CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

https://zenodo.org/records/10473078

https://www.iajps.com/volumes/volume10-november-2023/53-issue-11-november-23/

Available online at: http://www.iajps.com *Research Article*

KNOWLEDGE AND AWARENESS OF CHRONIC FATIGUE SYNDROME AMONG MEDICAL STAFF IN KSA: A CROSS-SECTIONAL STUDY

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Abstract:

Objective: *To assess the knowledge and awareness of chronic fatigue syndrome (CFS) among medical staff in the Kingdom of Saudi Arabia (KSA) through a cross-sectional study.*

Methods: *This research will employ a cross-sectional study design to assess the knowledge and awareness of chronic fatigue syndrome (CFS) among medical staff in the Kingdom of Saudi Arabia (KSA). A cross-sectional design is appropriate for a one-time assessment of the study population's knowledge and awareness regarding CFS.*

Results: *The study included 471 participants. The most frequent age among them was 18-28 years (n= 309, 65.6%) followed by 29-39 years (n= 100, 21.2%). The most frequent gender among study participants was male (n= 242, 51.4%) followed by female (n= 229, 48.6%). The most frequent nationality among study participants was Saudi (n= 438, 93%) followed by non-Saudi (n= 33, 7%). Marital status among study participants with most of them being single (n= 309, 65.6%) followed by married (n= 148, 31.4%). Participants were asked if they had Fatigue syndrome is diagnosed with accurate medical history according to established, clinical examination or history of mental illness. According to established (n=307, 65.2%), the most frequent was accurate medical history. Participants were asked if they think chronic fatigue syndrome may affect more people. Female (n= 297, 63.1%). Followed by males (n=174, 36.9%).*

Conclusion: *Study results showed that most of the study participants are Saudis. The most common Practical/functional level was Medical Student. Participants. The most of them Fatigue syndrome is diagnosed with Accurate medical history according to established. In addition, most of the study participants had good social connections.*

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Please cite this article in press Shurouq Hamzah Arkoubi et al, ***Knowledge And Awareness Of Chronic Fatigue Syndrome Among Medical Staff In KSA: A Cross-Sectional Study.,*** *Indo Am. J. P. Sci, 2023; 10 (11).*

INTRODUCTION:

Symptoms of chronic fatigue syndrome (CFS) typically last for at least six months and include severe, disabling fatigue that is not relieved by rest, as well as a wide variety of other symptoms, many of which are autonomic or cognitive in nature and contribute to significant decreases in functional activity and quality of life [1,2,3]. There is a wide range of symptom presentation, illness manifestation, and progression. Most people with CFS are between their 20s and 50s, although the disease may strike anybody. There are mostly female patients [4,5,6]. Although prevalence estimates for Europe as a whole are unavailable, it is widely assumed that the number of affected people in the United Kingdom is in the neighborhood of 250,000 [7]. If these estimates hold, there might be as many as two million sufferers over all of Europe.

Across Europe, researchers have banded together to form the European CFS Research Network. Its goal is to assess where our understanding of CFS is at the moment and pinpoint any knowledge gaps that may exist. Through its research on biomarkers, diagnosis, and therapy, this collaboration also hopes to increase our understanding of the global burden of illness [8].
The inability of general practitioners to identify chronic fatigue syndrome (CFS) has been highlighted as a major contributor to underestimating the frequency and prevalence of the condition, and hence its economic effect [9], according to a previous study by the socioeconomic working group of European CFS Research Network. To gauge the current state of general practitioner (GP) diagnosis of CFS, the group ran a pilot survey among European CFS Research Network participants [10]. The results of the study indicated that under-diagnosis in primary care was an issue throughout Europe [10]. As a result, estimates of the public health burden of the condition are likely to be severely understated, even when these exist.
Chronic Fatigue Syndrome (CFS) is a complex and debilitating medical condition characterized by persistent, unexplained fatigue that significantly

