

Sexual Functions of Female Patients with Chronic Liver Disease from Two Centers in Nigeria

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Abstract

Background: Chronic liver disease (CLD) is a disease with significant morbidity and mortality in Nigeria. This study assessed the sexual functions of women with chronic hepatitis B infection (CHB), liver cirrhosis (LC), and hepatocellular carcinoma (HCC) designated as cases and normal women as controls. **Methods:** A prospective, comparative, case-control study of CHB, LC, HCC, and controls. Consenting cases and controls completed a self-administered Female Sexual Function Questionnaire (FSFI). Bio-data was obtained for all participants and cases were graded using the Child-Turcotte-Pugh scores (CTP). Data obtained were entered into SPSS version 20 and analyzed using descriptive and inferential statistics. **Results:** A total of 176 women completed the study, comprising 88 cases and 88 controls. Mean age (standard deviation) was 39.5 + 8.5 years and 40.5 + 8.2 years for cases and controls, respectively. Cases comprised CHB – 46, LC – 25, and HCC – 17, and their CTP classes were CTP A, 54; CTP B, 22; and CTP C, 12. The FSFI scores for CHB compared with controls were not statistically significant in all domains of the FSFI. The FSFI scores for LC and HCC in all domains were statistically significant compared with controls. Total mean FSFI scores for cases in CTP Class C showed sexual dysfunction, where 13.6% of CLD and 6.8% of all participants had sexual dysfunction and none among the controls. **Conclusions:** Females with advanced CLD had sexual dysfunction. Sexual concerns of females with CLD should be inquired for and treated.

Keywords: Chronic liver disease, females, Nigeria, sexual functions

INTRODUCTION

Chronic liver disease (CLD) is a disease of the liver resulting from an inflammatory, infiltrative, immunologic, circulatory, or metabolic injury to the liver, a process which has been going on for a long time, usually for a period of 6 months or longer without complete resolution.^[1] CLD is an important cause of morbidity and mortality in Nigeria.^[2] CLD in Nigeria is majorly of four types, namely, liver cirrhosis (LC), hepatocellular carcinoma (HCC), chronic hepatitis B virus infection (CHB), and hepatosplenic schistosomiasis.^[1] Hepatitis B virus infection is the most common cause of CLD in Nigeria.^[3] Most cases of CHB infection either progress to LC or HCC. Moreover, majority of HCC in Nigeria occur on a background of LC in up to 70%–80% of cases.^[3]

Female sexual dysfunction is frequent in Western countries in up to 30%–50% of Americans and Germans.^[4,5] Female sexual dysfunctions include persistent or recurrent disorders of sexual interest/desire, disorders of subjective genital arousal,

orgasm disorder, and pain and difficulty with attempted or completed intercourse.^[6] Female sexual dysfunction tends to be age-related, progressive, and sometimes, could have a background emotional problem or a background medical or organic problem.^[7-9] Female sexual dysfunction has been demonstrated among Egyptian women with chronic hepatitis C infection using the Female Sexual Function Index (FSFI) questionnaire when compared with controls.^[10] Chronic hepatitis C is the most prevalent type of hepatitis infection in Egypt. Nigeria, on the other hand, has a high prevalence rate of hepatitis B infection averaging 10%–15% of the 170 million population, as well as other types of CLDs such as LC

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and HCC that affect the health of women. There is virtually no study to the best of our knowledge on the sexual functions of women with CLD in Nigeria. This study therefore investigated the sexual functions of women having the prevalent types of CLD in Nigeria, namely, CHB, LC, and HCC, and compared same with normal married women as controls, using a standard FSFI. The study also looked at the degree of liver disease severity and how they relate to their sexual functions among cases and controls.

METHODS

This was a prospective, comparative, case-control study carried out at two tertiary centers both in Southwest Nigeria from August 2009 to December 2017. Both hospitals are Federal Tertiary Centers with various disciplines, including a gastrointestinal unit. The centers receive referrals from neighboring two other states. The gastrointestinal unit in one of the centers runs one clinic on a weekly basis and takes care of gastrointestinal cases. The clinic is manned by two consultant gastroenterologists and about four senior residents and at least three nurses. The clinic receives a wide range of referrals of gastrointestinal diseases including cases of CHB infection, LC, and HCC. Sample size for this study was calculated from the formula, $n = z^2 P (1-p)/d^2$ using a liver disease admission prevalence rate of 9.7%,^[11] which puts the sample size at 111 and approximated to 110 cases. These were divided among the three disease types in the proportion of 1:1:1 or 2:1:1 (CHB:LC:HCC) for equal representation. The cases were married women with CHB, LC, and HCC, while the controls were normal women that were also married.

