

# Psychological and physical effects of pain on cancer patients in Ibadan, Nigeria

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## Abstract

**Objective:** To determine the prevalence of pain and its psychological and physical effects on cancer patients. **Method:** We interviewed 210 consecutively admitted cancer patients in the University College Hospital, Ibadan between May 2006 and November, 2006 using the socio-demographic/clinical questionnaire with a section designed to measure psychological and physical symptoms. The screening modules of the depression and anxiety sections of the Structured Clinical Interview for DSM-IV diagnosis was used to screen for depression and anxiety. **Results:** There were 63 (30%) males and 147 (70%) females. Sixty-eight (32.4%) subjects had breast cancer, 59 (28.1%) had cervical cancer, 40 (19.0%) had colon/rectal cancer while the remaining 43 (20.5%) had prostate cancer. The prevalence of pain was found to be 73.8%. Presence of pain was significantly associated with depressive and anxiety symptoms, suicidal ideation, poor sleep, impaired concentration, lack of opportunity for leisure, dissatisfaction with health, poor overall quality of life, poor ability to get around and the need for extreme amount of medical treatment to function in the daily life. **Conclusion:** Pain is common among cancer patients and is associated with significant psychological and physical impairment. Therefore pain should be adequately assessed and managed.

**Keywords:** Cancer; Pain; Effects; Patients; Nigeria

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## Introduction

Cancer, a colloquial expression for neoplasm, is associated with significantly high morbidity and mortality and its diagnosis is often regarded by many as a death sentence.<sup>1</sup> Cancer patients experience a range of physical symptoms such as pain, weight loss, ulceration of cancer site, swelling, bleeding and impaired sexual functioning.<sup>2</sup> Others exhibit psychological symptoms of anxiety disorder, adjustment disorder, post-traumatic stress disorder, depression and organic mental disorders.<sup>3,4</sup>

Psychiatric disorders are common in cancer patients but they are often not recognized by the oncologists.<sup>5</sup> Ohaeri et al, in 1998 reported that 45% of some women with breast and cervical cancers had depression about their condition.<sup>6</sup> In South Africa, Berard et al, in 1998 found a prevalence of depression of 9% among 43 adolescents with cancer.<sup>7</sup>

Cancer is associated with pain. Cancer pain varies in prevalence depending on the stage and site of the disease. An

overall pain incidence of 51-70% has been described.<sup>8</sup> Forty to 50% of the pain is moderate to severe while 20-30% is very severe. The presence of pain increases the risk of suicide in cancer patients and patients with comorbid pain also have a high incidence of depression and anxiety.<sup>8-11</sup>

The advances in the understanding of aetiology, presentation, diagnosis and management of cancer will prolong the lives of many cancer patients.<sup>12,13</sup> However for cancer patients to have a meaningful quality of life pain should be adequately controlled so that the associated psychological and physical symptoms can be prevented. In Nigeria, however, there is a dearth of literature on the effects of pain on cancer patients. To our knowledge none of the earlier studies carried out among cancer patients in Nigeria considered the effects of pain on these patients. It is against this background that cancer patients in Ibadan, Nigeria, were studied to determine the prevalence of pain and the psychological and physical effects of pain on the patients.

## Method

The study was conducted at the radiotherapy, gynaecology and surgical wards of the University College Hospital (UCH) in Ibadan, Nigeria. All the wards are located within the hospital complex. Cancer patients in the surgical and gynaecology wards

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are jointly managed by the surgeons and gynaecologists together with the oncologists. The University College Hospital is an 812-bed teaching hospital. It is located in Ibadan North local government area of Oyo State in the South Western Nigeria. It acts as a referral centre for general hospitals and clinics in Oyo and neighboring states.

### Participants

The sample consisted of all patients consecutively admitted to the radiotherapy ward and cancer patients admitted to the gynaecology and surgical wards between May 2006 and November 2006 who met the inclusion criteria for the study. The inclusion criteria were histological diagnosis of cancer of the cervix, breast, prostate or colon/rectum and subjects 18 years and older. Patients with history of chronic mental illness e.g. schizophrenia, pre-existing organic brain pathology before the onset of cancer such as dementia or mental retardation, acute confusional state (i.e. delirium) during interview and chronic physical illness [such as cardiac, renal, hepatic, cerebrovascular, pulmonary or infectious disease) were excluded.