impairs a person's ability to function. Despite its prevalence worldwide, CFS remains a poorly understood and often underdiagnosed illness. This research problem addresses the critical issue of knowledge and awareness of CFS among medical staff in the Kingdom of Saudi Arabia (KSA). While CFS affects individuals of all ages and backgrounds, its diagnosis and management primarily fall within the purview of healthcare professionals. Thus, this cross-sectional study aims to assess the level of knowledge, awareness, and understanding of CFS among medical staff in KSA, including physicians, nurses, and allied health professionals, to identify potential gaps in their education and training that may impact patient care.
Understanding the knowledge and awareness of CFS among medical staff in KSA is essential for several reasons. First, misdiagnosis or a lack of awareness about CFS can lead to delayed or inappropriate treatment, negatively impacting patient outcomes and quality of life. Second, the burden of CFS on the healthcare system, including increased healthcare utilization and associated costs, highlights the need for improved education and awareness within the medical community. Finally, as CFS is often a diagnosis of exclusion, healthcare professionals in KSA need to be proficient in recognizing and addressing this condition to ensure that patients receive the appropriate care and support. This research problem underscores the significance of assessing and enhancing the knowledge and awareness of CFS within the medical community in KSA to improve patient care and reduce the societal burden of this often misunderstood condition.

METHODS:

Study design
This research will employ a cross-sectional study design to assess the knowledge and awareness of chronic fatigue syndrome (CFS) among medical staff in the Kingdom of Saudi Arabia (KSA). A cross-sectional design is appropriate for a one-time assessment of the study population's knowledge and awareness regarding CFS.
Study approach
The study will be conducted in healthcare facilities across KSA, including hospitals, clinics, and other

healthcare institutions. Various regions in KSA will be included to ensure geographical diversity.

Study population
The population of interest includes medical staff, such as physicians, nurses, and allied health professionals, working in the selected healthcare facilities across KSA. The sample will be drawn from this population, aiming for a representative cross-section of healthcare professionals.

Study sample
A stratified random sampling technique will be employed, where healthcare facilities will be stratified by region, and then a random sample of healthcare professionals will be selected from each stratum. This approach ensures diversity in the sample across different geographical regions of KSA.

Study tool
For the current study, the questionnaire was adopted for data collection, which was also categorized as a study tool.
Data collection
Data will be collected through a structured questionnaire designed to assess the knowledge and awareness of CFS among medical staff. The questionnaire will include both closed-ended and Likert-scale questions to capture a wide range of information.

Data analysis
Data collected will be analyzed using descriptive and inferential statistics. Descriptive statistics will summarize the baseline knowledge and awareness levels of CFS among medical staff. Inferential statistics, such as chi-square tests and logistic regression, will be used to identify factors influencing awareness levels.

Ethical considerations
The research will adhere to ethical principles, including obtaining informed consent from participants, ensuring anonymity and confidentiality of responses, and seeking ethical approval from the relevant institutional review board (IRB) or ethics committee. Participants will be informed about the purpose of the study, and their participation will be voluntary. Data will be stored securely, and no personal identifiers will be linked to responses to maintain participant confidentiality.

RESULTS:

The study included 471 participants. The most frequent age among them was 18-28 years (n= 309, 65.6%) followed by 29-39 years (n= 100, 21.2%). Figure 1 shows the age distribution among study participants. The most frequent gender among study participants was male (n= 242, 51.4%) followed by female (n= 229, 48.6%). Figure 2 shows the gender distribution among study participants. The most frequent nationality among study participants was Saudi (n= 438, 93%) followed by non-Saudi (n= 33, 7%). Figure 3 shows the distribution of nationality among study participants.