Cases of CHB infection were diagnosed based on the persistence of hepatitis B surface antigen (HBsAg) positivity for >6 months or the presence of anti-HBc IgG antibody and absence of IgM antibody in a patient who tested positive to the HBsAg, for <6 months. LC and HCC were diagnosed based on history, biochemical, ultrasound, and/or histology or tumor marker in patients with the clinical findings suggestive of both diseases. Liver disease severity in the cases was graded using the Child-Turcotte-Pugh scoring (CTP) system after the relevant tests and clinical examination. Cases included were those aged 18 years and above who were stable and were living with their spouses with a steady partner relationship. The study excluded cases of CHB, LC, and HCC that were not married, separated, or living apart from their partners or those that have lost their partners. Furthermore, cases that presented in hepatic encephalopathy or in coma from any cause were excluded. In addition, those that presented with any emergency condition such as upper gastrointestinal bleeding were excluded. Consenting cases were recruited consecutively; each gave informed consent and thereafter completed a self-administered questionnaire, using the FSFI.

Non-English speaking participants had the questionnaire explained to them in the native language by a trained female assistant. The FSFI is a brief questionnaire designed to measure

sexual functioning in women with specific focus on sexual desire, arousal, lubrication, orgasm, satisfaction, and pain.^[12] Each set of items under specific focus of the FSFI was scored according to the patient's response. The FSFI has been shown to have a high reliability and psychometric and clinical validity. The internal consistency of the domains of the FSFI ranged from 0.65 to 0.91 and test-retest reliability ranged from 0.21 to 0.71 for Cohen's weighted kappa and 0.42–0.78 for Pearson's correlation coefficient.^[13] A total mean score of ≤ 26.55 was regarded as sexual dysfunction on the FSFI.^[14] The FSFI has previously been validated among Nigerians and used among diabetic women.^[15] Included cases also had their bio-data and the body mass index (BMI) recorded and calculated, respectively. Age and sex matched and married women as controls, who were also living with their spouses with a steady partner relationship, were selected randomly among women. This control group was of two categories. Cases who came for routine medical test of fitness to the general outpatient clinic as well as those referred to the gastrointestinal endoscopy unit from within and outside the hospital and all had no clinical evidence of liver disease. The controls also completed a self-administered FSFI questionnaire and their scores were compared with the scores of the cases with CLD. Bio-data of the controls as well as BMI were done. Ethical clearance for this study was obtained from one of the centers with approval number FMC/OW/380/VOL.1X/150.

Hepatitis B virus tests as well as hepatitis C test were done using an ELISA HBsAg test kit and anti-hepatitis C virus (HCV) for all cases; the results were extracted from among the tests done by the cases.

Statistical analysis

The data obtained were entered into a computer software SPSS version 20 and frequencies were generated. The FSFI mean score, range, median, as well as the total scores of cases and controls under each scored item were computed when the cases were divided according to their liver disease types. The cases were further subdivided according to their liver disease severity using the CTP and their FSFI scores were also computed alongside with their controls. The mean scores of both cases and controls were compared using the Student's *t*-test. Categorical variables were compared by means of a Chi-square test. The significant level was put at $P < 0.05$.

RESULTS

A total of 176 women completed the study. These comprised CHB infection (46 cases) and 46 controls, LC (25 cases) and 25 controls, and HCC (17 cases) and 17 controls. The age for cases and controls ranged from 22 to 69 and 25 to 61 years, respectively. The mean age (+standard deviation [SD]) of the cases was 39.5 ± 8.5 years, while that of the controls was 40.5 ± 8.2 years. The mean (+SD) ages for CHB, LC, and HCC were 37.9 ± 6.1 years, 42.6 ± 10.1 years, and 39.4 ± 10.6 years, respectively. There were 54 (61.4%) cases in CTP Class A, 22 (25.0%) in CTP Class B, and 12 (13.6%) in CTP Class

C. All (100%) cases of CHB were HBsAg positive, while 19 (45.2%) among LC and HCC cases were HBsAg positive. None of the 88 cases was HCV positive. The BMI of the cases compared with controls showed that a significantly higher proportion of the controls were in the overweight and obese categories compared with the cases [Table 1].