### Procedure

The University of Ibadan/University College Hospital Institution Review Committee (UI/UCH IRC) gave ethical approval for the study. The subjects were interviewed using the Socio-demographic and Clinical Questionnaire (SDCQ), and depressive and anxiety symptoms were identified with the Structured Clinical Interview for DSM-IV diagnosis (SCID). [Appendix I]

The SDCQ was designed by two of the researchers in this study (Nuhu and Adebayo). The questionnaire, in addition to the socio-demographic and clinical variables, also enquires about psychological symptoms such as suicidal ideation, sleep pattern, concentration, health satisfaction, overall quality of life and leisure. It also has a section for physical symptoms such as presence of pain, sexual functioning, fatigue/limitation of mobility and the amount of medical treatment (for cancer, pain and associated symptoms) required to function in daily life. A section of the questionnaire was specifically designed to ask subjects about presence of pain. Those who confirmed having pain were asked to rate the pain from very mild, mild, moderate, severe to very severe in a similar way to the verbal rating system. We subsequently checked the case notes of the subjects to ascertain any complaints of pain, the site and severity of the pain, the effects on daily activities of the subjects and the medication they were being given. We contacted the doctors and nursing staff managing the patients for clarification of inadequate data.

The SCID has been used in a comprehensive epidemiological survey of mental health in Nigeria (World Mental Health 2000 Project) part of which was presented at the annual conference of the Association of Psychiatrist in Nigeria, Calabar, 2003 (Gureje and Adebayo). The instrument has been shown to have good reliability for categorical construct DSM-IV diagnoses and good standard validity.<sup>14-17</sup> We translated the instruments from English to Yoruba language (the major language of the people of South-Western Nigeria where the study was conducted) through the process of back translation.<sup>18</sup> The Yoruba version was administered to all patients who could not speak English. Two of the investigators attended the training in the use of the SCID organized for participants in the World

Mental Health Project, 2000 and they conducted the screening interview for anxiety and depressive symptoms.

Written informed consent was obtained from all the subjects after explaining the objectives of the study to them. Three patients refused to be interviewed. They said they were in the hospital for the treatment of cancer and not for research. These patients were excluded from the study. The diagnoses and other essential information such as the presence of a concurrent physical illness were obtained from patients' case notes.

### Statistical analysis

The eleventh edition of the Statistical Package for Social Sciences (SPSS-11) was used for analysis. Descriptive statistics was calculated for all variables, which included means and standard deviation. Frequency distribution and cross tabulations were generated and the Chi-square ( $X^2$ ) test was used to compare proportions and also to investigate the association between categorical variables. Statistical significance was set at 5% level of probability.

### Results

#### Socio-demographic characteristics (Table 1)

The socio-demographic/clinical characteristics of the subjects are shown in Table I. Two hundred and ten subjects were interviewed. Out of these, 63 (30.0%) were males while 147 (70.0%) were females. The mean age of all the subjects was 53.3 (S.D 3.7) years; the mean age for males was 59.8 (S.D 6.0) years while the mean age for the female subjects was 50.1 (S.D 4.5) years.

One hundred and forty nine subjects (71.0%) were married, 32 (15.2%) subjects were widowed 10 (4.8%) were single and 14 (6.7%) were separated. Only 5 (2.4%) were divorced. The majority of the subjects, 185 (88.1%) reported that they lived with either their spouses or their children or both. Only 6 (2.9%) subjects lived alone. Forty-eight (22.9%) subjects had no formal education, 38 (18.1%) completed their primary education, 35 (16.7%) completed secondary education while 56 (26.7%) had tertiary education.

One patient did not receive support for the illness from anybody, while the majority 204 (97.1%) received support from their relatives. Only 4 (1.9%) received support from government. One hundred and eighty (85.7%) rated the support as good.

Sixty-eight (32.4%) subjects had cancer of the breast, 59 (28.1%) had cancer of the cervix, 40 (19.0%) had cancer of the colon/rectum while the remaining 43 (20.5%) had cancer of the prostate.