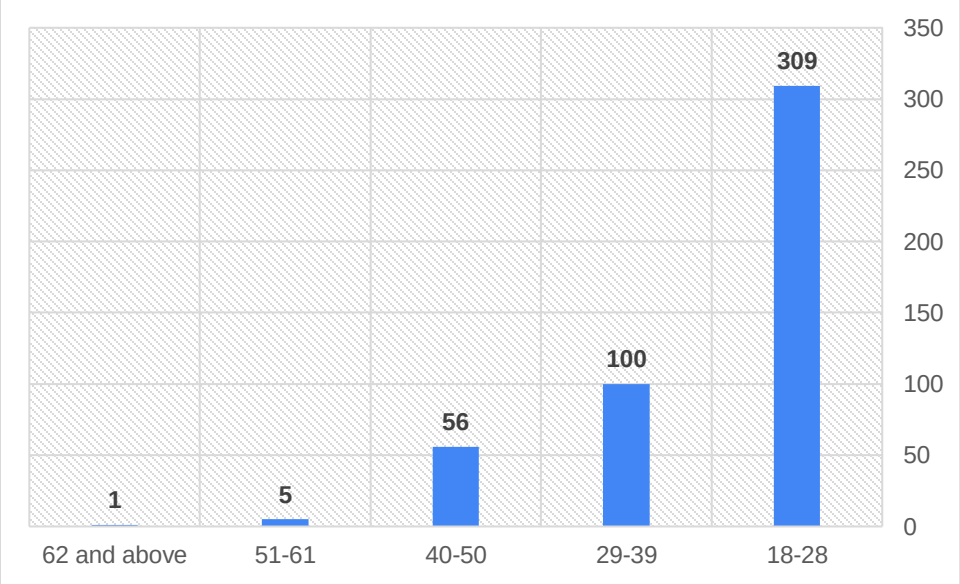

Figure 1: Age distribution among study participants

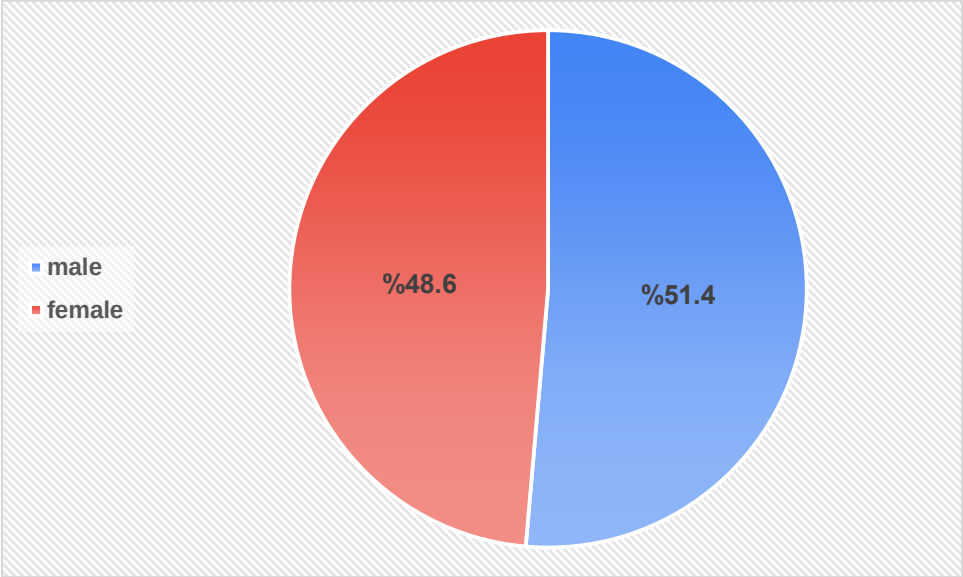

Figure 2: Gender distribution among study participants

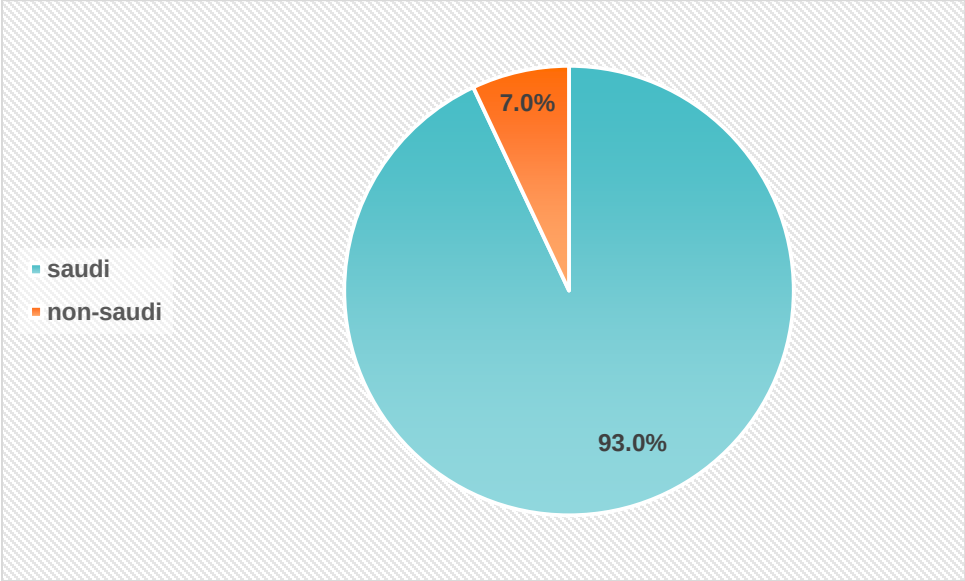

Figure 3: Nationality distribution among study participants

Marital status among study participants with most of them being single (n= 309, 65.6%) followed by married (n= 148, 31.4%).

