influence of estrogen and progesterone on the control of convulsions, high likelihood of osteomalacia among WWE, and high rate of sexual dysfunction among them. This insufficient knowledge among healthcare providers could negatively influence epilepsy-related counseling for WWE.

Keywords: Women with epilepsy, Obstetrician, Family medicine physicians, Saudi Arabia

Background

Epilepsy is a heterogeneous condition characterized by recurrent unprovoked seizures not attributed to metabolic, toxic disturbances, or an acute central nervous system insult [1]. It is one of the most common neurological conditions, with approximately 50 million people affected worldwide [2].

The prevalence of epilepsy in women is lower than in men; however, women with epilepsy have multiple issues that should be considered, such as the use of ASMs, and the effects of these drugs on sexual function, contraception, pregnancy, childbirth, congenital fetal malformations, and breastfeeding. Moreover, 50% of women and girls with epilepsy are within the reproductive age range [3, 4]. There is a bidirectional relationship between women's hormonal changes and seizures as hormones influence seizures. In contrast, seizures impact hormones and result in disturbing reproductive endocrine function. Additionally, female sex steroid hormones, progesterone, and its metabolites are anticonvulsants, while estrogens are mainly proconvulsant. Conclusively, the monthly

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fluctuations in female sex hormone levels are responsible for catamenial seizures [5]. On the other hand, ASMs have endocrine side effects that might impact fertility, sexuality, thyroid function, and bone health, which impact their well-being and quality of life in WWE. ASMs treatment can change the levels of different sex hormones, such as increasing sex hormone-binding globulin (SHBG) concentrations in women, which can reduce levels of bioactive testosterone and estradiol, which may cause menstrual disturbances, sexual problems, and reduction of fertility [6].

Indeed, 90% of WWE deliver healthy babies [7]; however, some ASMs have been associated with pregnancy-related complications, such as a negative impact on cognitive outcomes and major congenital malformations in offspring [8–10].

A literature review indicates that the physicians' knowledge of WWE is lacking, particularly about the menstrual cycle, impact on seizure activity, contraceptives, ASMs interaction, pharmacokinetic alternations during pregnancy, teratogenicity effects, breastfeeding, and effects of ASMs on bone health and sexual function [11–14]. Two different studies showed that more than half of the reviewed women received inadequate information from their treating physician on the impact and consequence of epilepsy on their health [12, 13].

In line with that, doctors' knowledge about WWE has been thoroughly addressed in the literature. The Epilepsy Foundation conducted an extensive study among 3500 healthcare workers. It concluded that only 5% of those likely to treat WWE correctly answered at least two-thirds of the questions concerning these issues [12, 14].

Obstetricians and family medicine physicians were selected in this study because they significantly contribute to healthcare for WWE during pregnancy and labor. Therefore, this study was conducted to assess the knowledge of obstetricians and family medicine physicians about WWE in Saudi Arabia.

Methods

A cross-sectional study was conducted in Saudi Arabia between September–November 2021. The participants were invited to complete a 10-item survey adopted from the Knowledge of women's issues and epilepsy (KOWIE-II) questionnaire: a survey of health care professionals. It includes items specific to issues that affect WWE [15], including hormone-sensitive seizures and effects of ASMs on oral contraception, bone health, sexual function, pregnancy, and breastfeeding. This questionnaire has been standardized and was established by Long and Montour to evaluate healthcare professionals' knowledge regarding specific WWE issues. Permission was obtained from the corresponding author to use the questionnaire in this study. We added the following four items to suit the study objectives: for some women with epilepsy, there is a relationship between seizures and the hormonal cycle; reproductive disorders occur more frequently in WWE than in women without epilepsy. Do you recommend WWE on ASMs to breastfeed her baby? Moreover, what is the minimum amount of folic acid that must be advised to a WWE of childbearing potential under ASMs?". The new questionnaire was face validated by three consultants in pediatrics and community medicine, and the Cronbach's alpha value for internal consistency was 0.81. We used an online survey (Google form), allowing data collection through a personalized survey. Information was automatically collected from software programs and converted into an excel sheet. This method was utilized to increase the number of study participants.

We distributed the questionnaire through the WhatsApp application to groups of family medicine and obstetricians in the Western, Eastern, Northern, Southern, and Central areas of Saudi Arabia.

Results

Out of 108 participants recruited for the study, the most significant percentage was residents (62%), while 17.6% of the participants were consultants, 16.7% were specialists, and 3.7% were fellows. In terms of specialty, it was found that 61.1% of the participants were obstetricians, while the remaining 38.9% were family medicine physicians (Fig. 1).