The FSFI scores of CHB cases compared with controls showed that the domains of desire, arousal, lubrication, orgasm, satisfaction, and pain were not statistically significant. The FSFI scores for cases with LC on the other hand for the domains of desire, arousal, lubrication, satisfaction, and pain were all low and statistically significant when compared with controls [Table 2]. The total mean score for cases with LC was lower than those of controls but was higher than 26.55 regarded as sexual dysfunction on the FSFI score [Table 2], which means that they did not have sexual dysfunction. The FSFI scores for HCC in all domains compared with controls were all low and statistically significant. Total mean FSFI score was also low when compared with controls, but was higher than 26.55, which means that they also did not have sexual dysfunction. There was a reduction trend in the total mean FSFI score from CHB to LC and HCC [Table 2]. Furthermore, the mean total FSFI scores according to CLD type showed a reduction trend from CHB to LC and HCC.

The FSFI scores of cases when they were divided according to their liver disease severity using the CTP score showed that the FSFI scores for those in CTP Class A compared with controls were not statistically significant in all the domains of the FSFI [Table 3]. The FSFI scores for those in CTP Class B compared with controls showed that the domains of desire, arousal, lubrication, orgasm, satisfaction, and pain were low and statistically significant. Total mean FSFI score of cases

in this CTP Class B compared with controls was statistically significant but, higher than 26.55, which means that there was no sexual dysfunction.

The FSFI scores of cases compared with controls in CTP Class C showed that the scores in the domains of lubrication, orgasm, and satisfaction were statistically significant. More importantly is the fact that the total mean FSFI scores for cases were below 26.55 which translates to sexual dysfunction. The total mean FSFI score was also statistically significant compared with controls. Moreover, the total mean FSFI scores reduced gradually for cases in CTP Class A from 61.30 ± 23.24 to 33.45 ± 33.88 , for cases in CTP B, and further reduced to 23.50 ± 27.83 , for those in CTP Class C, respectively [Table 3]. Thus, the percentage of CLD with sexual dysfunction in this study among cases was 12/88 (13.6%) and 12/176 (6.8%) overall among cases and controls. None among the controls had sexual dysfunction.

DISCUSSION

The number of women with CLD seen in this study appeared small even over the long years of the study. The study recruited 88 cases and 88 controls over close to 8 years, and this represented about 80% of the calculated sample size. This is majorly because CLD is not common among females in this environment. Besides, some females with CLD were divorced or widowed. The number of HCC in this study was also small because most cases are usually seen in the hospital with complications, such as hepatic encephalopathy, acute abdomen, upper gastrointestinal bleeding, or in frank coma.^[3] Most of these cases were therefore not candidates for sexual function assessment, hence the small number. Again, cases of CHB though were not as scarce as the other two types, but disease progression in CLD is usually from CHB to LC and HCC. Therefore, the desire to have equal numbers of the CLD type's limits increasing the number of CHB arbitrarily with very scarce and stable LC and HCC suitable for sexual function assessment, again makes the sample size to be small. Besides refusal of some cases to take part in the study also limits the sample size.

The FSFI of the cases according to the types of liver disease showed that CHB had normal sexual functions compared with controls. This pattern differs from cases of hepatitis C reported among Egyptian women.^[10] Cases of LC and HCC had low sexual function scores on the FSFI questionnaire compared with controls and CHB. While the place of hormonal influence in women with sexual dysfunction is not fully clarified,^[16] it may seem that patients with LC and HCC have more hormonal disturbances as females with low testosterone and estrogen typically experience symptoms of decreased libido, decrease sensation, vaginal dryness, and decreased arousal.^[8] It is also possible that depression may be responsible for the poor sexual performance as was reported among females with rheumatoid arthritis with increased disease activity,^[17] although we did not assess for depression in our patients. The pattern