Participants were asked if they had Fatigue syndrome is diagnosed with accurate medical history according to established, clinical examination or history of mental illness. The most frequent was accurate medical history according to established (n=307, 65.2%). Figure 4: Nationality distribution among study participants.

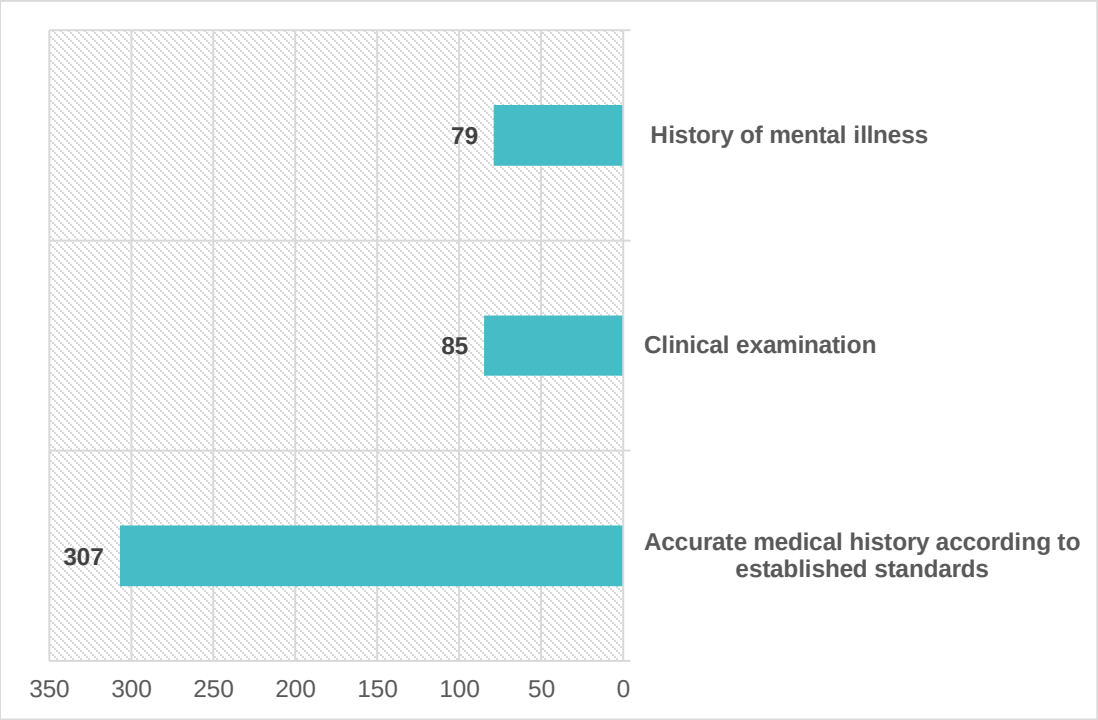

Figure 4: Nationality distribution among study participants.

Participants were asked if they Do you think chronic fatigue syndrome may affect more people. Female (n= 297, 63.1%). Followed by males (n=174, 36.9%).