Presence of pain was reported by 73.8% of all the subjects with 87.1% of them having moderate to severe pain. Ninety per cent of subjects with cancer of the colon/rectum reported having pain, while 75% of those with cancer of the breast, 66% of those with cancer of the cervix and 73% of subjects with cancer of the prostate reported the presence of pain. The association of cancer of the colon/rectum with pain was statistically significant ( $X^2$ , 8.189;  $p = 0.042$ ). Cancer staging was also significantly associated with presence of pain with 81.7% of subjects with advanced stage of cancer reporting pain while 70.1% of subjects with early stage and 59.0% of those with intermediate stage reported that they had pain ( $X^2$ , 8.280;  $p = 0.016$ ). Age ( $p = 0.066$ ), gender ( $p = 0.843$ ) and duration of cancer ( $p = 0.451$ ) were not significantly associated with pain.

**Table I: Socio-demographic and Clinical Characteristics of Subjects**

S/N Socio-demographic variables	Frequency (n) N=210	Percentage (%)
<b>1. Sex</b>		
Male	63	30.0
Female	147	70.0
<b>2. Age (years)</b>		
21 – 30	8	3.8
31 – 40	24	11.4
41 – 50	58	27.6
51 – 60	54	25.7
61 – 70	45	21.4
71 – 80	20	9.5
> 80	1	0.5
Mean age 53.3(SD 3.7)		
<b>3. Cancer Diagnosis</b>		
Breast	68	32.4
Cervix	59	28.1
Colon/Rectum	40	19.0
Prostate	43	20.5
<b>4. Duration of Symptoms</b>		
<1 year	56	26.7
1 – 2 years	89	42.4
2 – 3 years	28	13.3
3 – 4 years	23	11.0
4 – 5 years	5	2.4
> 5 years	9	4.3
<b>5. Cancer Staging</b>		
Early	67	31.9
Intermediate	39	18.6
Advanced	104	49.5
<b>6. Presence of Pain</b>		
No	55	26.2
Very mild	6	2.9
Mild	18	8.6
Moderate	39	18.6
Severe	64	30.5
Very severe	28	13.2
<b>7. Support</b>		
Good	180	85.7
Poor	29	13.8
Nil	1	0.5

#### **Pain and psychological symptoms measured with SCID (Table II)**

Of the 210 subjects interviewed, a total of 78(37.2%) subjects had depressive symptoms. Out of the 155 subjects who reported pain, 64 (41.3%) had depressive symptoms compared to only 14 (25.5%) of the 55 subjects who reported no pain. Presence of pain was significantly associated with depressive symptoms ( $p=0.004$ ).

Forty-five (21.4%) subjects had anxiety symptoms; 25.2% of those who reported the presence of pain had anxiety symptoms while only 10% of those without pains had anxiety symptoms. There is statistically significant association between pain and anxiety symptoms ( $p = 0.027$ )

#### **Pain and psychological symptoms measured with the SDCQ (Table II)**

For suicidal ideation 65.2% of those who had pain said they had suicidal ideation as against 34.8% of those who did not have pain ( $p < 0.001$ ).

Approximately 51% of subjects who reported pain had poor sleep while 30.9% of those who said they did not have pain slept poorly. Poor sleep was significantly associated with presence of pain ( $p=0.005$ ). Twenty-seven subjects, representing 17.4% of those who reported pain, had poor ability to concentrate. However only 9.1% of those who did not have pain had impaired concentration ( $p = 0.05$ ). Fifty-nine per cent of subjects with pain reported that they had little or no opportunity for leisure while

29% of those who had no pain had similar report. Subjects who complained of pain had significantly less opportunity for leisure ( $p = 0.001$ ). Pain was also significantly associated with dissatisfaction with health ( $p = 0.027$ ) as 71.8% of those who reported pain said they were not satisfied with their health. There was also a statistically significant association between overall quality of life and pain. About 41% of subjects with pain reported poor overall quality of life compared to only 16.3% of those who had no pain ( $p = 0.003$ ).

#### **Pain and physical symptoms measured with SDCQ (Table III)**

Fatigue and poor ability to get around was reported by 28.4% of subjects who had pain and only 5.4% of those who did not have pain. Poor ability to get around was significantly associated with presence of pain ( $p < 0.001$ ).

About 44% of subjects with pain reported that they needed an extreme amount of medical treatment (such as analgesic drugs and sleeping tablets) to function in their daily life while only 9.1% of those who reported no pain admitted to such need. Pain and

increasing amount of medication had a statistically significant association ( $p < 0.001$ ).