Table 1: Baseline characteristics of the cases and controls

Variables	Cases	Controls	χ^2	P
All cases age (mean±SD)	39.49±8.49	40.45±8.22		0.445
CHB age (mean±SD)	37.85±6.13	40.87±8.37		
LC age (mean±SD)	42.56±10.09	40.76±7.10		
HCC, age (mean±SD)	39.41±10.58	38.88±9.56		
BMI (kg/m ²)				
<18.5	9 (69.2)	3 (30.8)	23.08	0.000
18.5-24.5	49 (67.1)	24 (32.9)		
25-29.5	15 (33.3)	30 (66.7)		
30-34.9	12 (41.4)	17 (58.6)		
35-39.9	2 (28.6)	5 (71.4)		
40 and above	1 (11.1)	8 (88.9)		
CTP grade of cases				
Class A	54 (30.7)	0		
Class B	22 (12.5)	0		
Class C	12 (6.8)	0		

SD: Standard deviation, CHB: Chronic hepatitis B infection, CTP: Child-Turcotte-Pugh scores, LC: Liver cirrhosis, HCC: Hepatocellular carcinoma, BMI: Body mass index

Table 2: Second sexual functions of female cases with chronic liver disease and controls according to types of liver disease

Variable	Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)	P
CHB					
		Cases (46)		Controls (46)	
Desire	5.17±1.43	5.00 (2.00-8.00)	5.02±1.78	5.00 (2.00-9.00)	0.671
Arousal	11.52±4.36	12.00 (0.00-19.00)	11.04±5.16	11.00 (0.00-19.00)	0.612
Lubrication	14.54±5.06	16.00 (0.00-20.00)	13.04±5.64	14.00 (0.00-20.00)	0.178
Orgasm	10.91±3.98	12.00 (0.00-15.00)	9.07±3.99	9.00 (0.00-15.00)	0.030
Satisfaction	11.85±4.26	13.00 (0.00-15.00)	10.39±4.32	12.00 (0.00-15.00)	0.136
Pain	11.67±4.29	13.00 (0.00-20.00)	9.98±4.37	10.00 (0.00-15.00)	0.076
Total	65.67±20.70	72.50 (4.00-93.00)	58.54±21.39	60.00 (2.00-89.00)	0.118
LC					
		Cases (25)		Controls (25)	
Desire	3.84±1.91	4.00 (2.00-9.00)	5.00±1.26	5.00 (2.00-8.00)	0.029
Arousal	6.32±5.91	8.00 (0.00-18.00)	10.72±4.02	11.00 (0.00-18.00)	0.004
Lubrication	6.68±6.58	8.00 (0.00-20.00)	14.88±3.95	15.00 (0.00-19.00)	0.000
Orgasm	4.68±4.92	4.00 (0.00-14.00)	10.20±3.25	11.00 (0.00-14.00)	0.000
Satisfaction	5.56±5.82	4.00 (0.00-15.00)	11.12±3.82	12.00 (0.00-15.00)	0.000
Pain	6.44±6.74	7.00 (0.00-20.00)	10.84±4.35	12.00 (0.00-15.00)	0.006
Total	33.52±30.22	41.00 (2.00-85.00)	62.78±16.77	67.00 (2.00-85.00)	0.000
HCC					
		Cases (17)		Controls (17)	
Desire	3.36±1.69	3.00 (2.00-8.00)	4.53±1.55	5.00 (2.00-6.00)	0.048
Arousal	4.47±5.60	2.00 (0.00-16.00)	8.29±4.90	10.00 (0.00-15.00)	0.007
Lubrication	5.88±7.29	1.00 (0.00-19.00)	10.18±6.79	12.00 (0.00-20.00)	0.031
Orgasm	3.47±4.77	0.00 (0.00-15.00)	8.59±4.65	9.00 (0.00-15.00)	0.002
Satisfaction	4.71±6.01	0.00 (0.00-15.00)	9.12±5.38	12.00 (0.00-15.00)	0.005
Pain	5.71±7.17	0.00 (0.00-15.00)	9.88±5.52	13.00 (0.00-15.00)	0.024
Total	27.59±30.37	7.00 (2.00-86.00)	50.59±25.57	58.00 (2.00-86.00)	0.005

SD: Standard deviation, CHB: Chronic hepatitis B infection, LC: Liver cirrhosis, HCC: Hepatocellular carcinoma

of sexual dysfunction seen in this study with normal sexual function among CHB and low sexual scores among LC and HCC seems to follow the pattern of sexual dysfunction seen in other diseases, where active disease or disease progression impacts negatively on sexual function. Progression of disease in CLD is usually from CHB to LC and HCC.

