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RESEARCH ARTICLE

ASSESSMENT OF MULTIPLE SCLEROSIS AWARENESS: KNOWLEDGE AND ATTITUDE AMONG SAUDI POPULATION IN TAIF CITY, KSA.

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Abstract

Multiple sclerosis (MS) is an organ specific inflammatory disease that considered the main cause of chronic neurologic disability in young and middle-aged adults with increased prevalence in Saudi Arabia. Public awareness MS is generally poor, and this limited understanding delays the early diagnosis and treatment of patients. This study was community based cross sectional study that conducted in different public areas.A structured questionnaire including questions on knowledge and attitude of MS was administered.

A total of 900 questionnaires were distributed and 715 were completed the questionnaire. The mean knowledge score among the study cohort was 8.74 ± 2.7 and the mean attitude score was 2.19 ± 1.8 with no significant variation regarding age and sex of participants. Learning from surrounding people was the only source of information with significantly high knowledge and attitude score. Also, participants who recorded knowing someone with MS was significantly had higher knowledge and attitude scores.

Most respondents in our sample suffered from deficiency of background information about MS and health education. Therefore, more intensified awareness programs among population are necessary to ensure reliable information reach the public in order for early detection and management of this serious disease.

Also, further researches are needed to identify causes of inadequate knowledge and attitude of MS among Saudi population. More utilization of Media as an important source of MS is important to improve awareness among the community.

Introduction:-

Multiple sclerosis (MS) is an inflammatory disease that affects central nervous system and causes chronic neurologic disability that requires lifelong management. Young adults and women are commonly affected **[1].** Latest evidence from epidemiological studies have indicatedthat the Arabian Gulf region has a high prevalence ofMS with increasing incidence of MS in Saudi Arabia. **[2].** A community survey study in Riyadh Military Hospital during March 1997 to November 2007 detected one hundred fifty patients were diagnosed and treated for MS

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[3]. Higher parity and breastfeeding may protect against MS in women. Local customs and consanguinitymight have played some role in the etiology of the disease [4]. There is considerable evidence that vitamin D deficiency may increase susceptibility to MS [5]. Studies in Saudi Arabia revealed that 28 to 80 % of adults had vitamin D deficiency. However, giving vitamin D supplements decreased disability [6]. Also, smoking and adolescent obesity increase the risk of susceptibility for MS [7].

MS patients were presented with variable symptoms and presentation. Different episodes including optic neuritis, spinal cord syndrome were common that may lead to progressive disability and even death [8]. Several strategies are used to reach diagnosis of MS including detailed history, and careful neurologic investigations [9]. Physical, psychological and social life of MS patients and their families were significantly affected. As MS is an unpredictable, disabling disease of the central nervous system, the more awareness and education about the disease, the better the benefits of early intervention.

Recent trials have demonstrated that early treatment may delay developing MS, slow the progression and reduce disability [10]. A lack of knowledge about the disease symptoms may cause patients to present late and miss the opportunity for better disease outcome. Based on these facts, better MS awarenesslead to early diagnosis and prevention of complications.

So, this study aimed to assess knowledge, the sources of knowledge and attitude toward MS among Saudi population of Taif region. This information would help building more targeted public health awareness campaigns that may aid in early intervention of MS.

Materials & Methods:-

Study design: A community based cross sectional study was conducted in different public areas (university, and shopping malls of different regions of Taif city, KSA). The study was approved by the Ethics Committee of College of Medicine, Taif University.

Target population: The sample was derived from the general population with varying age groups and locations from March, 2014 to May, 2014. Participants were selected randomly without age or gender criteria. Adult Saudis were included and all health professionals/students and subjects diagnosed with MS were excluded. All participants in the study voluntarily gave their consent before being enrolled. Randomly selected men and women aged 18 years and above participated in the study.Knowledge and attitude toward MS was assessed by using a pre validated questionnaire.

Sampling methods:-

A structured questionnaire was generated and distributed. The questions were about knowledge, sources of knowledge on MS and attitude toward the disease were administered by an interview. Face, content and convergent validity of the questionnaire was performed. The questionnaire was piloted with 30 respondents for its acceptability and consistency. Little modification was needed after the pilot testing. Data from the pilot study was not included in the final analysis. As the consistency and validity of the study questionnaire was stabilized, the instrument was made available for data collection. The questionnaire was divided into three sections. The first part was for demographic characteristics for respondents, second includes knowledge questions and the third was for attitude.

The knowledge section include 15-item Arabic, closed-ended questions to collect information about familiarity, knowledge about MS etiology, risk factors and perception of perceived seriousness of the disease in Taif city. An additional question was added on the source of the information: social media, newspaper, TV or radio. For every question, the participant is given a choice of answering by yes or no. Table 2 summarizes the questions.The scoring range of the questionnaire was 15 (maximum) to 0 (minimum). A cut off level of ≤ 8 was considered as poor whereas > 8 was considered as adequate knowledge about MS. Knowledge scores for individuals were calculated and summed up to give the total knowledge score.