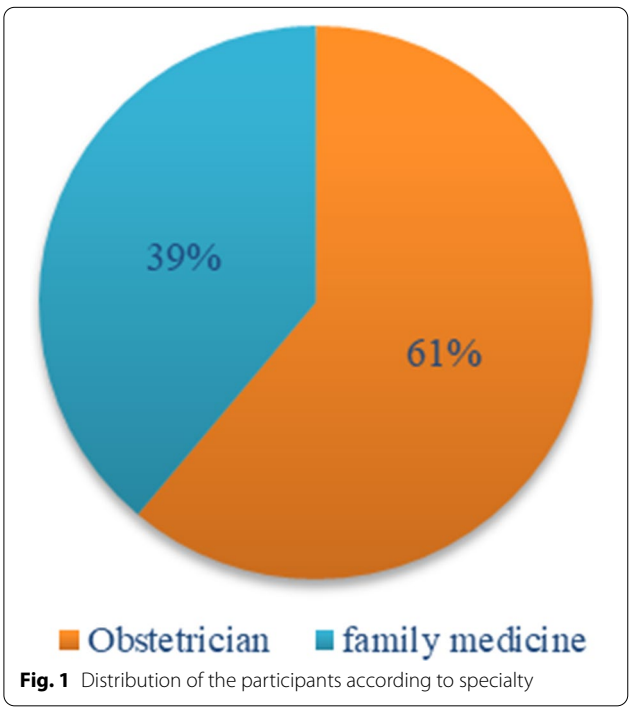

Fig. 1 Distribution of the participants according to specialty

Participants' responses to the 14-item questionnaire were corrected and classified as correct, incorrect, or unsure (Table 1). The participants showed varied levels of knowledge about health issues of importance to WWE, ranging from 71.3% (ASMs and breastfeeding) to 11.5% (percent of children at risk for major birth defects). However, it was apparent that many participants (11.3% to 75%) were aware of their knowledge defects, as indicated by responding with the "unsure" option rather than guessing incorrectly.

Knowledge scores of health issues for WWE were significantly higher among obstetricians compared to family medicine physicians (6.16 ± 2.75 versus 4.29 ± 1.95; $p < 0.001$). Similarly, scores were significantly higher among consultants and fellows compared to residents and specialists (7.27 ± 1.62 versus 4.65 ± 2.56; $p < 0.001$), as shown in Table 2.

Table 2 Distribution of participants knowledge scores according to medical specialty and position

	Mean ± SD	Median (25–75%)	*p*-value
Specialty			
Obstetrician	6.16 ± 2.75	6 (5–8)	< 0.001*
Family medicine	4.29 ± 1.95	4 (3–6)	
Position			
Consultant/fellow	7.27 ± 1.62	7 (6–8)	
Resident/specialist	4.65 ± 2.56	4 (3–5)	< 0.001*
Overall	5.40 ± 2.61	5 (3–7)	

* Significant difference at 0.05 level (Mann–Whitney test)

Discussion

Most WWE reported not receiving proper counseling concerning epilepsy and related issues [16]. This poor communication can be resolved by improving knowledge among healthcare providers dealing with these women. Providing better healthcare to WWE necessitates having good awareness and relevance about these issues among healthcare providers. In the present study, significant gaps were observed; the median score of surveyed obstetricians and family medicine physicians was only 50%.

Most participants (86.2%) in the current study were not aware of the fact that during the menstrual cycle, estrogen was found to be a proconvulsant, while progesterone has anticonvulsant properties. This finding was reported by Bhat et al. (60%) [11], Long and Montouris (86%) [12], and Morrell (83%) [4].

Seventy percent of the participants knew that some ASMs interact and can compromise the efficacy of oral contraception. However, most participants did not know the dose of ASMs causing these interactions. This finding is comparable to what has been reported by Morrell (95%) [4], Long and Montouris (71%) [12], and Bhat et al. (95%) [11].

Most of the study participants were either unsure of the answer or incorrectly answered the question about the percentage of children born to WWE who are at risk for major birth defects, while only 11.5% were aware that most WWE have healthy children. This result is similar to what has been reported by Long and Montouris (86%) [12] and Bhat et al. (91%) [11]; both studies used the "KOWIE II" questionnaire.

Almost half (46.3%) of our participants could recognize the association between ASMs and osteomalacia.