The nonuniform result of the FSFI scores seen with cases in CTP Class C may be difficult to explain for now. This stage represents a terminal phase of CLD, sexual desire and arousal may be very difficult, and pain may be an issue confronting the cases. This pattern was also observed among women patients with rheumatoid arthritis, another condition where patients experience early morning pain. The domain of pain in women with rheumatoid arthritis was also not statistically significant compared with controls.^[17]

The assessment of CLD using the CTP grading system shows that cases in Class A usually have excellent hepatic functions. It is therefore not surprising that all the cases in CTP Class A had good sexual functions. Sexual functions become poor with worsening liver disease from those in CTP Class A to CTP Class B and C as reflected in the total mean FSFI scores. Apart from hormonal imbalance, body physic in the advanced disease state as well as psychosocial issues of the disease may affect sexual functions. Cases in the worse grades of liver disease may have ascites or abdominal mass and disturbing

psychological effect of the diagnosis may affect sexual functions. Psychological disturbance resulting in low quality of life, increased disease activity as well as depression affects sexual function in people with background chronic illness.^[17-19]

The percentage of cases with sexual dysfunction was 13.6% and occurred mainly among cases with the worse grades of liver disease. Cases with CTP Class C thus had sexual dysfunction. It thus means that it is the grade of the liver disease severity rather than the type of the liver disease, that is, strongly associated with sexual dysfunction among women using the FSFI. Cases of LC and HCC actually performed poorly compared with control on FSFI in this study. These findings are similar to previous reports that worsening disease severity or exaggerated symptoms affect sexual functions as reported among rheumatoid arthritis cases and patients with end-stage renal disease from other countries.^[18,20]

CONCLUSIONS

Women with CLD have a disproportionately high rate of sexual dysfunction, especially among cases in CTP Class C. Sexual concerns of women with advanced liver disease should be inquired for and treated if possible. In addition, concerted effort should be put into the management of CLD in CTP Class A to prevent them from progressing to the advanced stage of liver disease.

Table 3: Sexual function of female cases with chronic liver disease and controls according to Child- Turcotte-Pugh class

Variable	Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)	P
CTP A		Cases (54)		Controls (54)	
Desire	4.98±1.50	5.00 (2.00-8.00)	4.94±1.67	5.00 (2.00-9.00)	0.909
Arousal	10.70±4.74	11.00 (0.00-19.00)	10.81±4.91	11.00 (0.00-19.00)	0.899
Lubrication	13.63±5.51	15.00 (0.00-20.00)	13.19±5.63	14.00 (0.00-20.00)	0.668
Orgasm	10.07±4.52	12.00 (0.00-15.00)	9.15±3.95	10.00 (0.00-15.00)	0.263
Satisfaction	10.85±4.84	12.00 (0.00-15.00)	10.17±4.44	12.00 (0.00-15.00)	0.446
Pain	11.06±4.67	13.00 (0.00-15.00)	9.98±4.34	10.00 (0.00-15.00)	0.218
Total	61.30±23.24	67.00 (2.00-90.00)	58.24±21.24	60.00 (2.00-89.00)	0.474
CTP B		Cases (22)		Controls (22)	
Desire	3.59±1.89	3.00 (2.00-9.00)	5.27±1.28	5.50 (2.00-8.00)	0.003
Arousal	6.27±6.67	4.00 (0.00-18.00)	10.95±4.23	11.00 (0.00-19.00)	0.002
Lubrication	6.18±7.28	3.00 (0.00-20)	12.95±5.33	14.00 (0.00-19.00)	0.001
Orgasm	4.41±5.30	1.50 (0.00-14.00)	10.32±3.24	10.5 (0.00-14.00)	0.000
Satisfaction	6.32±6.72	4.00 (0.00-15.00)	11.45±3.62	12.00 (0.00-15.00)	0.001
Pain	6.68±7.72	1.50 (0.00-20.00)	11.55±4.35	13.00 (0.00-15.00)	0.005
Total	33.45±33.88	22.50 (2.00-93.00)	62.50±17.90	67.00 (2.00-85.00)	0.000
CTP C		Cases (12)		Cases (12)	
Desire	3.58±2.02	2.50 (2.00-8.00)	4.17±1.70	5.00 (2.00-6.00)	0.443
Arousal	4.00±5.00	1.50 (0.00-12.00)	7.67±5.26	9.50 (0.00-15.00)	0.093
Lubrication	5.33±6.99	0.00 (0.00-18.00)	12.33±6.62	12.00 (0.00-20.00)	0.017
Orgasm	3.08±4.21	0.00 (0.00-10.00)	8.08±4.83	8.50 (0.00-15.00)	0.011
Satisfaction	3.25±4.88	0.00 (0.00-15.00)	9.17±5.47	9.50 (0.00-15.00)	0.005
Pain	4.25±5.99	0.00 (0.00-15.00)	8.75±5.66	9.00 (0.00-15.00)	0.073
Total	23.50±27.83	4.00 (2-76.00)	50.17±26.11	55.00 (2.00-86.00)	0.020