Attitude towards MS was assessed by asking seven questions (table 3). Each question was labeled with positive or negative attitude. A score of 1 was given to positive while 0 was given to negative attitudes with a score range of maximum of 7 to a minimum of 0. The scale classified attitude as positive with score > 4 and negative ≤ 4.

Statistical analysis:-
Descriptive statistics such as frequency distributions and means ± SD were used to evaluate perception variables. Categorical variables were measured as percentages while continuous variables were expressed as mean ± standard deviation. Statistical differences were assessed by one-way Analysis of Variance (ANOVA) followed by Post Hoc multiple comparison tests (least significant different test; LSD) and paired sample t-test to detect the significance of difference from the SPSS statistical package (version 17; Chicago, IL, USA) to compare changes among individual. The significance level was set at ($P \leq 0.05$) for all statistical procedures.

Relationship between the knowledge and attitude scores was done by Pearson correlation (r) analysis and the correlation coefficients (r) were tested. $P < 0.05$ was considered statistically significant.

Results:-
A total of 900 questionnaires were distributed and 715 were completed the questionnaire with a response rate of 79.0%.

Demographic characteristics (table 1):-
The mean ± SD of age of the study respondents was 27.4±10.8 with more female than males; 35% of respondents were male (n=248) and 65% were female (n=467). About 55% of respondents had secondary school education and 28% had high level of education. 51% of respondents were unemployed including house wives and students. The major source of information regarding MS was from family/friend/neighbors (31%), followed by (26%) getting their information from social media. Health workers as a source of information was the least percentage (5%).

Response of participants to knowledge items (table 2):-
Table (2) describes the responses of the participants towards MS knowledge. Mean knowledge for all participants was 5.74 ± 1.7, range = (3–13).
Out of the 715 participants, 528 (74%) were within the poor knowledge range whereas 187 (26%) showed adequate knowledge about MS.

Assessment of attitude towards MS table (3):-
As shown in Table (3), majority of the respondent 567 (79%) believed that they can never get affected with MS. About 37% of respondents stated that they will be ashamed to get the disease. Respondents were ready to disclose their disease to their family (43%) and friends (29%). However, 28% agreed to consult a physician as their first choice of treatment. Four hundred (56%) of the study respondents were of opinion to go to traditional healer in case of MS. In addition, over all the respondents had a negative attitude towards MS with mean score of *2.91 ± 1.8*.

Data analysis comparing demographic characteristics with knowledge and attitude scores revealed that age or sex weren't significantly affect both scores of participants $p > 0.05$. However, education level significantly affects knowledge and attitude scores. High level of education was associated with higher scores. Also, employment significantly increases the scores.

There was a significant difference between mean scores of knowledge and attitude and having someone with MS in the respondents' family; having persons with MS recorded 10.9 ±1.9 as mean knowledge score and 3.9±0.8 as mean attitude score versus 4.9 ±0.8 and 1.8±1.2 mean values of knowledge and attitude scores of persons who don't have someone with MS. The persons with MS relative or friend performed better in the knowledge and attitude toward MS.

Scatter plots of knowledge score against attitude score revealed a significant correlation (Fig. 1). Significant Positive linear correlation was found between both scores ($P = 0.0001$ and r value = 0.87). The attitude score was decreased significantly with the decrease in knowledge score and vice versa.

Table 1:- Characteristicsof the study respondents (N = 715).

	N (%)
Age	
18-30	450 (63%)
30-45	265 (37%)
Sex	
Male	248(35%)
Female	467 (65%)
Educational level	
Less than secondary school	124 (17%)
secondary school	391 (55%)
High level of education	200 (28%)
Employment status	
Employed	350 (49%)
Not employed	365(51%)
Know someone have MS (relatives, friends)	
Yes	220 (31%)
No	495(69%)
source of MS information	
social media	185 (26%)
newspaper	100 (14%)
TV or radio	95 (13%)
Health workers	35 (5%)
Family, friends, neighbors	220 (31%)
MS information leaflets, brochures, posters etc.	80 (11%)

Table 2:- Responses of study participants to MS knowledge items (n = 715).

Qs		Yes (N %)	No (N %)
1	Have you ever heard of a disease termed MS?	250 (35%)	465 (65%)
2	MS is neurological diseases result from immunological disorder	100 (14%)	615 (86%)
3	MS is hereditary disease that have genetic causes	205 (29%)	510 (71%)
4	Pollution could be a cause of MS	285 (40%)	430 (60%)
5	Age is a risk factor for having MS	205 (29%)	510 (71%)
6	young age is mostly affected	100 (14%)	615 (86%)
7	MS affecting female more than male	502 (70%)	213 (30%)
8	Can you caught MS disease from someone else	195 (27%)	520 (73%)
9	MS is neurological disease with stages of exacerbation and remission	120 (17%)	595 (83%)
10	MS cause disability complications	206 (29%)	509 (71%)
11	lifestyle decrease disability in MS more than treatment	122 (17%)	593 (73%)
12	Is there a relationship between living in hot or cold areas and having MS symptoms or complications	240 (33.5%)	475 (66.5)
13	MS is not a curable disease. Drugs can keep the disease from getting worse for a while.	110 (15%)	605 (85%)
14	specific diet is required for the treatment of MS	240 (33.5%)	475 (66.5%)
15	There is role for vit. D and ultraviolet ray of sun in protection against MS	117 (16%)	598 (84%)

Note: Knowledge was assessed by giving 1 to correct answer and 0 to the wrong answer. The scale measured knowledge from maximum 15 to minimum 0. Scores < 8 were taken as poor, ≥ 8 as adequate knowledge of multiple sclerosis.