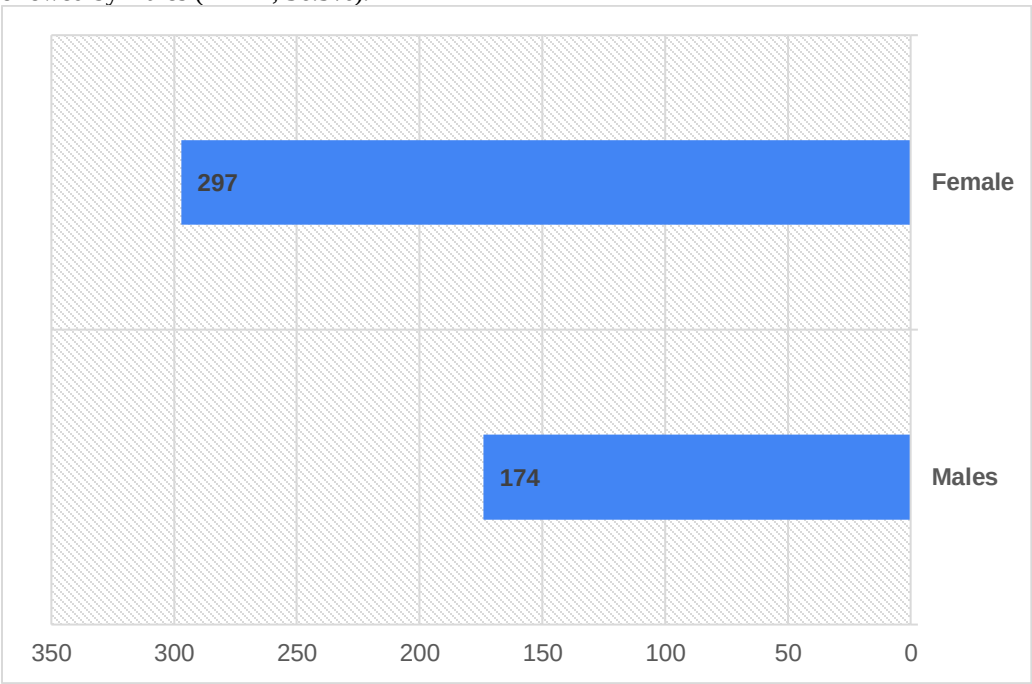

Figure 5: affect CFS distribution among study participants.

Participants were asked about the Awareness and knowledge of participants. Their responses and results are presented in Table 1.

Table 1: Awareness and knowledge of participants

survey item	Yes	No
Have you ever heard of chronic fatigue syndrome?	224	247
	47.6%	52.4%
Have you met someone suffering from chronic fatigue syndrome?	115	356
	24.4%	75.6%
Do you know the risk factors for chronic fatigue syndrome?	127	344
	27.0%	73.0%
Do you know any of the symptoms of chronic fatigue syndrome?	184	287
	39.1%	60.9%
Do you expect that you suffer from chronic fatigue syndrome?	148	323
	31.4%	68.6%
Have you been diagnosed with chronic fatigue syndrome by a doctor?	30	441
	6.4%	93.6%

DISCUSSION:

Chronic Fatigue Syndrome (CFS), also known as Myalgic Encephalomyelitis (ME), is a complex and debilitating medical condition characterized by severe, unexplained fatigue that is not improved by rest and often worsens with physical or mental activity. While it affects individuals worldwide, CFS remains a challenging and often underdiagnosed condition, leading to significant morbidity and a substantial burden on healthcare systems [11-17]. This literature review explores the existing body of knowledge related to the awareness and understanding of CFS among medical staff, focusing on healthcare professionals in various settings, with a particular emphasis on the Kingdom of Saudi Arabia (KSA).

CFS is known for its multifaceted and puzzling nature, as it can manifest with a wide range of symptoms beyond fatigue, including cognitive impairment, sleep disturbances, pain, and immune dysfunction. The diagnosis of CFS primarily depends on the recognition of specific criteria, such as the Fukuda criteria or the more recent Institute of Medicine (IOM) criteria. The difficulty in diagnosing CFS partly arises from the overlap of symptoms with other conditions, such as fibromyalgia and depression, and the absence of a specific diagnostic test. This complexity necessitates a high level of awareness and knowledge among healthcare professionals to accurately identify and manage CFS [18-22].

Several studies from different countries have highlighted the limited awareness and knowledge of CFS among medical staff. A study conducted by Jason et al. (2009) in the United States found that only 45% of primary care physicians felt they had adequate knowledge about CFS. A similar survey in the United Kingdom reported that a substantial proportion of general practitioners lacked confidence in diagnosing and managing CFS. These findings underscore the importance of addressing the awareness and knowledge deficit among medical staff to improve patient care and outcomes [23-28].

In the context of the Kingdom of Saudi Arabia (KSA), research on CFS is relatively limited compared to more extensively studied medical conditions. However, given the growing awareness of CFS and the increasing recognition of its impact on patients' lives, addressing the knowledge gap among healthcare

professionals in KSA is imperative. KSA, with its diverse healthcare workforce, needs a concerted effort to ensure that medical staff across different specialties have a comprehensive understanding of CFS and are capable of recognizing and providing appropriate care for patients suffering from this condition.

Enhancing awareness and knowledge of CFS among medical staff in KSA is not only important for accurate diagnosis but also to reduce the stigma and skepticism often faced by CFS patients. Misunderstanding and misdiagnosis of CFS can contribute to a prolonged and frustrating diagnostic journey for patients, leading to delayed treatment and increased healthcare utilization. Therefore, improving awareness and knowledge about CFS among medical staff has the potential to improve patient outcomes, reduce healthcare costs, and foster a more compassionate and informed healthcare environment for individuals living with this challenging condition [29-35].