One hundred and nineteen subjects constituting 76.6% of those who reported pain and 36 subjects representing 66.7% of those who did not report pain said they had impaired sexual function. The relationship between presence of pain and impaired sexual ability was not statistically significant ( $p = 0.131$ ).

## **Discussion**

### **Socio-demographic and clinical variables**

The male to female ratio of 3:7 was due to the preponderance of cancer of the breast and cancer of the cervix. Cancer of the breast was the commonest among the subjects studied. This is consistent with some previous reports in the study environment.<sup>6,19</sup> About a half of the subjects had advanced stage of cancer while only 31.9% presented early. This finding is similar to those of some earlier studies undertaken amongst cancer patients.<sup>20,21</sup> In the Nigerian culture, many people believe that illnesses are due to spiritual attacks and that spiritual problems

**Table II: Psychological effects of pains on the subjects**

S/N	Variables	Presence of pains	No pains n=155	$\chi^2$ n=55	df	P value																																																																															
<b>1.</b>	<b>Depressive symptom <sup>a</sup></b>	Present	64(41.3)	14(25.5)	11.292	1	0.004																																																																														
		Absent	91(58.7)	41(74.5)				<b>2.</b>	<b>Anxiety symptom <sup>a</sup></b>	Present	39(25.2)	6(10.9)	4.898	1	0.027	Absent	116(74.8)	49(89.1)	<b>3.</b>	<b>Suicidal ideation <sup>b</sup></b>	Present	101(65.2)	20(36.4)	15.713	1	<0.001	Absent	54(34.8)	35(62.6)	<b>4.</b>	<b>Sleep <sup>b</sup></b>	Good	76(49.0)	38(69.1)	14.855	2	0.005	Poor	79(51.0)	17(30.9)	<b>5.</b>	<b>Concentration <sup>b</sup></b>	Normal	128(82.6)	50(90.9)	11.090	2	0.050	Impaired	27(17.4)	5(9.1)	<b>6.</b>	<b>Leisure opportunity <sup>b</sup></b>	Adequate	39(25.2)	28(50.9)	17.807	2	0.001	Moderate	25(16.1)	11(20.0)	Little or none	91(59.1)	16(29.1)	<b>7.</b>	<b>Health satisfaction <sup>b</sup></b>	Satisfied	44(27.9)	27(49.1)	9.215	1	0.027	Dissatisfied	111(71.8)	28(50.1)	<b>8.</b>	<b>Overall quality of life <sup>b</sup></b>	Good	53(34.4)	34(61.8)	16.365	2	0.003	Fair
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<b>4.</b>	<b>Sleep <sup>b</sup></b>	Good	76(49.0)	38(69.1)	14.855	2	0.005																																																																														
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The figures in the brackets are the percentages of subjects with pain who had various psychological symptoms a results obtained using SCID b results obtained using SDCQ

<sup>a</sup> results obtained using SCID <sup>b</sup> results obtained using SDCQ

**Table III: Physical effects of pains on the subjects**

S/N	Variables	Presence of pains n=155	No pains n=55	$\chi^2$	df	p value
1.	<b>Getting around <sup>b</sup></b>			20.939	2	<0.001
	Good	78(50.3)	46(83.7)			
	Fair	33(21.3)	6(10.9)			
	Poor	44(28.4)	3(5.4)			
2.	<b>Medical Rx required <sup>b</sup></b>			51.194	2	<0.001
	Little or none	40(25.8)	42(76.4)			
	Moderate amount	47(30.3)	8(14.5)			
	Extreme amount	68(43.9)	5(9.1)			
3.	<b>Sexual function <sup>b</sup></b>			5.640	1	0.131
	Normal	36(23.4)	18(33.3)			
	Impaired	119(76.6)	36(66.7)			

The figures in the brackets are the percentages of subjects with pain who had various physical symptoms

<sup>b</sup> results obtained using SDCQ

should be handled in a spiritual way. They therefore consult spiritualists, herbalists, traditional healers and religious healers who claim total cure and reinforce their beliefs.<sup>22</sup> Some would have also self-medicated or visited some private practitioners and they only reluctantly come to specialist treatment centres when symptoms become persistent, more advanced or disturbing- usually when metastases would have occurred.