SD: Standard deviation, CTP: Child-Turcotte-Pugh scores

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Conflicts of interest

There are no conflicts of interest.

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ملخص المقال باللغة العربية

الوظائف الجنسية للمرضى الإناث الاتي يعانون من أمراض الكبد المزمنة من مركزين في نيجيريا

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الهدف: مرض الكبد المزمن هو مرض ذو معدلات اعتلال ووفيات كبيرة في نيجيريا. قارنت هذه الدراسة الوظائف الجنسية للنساء المصابات بعدوى التهاب الكبدى نوع B أو التليف الكبدى أو سرطان الخلايا الكبدية بنساء سليمات لا يعانين من أي اعتلال كبدى.

المرضى والطرق: هذه دراسة مستقبلية ثم فيها مقارنة الوظائف الجنسية لنساء يعانين من العدوى بالتهاب الكبدى نوع B أو التليف الكبدى أو سرطان الخلايا الكبدية بنساء لا يعانين من أي اعتلال كبدى كضوابط. تم تعبئة النموذج الخاص بالوظائف الجنسية من قبل جميع النساء المشاركات في الدراسة. تم إدخال البيانات التي تم الحصول عليها في الإصدار 20 من SPSS وتحليلها باستخدام إحصاءات وصفية واستقصائية.

النتائج: استكمل ما مجموعه 176 امرأة الدراسة، ضمت 88 حالة مرضية و88 من الضوابط. متوسط العمر بالسنة ($\pm$ الانحراف المعياري) كان 8.5 ± 39.5 سنة و 8.2 ± 40.5 سنة للحالات المرضية والضوابط على التوالي. كان عدد الحالات المصابة بالتهاب الكبدى نوع B 46 حالة، والتليف الكبدى 25 حالة، وسرطان الخلايا الكبدية 17 حالة. وأثبتت النتائج الخاصة بالوظائف الجنسية أنه ليس هناك اختلاف ذو دلالة إحصائية ما بين حالات التهاب الكبدى نوع B مقارنة مع الضوابط في جميع مجالات الوظائف الجنسية. ومن ناحية أخرى كان هناك فرق ذا دلالة إحصائية في نتائج الوظائف الجنسية لحالات التليف الكبدى وسرطان الخلايا الكبدية في جميع المجالات مقارنة مع الضوابط. أظهر مجموع متوسط درجات الوظائف الجنسية لحالات مرض الكبد المزمن بأنواعه أنه هناك عجز جنسي في 13.6% من المرضى. وعلى الرغم أن 6.8% في جميع المشاركين يعانون من عجز جنسي، فإنه لم يرصد أي عجز جنسي في مجموعة الضوابط.

الاستنتاج: نسبة من الإناث المصابون بأمراض الكبد المزمنة يعانون من العجز الجنسي. ولذلك يجب الاستفسار عن المخاوف الجنسية لهؤلاء الإناث ومعالجتها.

الكلمات المفتاحية: مرض الكبد المزمن، الإناث، نيجيريا، الوظائف الجنسية.