The awareness and understanding of Chronic Fatigue Syndrome among medical staff is a critical issue that impacts the diagnosis, management, and overall well-being of individuals suffering from this condition. Existing literature highlights the global knowledge gap among healthcare professionals regarding CFS, and there is a clear need for research addressing this issue, particularly in regions like the Kingdom of Saudi Arabia. This study seeks to contribute to the body of knowledge surrounding CFS awareness among medical staff in KSA, with the aim of improving patient care and reducing the societal burden of this complex and often misunderstood illness.

CONCLUSION:

Study results showed that most of the study participants are Saudis. The most common Practical/functional level was Medical Student. Participants. The most of them Fatigue syndrome is diagnosed with Accurate medical history according to established. In addition, most of the study participants had good social connections.

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ANNEX 1: DATA COLLECTION TOOL

1. How old are you?
   - 18-28
   - 19-39
   - 40-50
   - 51-61
   - 62 and more

2. What is your gender?
   - Male
   - Female

3. What is your nationality?
   - Saudi
   - Non-Saudi

4. What is your Practical/functional level?
   - Medical Student
   - excellent doctor
   - Resident doctor
   - specialist
   - Advisor
   - nurse
   - Nursing technician
   - Specialist Nursing
   - laboratory technician
   - Ray technician
   - Technical operations
   - Physical/Occupational Therapist
   - Social worker
   - Medical services management specialist
   - Other

5. What is your marital status?
   - Single
   - Married
   - Divorced
   - Widow

6. Have you ever heard of chronic fatigue syndrome?
   - Yes
   - No

7. Have you met someone suffering from chronic fatigue syndrome?
   - Yes
   - No

8. Do you know the risk factors for chronic fatigue syndrome?
   - Yes
   - No

9. Do you know any of the symptoms of chronic fatigue syndrome?
    - Yes
    - No

10. Do you expect that you suffer from chronic fatigue syndrome?
    - Yes
    - No

11. Have you been diagnosed with chronic fatigue syndrome by a doctor?
    - Yes
    - No

12. Have you been diagnosed with any of the following?
    - Any anxiety disorders or depressive disorders
    - Any behavioral disturbances
    - Hyperactivity disorder
    - none of the above

13. Are you suffering from any of the following symptoms?
    - headache
    - Sleep disorders
    - Neurological and psychological disorders
    - Muscle pain
    - Fatigue after working hard
    - Pain in the joints
    - Muscle weakness
    - Fatigue and laziness during the day
    - Back Pains
    - Difficulty and problems with vision and vision
    - Stiffness in the body
    - Dizziness with movement
    - Head pain
    - none of the above

14. Do you think chronic fatigue syndrome is rare?
    - Yes
    - No

15. Do you think chronic fatigue syndrome may affect more people?
    - Males
    - Females

16. Do you think chronic fatigue syndrome may affect children?
    - Yes
    - No

17. Do you think that the symptoms of chronic fatigue syndrome may disappear within six months?
    - Yes
    - No

18. Do you think chronic fatigue syndrome can be painful sometimes?
    - True
    - False

19. chronic fatigue syndrome may cause chronic disability?
    - True
    - False

19. Teenage children with chronic fatigue syndrome often miss longer periods of school?
    - True
    - False

20. Is chronic fatigue syndrome?
    - Mental illness/psychosomatic illness
    - Physical illness

21. Are chronic fatigue syndrome and chronic fatigue different from each other?
    - True
    - False

22. Chronic fatigue syndrome can affect and affect...
    - Cardiovascular system
    - Muscular and locomotor system
    - Nervous system
    - immune system
    - Endocrine system
    - Cells and metabolic processes
    - Digestive

23. One can die from chronic fatigue syndrome
    - True
    - False

24. Fatigue syndrome is diagnosed with
    - Accurate medical history according to established standards
    - Clinical examination
    - History of mental illness