Table 1 Knowledge and awareness of health issues for women with epilepsy

Statements	Correct	Incorrect	Unsure
For some women with epilepsy, there is a relationship between seizures and the hormonal cycle	66 (61.1%)	15 (13.9%)	27 (25%)
Reproductive disorders occur more frequently in WWE than in women without epilepsy	38 (35.2%)	36 (33.3%)	34 (31.5%)
Women with epilepsy on ASMs have a higher oral contraception pill failure rate	76 (70.4%)	15 (13.9%)	17 (15.7%)
To the best of your knowledge, which of the following ASMs interferes with levels of oral contraceptives?	18 (34.6%)	15 (28.9%)	19 (36.5%)
WWE have a lower fertility rate than women who do not have epilepsy	31 (28.7%)	66 (61.1%)	11 (10.2%)
WWE should not get pregnant while taking ASMs	23 (44.2%)	20 (38.5%)	9 (17.3%)
What percent of children born to a WWE is at risk for major birth defects?	6 (11.5%)	25 (48.1%)	21 (40.4%)
Estrogen has an inhibitory effect on neurons, whereas progesterone has an excitatory effect	24 (22.2%)	20 (18.5%)	64 (59.3%)
What minimum amount of folic acid must be advised to a WWE of childbearing potential under ASMs?	13 (25%)	39 (75%)	0 (0%)
What is the rate of patients with epilepsy who usually have sexual dysfunction?	8 (15.4%)	21 (40.4%)	23 (44.2%)
Studies on WWE indicate higher incidences of sexual dysfunction?	16 (30.8%)	14 (26.9%)	22 (42.3%)
Does WWE have sexual dysfunction?	19 (36.5%)	11 (21.2%)	22 (42.3%)
WWE are at higher risk for osteoporosis	50 (46.3%)	26 (24.1%)	32 (29.6%)
Do you recommend WWE on ASMs to breastfeed her baby?	77 (71.3%)	31 (28.7%)	0 (0%)

This finding agrees with what has been mentioned by Bhat et al. (45%) [11]. However, it is lower than that figure documented by Long and Montouris (77%) [12]. This discrepancy could be partially attributed to variations in cultural competence.

Moreover, almost a third (36.5%) of our participants were aware that WWE has sexual dysfunction, while most were either unsure (63.5%) or incorrectly answered this question. This figure is comparable to other figures reported by Bhat et al. (30%) [11] and Long and Montouris (37%) [12].

Indeed, most of the participants (61.1%) in the current study were aware that taking ASMs should not prevent WWE from becoming pregnant. This figure is lower than what has been reported by Bhat et al. (95%) [11] and Long and Montouris (75%) [12].

On the one hand, most participants (71.3%) recommend that WWE taking ASMs should breastfeed their babies. On the other hand, only 25% of the participants failed to identify the recommended minimum dose of supplemental folic acid.

Our study results indicate that the obstetrician's score was higher (6.16 ± 2.75) when compared with family medicine physicians (4.29 ± 1.95), and the Mann–Whitney test showed a significant difference in the median scores between obstetricians and family medicine physicians. In addition, the results showed that consultants and fellow doctors scored higher (7.27 ± 1.62) than residents and specialist doctors (4.65 ± 2.56), probably attributed to more experience of obstetricians and consultants for being in more touch with patients in this regard compared to family medicine physicians and residents.

Furthermore, the Mann–Whitney test showed a significant difference in the median scores between the two groups. Finally, the results show that the mean score for all participants is (5.4 ± 2.61).

The results revealed that obstetricians and consultants or fellow doctors had slightly better knowledge regarding WWE issues than family medicine physicians, residents, and specialists. However, the result indicates a general lack of knowledge among participants regarding issues of WWE as the highest scores among the groups were recorded by consultants and fellows with only 7.27 correct answers out of 14 questions. Hence, doctors have a responsibility to improve their knowledge of women's health in epilepsy and the importance of enhancing doctors' education and training programs.

The study has the following limitations: (1) the relatively small sample size, which could impact the generalizability of our findings over a similar population, and (2) the response rate cannot be estimated because of the study nature; therefore, the participants did not accurately represent all doctors concerned with WWE. Therefore, a more extensive field study, avoiding an online technique, is warranted to increase the sample size and response rate. Despite these limitations, this study is the first to assess the knowledge of obstetricians and family medicine doctors about WWE-related issues in Saudi Arabia.

Conclusions

The present study revealed a lack of understanding regarding several crucial aspects of WWE, including the hormonal influence of estrogen and progesterone on the control of seizures, the high chance of osteomalacia among them, and the high prevalence of sexual dysfunction among them. Furthermore, insufficient awareness of pregnancy-related concerns, such as the selection of ASMs during pregnancy and their safety during breastfeeding, was also noted. This lack of information among healthcare professionals may negatively impact counseling for WWE. We recommend that all healthcare professionals receive well-planned training in this area, taking into consideration cultural differences, to enhance their understanding and treatment of WWE. The dissemination of information regarding WWE-related issues through workshops is proposed. This will not only increase the quality of treatment provided by a variety of obstetricians and family physicians, but it will also make it simpler for the teaching and non-teaching health sectors to collaborate more.

Abbreviations

ASMs: Anti-seizure medications; WWE: Women with epilepsy; SHBG: Sex hormone-binding globulin; KOWIE-II: Knowledge of women's issues and epilepsy.

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Author contributions

RFA, GMA, KMA, and AAA conceived the study and participated in its design and coordination and helped to draft the manuscript. RFA and RAA participated in the design of the study and performed the statistical analysis. AAA reviewed and revised the manuscript. All authors have agreed to conditions noted on the Authorship Agreement Form. All authors read and approved the final manuscript.

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Availability of data and materials

Not applicable.

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board (IRB log number 21-307) of King Fahad Medical City. However, consent from the participants was not applicable.

Consent for publication
Not applicable.

Competing interests
The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

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