Approximately 74% of the subjects reported that they had pain. This is similar to the report by Breitbert et al in 1989 that 51-70% of cancer patients in their study had various degrees of pain.<sup>8</sup> In this study we found a strong association between advanced stage of cancer and pain. Studies have consistently shown that patients with advanced cancers are more likely to have complications like pain and depression.<sup>9,23</sup> A possible explanation is that advanced diseases are more likely to involve many structures, organs or systems of the body through their secondary spread.

#### **Pain and psychological symptoms**

We found that subjects who reported that they had pain were more likely to have significant depressive symptoms, anxiety symptoms and suicidal ideation. Similar observations have been made in previous studies that there is a significant association between pain and psychiatric morbidity and that these psychiatric symptoms tend to increase as illness progresses.<sup>9,23</sup> Depression, especially, has been reported to be strongly associated with pain among cancer patients.<sup>12,24</sup> Patient may interpret pain as a sign of severity and may conclude that nothing can be done to save them from death. They may therefore become hopeless and helpless. We stated earlier that advanced cancer is associated with pain. Advanced disease has also been reported to be associated with depression. Therefore it is possible that advanced stage of cancer is a common factor for both pain and depression in our subjects. The result of this study is also in keeping with a previous report that cancer is strongly associated with suicide and that uncontrolled pain is a contributory factor.<sup>25</sup> In fact, studies have shown that patients with persistent pain are more likely to request physician-assisted death (euthanasia).<sup>26,27</sup> The association

between pain and suicide on one hand could be due to depression. Subjects with pain are twice as likely to have depressive symptoms than those who did not have pain.<sup>28</sup> A similar observation was made in this study (Table II). A depressed patient may be helpless and hopeless and thus see death as a final solution to their 'problems'. On the other hand a cancer patient with very severe pain may interpret it as a sign of severity of the illness or impending death even in the absence of depression. In this study we found that cancer subjects who reported that they had pain were two-and-a-half times more likely to be anxious than those who had no pain (Table II). This is similar to findings from some studies that uncontrolled pain also causes anxiety in cancer patients.<sup>8,29</sup> Anxiety symptoms may result from patients' fear of dying from the illness. Presence of pain aggravates this fear because patients may interpret it as a sign of progression of cancer or an impending death.

A significant proportion of patients who complained of pain had insomnia. It has been reported that poor sleep in clinical practice is usually a symptom of other disorders notably painful physical conditions (like cancer), depressive disorders and anxiety disorders.<sup>30,31</sup> Therefore sleep problems found in our subjects could have resulted directly from a painful physical condition (cancer) or indirectly from depression or anxiety, both of which were in turn significantly associated with pain in this study.

We also observed that patients who had pain were twice more likely to have impaired concentration than those who did not. Poor concentration could be a symptom of depression or anxiety, it could have resulted from distraction by the pain or it could be both. Similarly the association between pain and opportunity for leisure could be due directly to the effects of pain. Subjects may be more preoccupied with obtaining relief from the pain than thinking of any leisure activity. On the other hand it is possible that loss of interest and lack of enjoyment (which are symptoms of depression) contributed to little or no opportunity for leisure. Poor sleep and lack of concentration could also be responsible.

Poor health satisfaction and overall quality of life were significantly associated with presence of pain. These are

measures of general well being. Poor rating on these important aspects of life could be due directly to the effects of pain. Alternatively it could have resulted indirectly from any of the other conditions related to pain such as depression, anxiety, insomnia or poor ability to concentrate.

### Pain and physical symptoms

For the physical factors there was a significant association between pain and fatigue. A similar observation was made by Roscoe et al.<sup>31</sup> Inability to get around could be due directly to the limitation of activities by the pain or indirectly to depression. We also found that subjects who had pain required increasing amount of medical treatment to function in their daily life compared to those who had no pain. The possible reason is that they required analgesic drugs to relieve pain and other specific drugs to treat symptoms significantly associated with pain. These include antidepressants to treat depression, anxiolytic drugs for anxiety and sedative drugs to treat insomnia. These drugs are taken in addition to anticancer medications, haematonic drugs and various physical treatments like radiotherapy and surgery. Sexual impairment was very common in both who had and those who did not have pain (76.6% and 66.7% respectively). However there was no statistically significant difference between the two groups. It is possible that other factors such as depression, anxiety and physical strength may be more important in sexual interest and performance in patients with cancer. A depressed patient may lose interest in all pleasurable activities including sex. Sexual dysfunction could be a symptom of depression as well.