25. Do you think having more knowledge about chronic fatigue syndrome might help with diagnosis?
    - Yes
    - No

APPENDIX 2: Participants responses to scale items

variable+A2:D29		Frequency	Percent
Age	18-28	309	65.6%
	29-39	100	21.2%
	40-50	56	11.9%
	51-61	5	1.1%
	62 and above	1	0.2%
Gender	male	242	51.4%
	female	229	48.6%
nationality	Saudi	438	93.0%
	non-Saudi	33	7.0%
marital status	single	309	65.6%
	married	148	31.4%
	divorced	10	2.1%
	widow	4	0.8%
Practical/functional level	Medical Student	109	23.1%
	excellent doctor	31	6.6%
	Resident doctor	84	17.8%
	specialist	39	8.3%
	Advisor	36	7.6%
	nurse	19	4.0%
	Nursing technician	23	4.9%
	Specialist Nursing	15	3.2%
	laboratory technician	21	4.5%
	Ray technician	10	2.1%
	Technical operations	1	0.2%
	Physical/Occupational Therapist	16	3.4%
	Social worker	36	7.6%
	Medical services management specialist	31	6.6%

Table 1: Awareness and knowledge of participants		
survey item	**Yes**	**No**
Have you ever heard of chronic fatigue syndrome?	224	247
	47.6%	52.4%
Have you met someone suffering from chronic fatigue syndrome?	115	356
	24.4%	75.6%
Do you know the risk factors for chronic fatigue syndrome?	127	344
	27.0%	73.0%
Do you know any of the symptoms of chronic fatigue syndrome?	184	287
	39.1%	60.9%
Do you expect that you suffer from chronic fatigue syndrome?	148	323
	31.4%	68.6%
Have you been diagnosed with chronic fatigue syndrome by a doctor?	30	441
	6.4%	93.6%

Table 2: knowledge of participants		
survey item	**Yes**	**No**
Do you think chronic fatigue syndrome is rare?	188	283
	39.9%	60.1%
Do you think chronic fatigue syndrome may affect children?	236	235
	50.1%	49.9%
Do you think that the symptoms of chronic fatigue syndrome may disappear within six months?	239	232
	50.7%	49.3%
Do you think having more knowledge about chronic fatigue syndrome might help with diagnosis?	437	34
	92.8%	7.2%
	TRUE	**FALSE**
Do you think chronic fatigue syndrome can be painful sometimes?	391	80
	83.0%	17.0%
chronic fatigue syndrome may cause chronic disability?	212	259
	45.0%	55.0%
Teenage children with chronic fatigue syndrome often miss longer periods of school?	370	101
	78.6%	21.4%
Are chronic fatigue syndrome and chronic fatigue different from each other?	325	146
	69.0%	31.0%
One can die from chronic fatigue syndrome	186	285
	39.5%	60.5%

Are you suffering from any of the following symptoms? (more than one)		
	Frequency	**Percent**
headache	196	12.6%
Sleep disorders	177	11.4%
Neurological and psychological disorders	103	6.6%
Muscle pain	146	9.4%
Fatigue after working hard	207	13.3%
Pain in the joints	86	5.5%
Muscle weakness	62	4.0%
Fatigue and laziness during the day	133	8.5%
Back Pains	138	8.9%
Difficulty and problems with vision and vision	55	3.5%
Stiffness in the body	29	1.9%
Dizziness with movement	79	5.1%
Head pain	42	2.7%
none of the above	105	6.7%

Is chronic fatigue syndrome?		
	Frequency	**Percent**
Mental illness/psychosomatic illness	373	79.2%
Physical illness	98	20.8%

Do you think chronic fatigue syndrome may affect more people?		
	Frequency	**Percent**
Males	174	36.9%
Female	297	63.1%

Have you been diagnosed with any of the following?		
	Frequency	**Percent**
Any anxiety disorders or depressive disorders	92	19.5%
Any behavioral disturbances	7	1.5%
Hyperactivity disorder	10	2.1%
none of the above	362	76.9%

Have you been diagnosed with any of the following?		
	Frequency	**Percent**
Cardiovascular system	68	14.4%
Muscular and locomotor system	168	35.7%
Nervous system	130	27.6%
immune system	53	11.3%
Endocrine system	9	1.9%
Cells and metabolic processes	18	3.8%
Digestive	25	5.3%

Fatigue syndrome is diagnosed with		
	Frequency	**Percent**
Accurate medical history according to established standards	307	65.2%
Clinical examination	85	18.0%
History of mental illness	79	16.8%