### Conclusion

Cancer is associated with many psychological and physical complications and presence of pain has a negative impact on the psychological and physical well being of cancer patients. It is therefore recommended that pain should be adequately assessed and managed to prevent distress associated with pain among this population of patients. One major limitation of this study is its cross-sectional design. It also involved only 4 types of cancer. In addition, documentation of pain was made from subjective reports by the patients; however attempts were made to verify the authenticity of their complaints by checking the case files and discussing with their physicians. Furthermore this study considered psychological symptoms rather than specific psychiatric disorders; some of these symptoms are not specific to a particular psychiatric entity

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**Appendix I: Effects of pain on cancer patients**

Please read and answer the following questions to the best of your ability. The information given shall remain confidential and limited to this academic study.  
Thank you for your co-operation.

**SOCIO-DEMOGRAPHIC/CLINICAL QUESTIONNAIRE***(A) Socio-demographic and clinical variables*

1. Hospital No.: .....
2. Serial No.: .....
3. Ward:
  - (1) Radiotherapy
  - (2) Urology
  - (3) General Surgery
  - (4) Gynaecology
4. Date of Interview: .....
5. Age of Subject (as at last birthday) .....
6. Sex
  - (1) Male
  - (2) Female
7. Marital Status
  - (1) Single (Never married)
  - (2) Married
  - (3) Divorced
  - (4) Separated
  - (5) Widowed
8. Educational Status:
  - (1) No formal education
  - (2) Primary education (partial)
  - (3) Primary education (completed)
  - (4) Secondary education (partial)
  - (5) Secondary education (completed)
  - (6) Post secondary education (Not University)
  - (7) University education
9. Who do you live with?
  - (1) Spouse
  - (2) Children
  - (3) Parents
  - (4) Sibling
  - (5) Closed relative
  - (6) Distant relative
  - (7) Friend
  - (8) Church/Mosque member
  - (9) Alone
10. From which of the following do you receive support in the care of this illness
  - (1) Relatives
  - (2) Government
  - (3) Non-government organization (specify)
  - (4) None
11. How satisfied are you with the support you get in the care of this illness
  - (1) Satisfied
  - (2) Not satisfied
12. Duration of present illness ..... years
13. Diagnosis (es)/ Type of cancer
  - (1) Cancer of the breast
  - (2) Cancer of the cervix
  - (3) Cancer of the colon/rectum
  - (4) Cancer of the prostate
14. Stage:
  - (1) Early
  - (2) Intermediate
  - (3) Advanced

*(B) Psychological and physical symptoms*

15. Do you have pains in any parts of your body?
  - (1) Yes
  - (2) No
16. If yes, where is the pain?
  - (1) Chest
  - (2) Abdomen
  - (3) Back
  - (4) External genitalia
  - (5) Limbs
  - (6) General body
17. If 15 above is yes. How severe is the pain?
  - (1) Very severe
  - (2) Severe
  - (3) Moderate
  - (4) Mild
  - (5) Very mild
18. Have you had any thought that life is not worth living or you will be better off dead?
  - (1) Yes
  - (2) No
19. Do you have trouble concentrating or collecting your thoughts?
  - (1) Yes
  - (2) No
20. To what extent do you have opportunity for leisure activities?
  - (1) Little or none
  - (2) Moderate
  - (3) Adequate amount
21. How satisfied are you with your health?
  - (1) Satisfied
  - (2) Not satisfied
22. How would you rate your overall quality of life?
  - (1) Good
  - (2) Fair
  - (3) Poor
23. How well are you able to get around?
  - (1) Good
  - (2) Fair
  - (3) Poor
24. How much do you need any medical treatment to function in your daily life?
  - (1) Little or none
  - (2) Moderate amount
  - (3) Extreme amount
25. How would you assess your sexual function?
  - (1) Normal
  - (2) Impaired
26. If the above is (2) describe
  - (1) Lack of sexual drive (loss of libido)
  - (2) Impotence
  - (3) Anorgasmia
  - (4) Others (specify)

NB: The questions on psychological and physical symptoms were adapted from Beck Depression Inventory, SCID, Montgomery Asberg Depression Rating Scale and World Health Organization Quality of Life Questionnaire.