SPSS

Case Processing Summary

		N	Marginal Percentage
Know risk CFS	yes	127	27.0%
	no	344	73.0%
Heard CFS	yes	224	47.6%
	no	247	52.4%
Met someone CFS	yes	115	24.4%
	no	356	75.6%
Know symptoms.CFS	yes	184	39.1%
	no	287	60.9%
Expect you CFS	yes	148	31.4%
	no	323	68.6%
Diagnosed CFS.by doctor	yes	30	6.4%
	no	441	93.6%
CFS rare	yes	188	39.9%
	no	283	60.1%
CFS children	yes	236	50.1%
	no	235	49.9%
CFS.disapper.6month	yes	239	50.7%
	no	232	49.3%
CFS painful	True	391	83.0%
	False	80	17.0%
CFS chronic disability	True	212	45.0%
	False	259	55.0%
CFS and CF different	True	325	69.0%
	False	146	31.0%
Die form CFS	True	186	39.5%
	False	285	60.5%
Knowledge CFS might help	yes	437	92.8%
diagnosis	no	34	7.2%
Valid		471	100.0%
Missing		0	
Total		471	
Subpopulation		284[a]	

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	511.222			
Final	244.624	266.598	13	.000

Pseudo R-Square

Cox and Snell	.432
Nagelkerke	.628
McFadden	.486

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Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	244.624[a]	.000	0	.
Heard CFS	282.589	37.966	1	.000
Met someone CFS	257.932	13.309	1	.000
Know symptoms CFS	267.597	22.973	1	.000
Expect you CFS	246.645	2.022	1	.155
Diagnosed CFS by a doctor	252.060	7.437	1	.006
CFS rare	246.117	1.494	1	.222
CFS children	247.939	3.315	1	.069
CFS.disapper.6month	244.947	.324	1	.569
CFS painful	251.046	6.423	1	.011
CFS chronic disability	245.542	.918	1	.338
CFS and CF different	245.328	.704	1	.401
Die form CFS	249.144	4.521	1	.033
Knowledge CFS might help diagnosis	246.034	1.411	1	.235

Parameter Estimates

Know. risk.CFS[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
yes	Intercept	-4.483-	.825	29.524	1	.000			
	[heard CFS=1]	2.847	.542	27.558	1	.000	17.236	5.954	49.895
	[heard.CFS=2]	0[b]	.	.	0	.	.	.	.
	[met someone CFS=1]	1.198	.333	12.957	1	.000	3.314	1.726	6.363
	[met someone CFS=2]	0[b]	.	.	0	.	.	.	.
	[know. symptoms.CFS=1]	1.688	.367	21.198	1	.000	5.410	2.637	11.099
	[know. symptoms.CFS=2]	0[b]	.	.	0	.	.	.	.
	[expect. you.CFS=1]	-.503-	.357	1.980	1	.159	.605	.300	1.218
	[expect. You CFS=2]	0[b]	.	.	0	.	.	.	.
	[diagnosed CFS.by.doctor=1]	1.651	.645	6.553	1	.010	5.212	1.472	18.449
	[diagnosed.CF .by.doctor=2]	0[b]	.	.	0	.	.	.	.
	[CFS rare=1]	-.394-	.324	1.484	1	.223	.674	.357	1.271
	[CFS rare=2]	0[b]	.	.	0	.	.	.	.
	[CFS.children=1]	.584	.322	3.286	1	.070	1.793	.954	3.370
	[CFS.children=2]	0[b]	.	.	0	.	.	.	.
	[CFS.disapper.6month=1]	-.176-	.311	.322	1	.570	.838	.456	1.541
	[CFS.disapper.6month=2]	0[b]	.	.	0	.	.	.	.
	[CFS painful=1]	-1.279-	.509	6.305	1	.012	.278	.103	.755
	[CFS painful=2]	0[b]	.	.	0	.	.	.	.
	[CFS chronic.disability=1]	.306	.319	.919	1	.338	1.358	.726	2.541

	[CFS chronic disability=2]	0[b]	.	.	0	.	.	.	.
	[CFS and CF.different=1]	-.291-	.348	.702	1	.402	.747	.378	1.477
	[CFS and CF different=2]	0[b]	.	.	0	.	.	.	.
	[die form CFS=1]	.693	.327	4.482	1	.034	2.000	1.053	3.800
	[die form CFS=2]	0[b]	.	.	0	.	.	.	.
	[knowledge CFS might.help.diagnosis=1]	.825	.705	1.369	1	.242	2.282	.573	9.094
	[knowledge CFS might.help diagnosis=2]	0[b]	.	.	0	.	.	.	.