Table 3:- Responses of study participants to Attitude questions

MS attitude terms	N (%)
Do you think you can get MS?	
Yes*	148 (21 %)
No	567 (79%)
What would be your reaction if you found that you have MS?	
Fear*	259 (36%)
Shame	265 (37%)
Surprise	89 (12%)
Sadness	102 (14%)
Who would you talk to about your illness?	
Physician	200 (28%)
Family	305 (43%)
Friends	210 (29%)
No one#	00
What will you do if you think that you have symptoms of MS?	
Go to Health facility*	215 (30%)
Go to Homeopath	200 (14%)
Go to Traditional healer	400 (56%)
If you had symptoms of MS, at what stage you will go to the health facility?	
On treatment fails	283 (40%)
After 3-4 weeks of the appearance of symptoms	131 (18%)
Soon as I realize the symptoms are of MS*	225 (31%)
Will not go to physician	76 (11%)
How expensive do you think is the diagnosis and treatment of MS?	
Free	184 (26%)
Reasonable	141 (20%)
Expensive	225 (31%)
Don't know#	165 (23%)
What worries you most if you will be diagnosed with MS?	
Fear of death	258 (36%)
Fear of disease spread to family	138 (19%)
Cost of treatment	92 (13%)
Isolation from the society#	227 (32%)

* Positive attitude, #Negative attitude.

Note: Attitude was assessed by giving 1 to positive and 0 to negative attitude. The scale classified attitude as positive with score >4 and negative ≤4. Over all the respondents had a negative attitude towards MS with mean score of 2.91 ± 1.8.

Table 4:- Comparison of Demographic Characteristics and Mean Knowledge scores.

Description		N	Knowledge Score (Mean ± SD)	P-Value
Age*	18-30	450	5.6±1.9	0.5
	30-45	265	5.5±2	
Sex*	male	248	5.71±1.5	0.5
	female	467	5.62±1.9	
Education level *	Less than secondary school	124	2.9±1.6	0.00
	secondary school	391	4.3±1.8	
	High level of education	200	9.8±2.3	
Employment **	Employed	350	10.5±2.4	0.00
	Not employed	365	5.6±1.3	
Know someone have MS**	yes	220	10.9±1.9	0.00
	No	495	4.9±0.8	

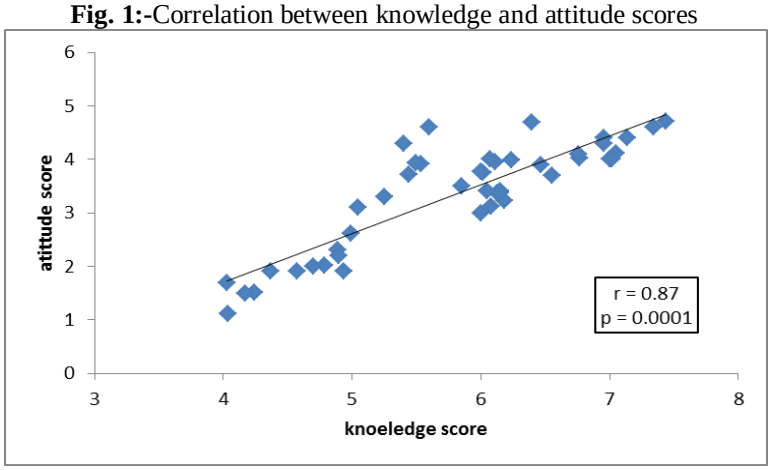
** Student t- Test, ** ANOVA Test, p < 0.05.*

Table 5:-Comparison of Demographic Characteristics and Mean attitude Scores.

Description		N	Attitude Score (Mean ± SD)	P-Value
Age*	18-30	450	2.87±2	0.1
	30-45	265	2.61±2.1	
Sex*	Male	248	2.69±1.9	0.35
	Female	467	2.82±1.7	
Education level*	Less than secondary school	124	0.9±1.8	0.00
	secondary school	391	1.7±0.9	
	High level of education	200	3.8±0.7	
Employment**	Employed	350	3.3±0.7	0.00
	Not employed	365	2.18±1.4	
Know someone have MS**	Yes	220	3.9±0.8	0.00
	No	495	1.8±1.2	

** Student t- Test, ** ANOVA Test, p < 0.05.*

Fig. 1:-Correlation between knowledge and attitude scores



Pearson's correlation coefficients (r) were used to evaluate simple linear relationship between variables.

Discussion:-

Multiple sclerosis is an immune-mediated demyelinating disease of the central nervous system **[11].** This treatable but incurable degenerative disease affects approximately40/100,000 Saudis in 2008. Although it used to be thought that MS is not common in Saudi Arabia, it is now clear that it is fairly prevalent, under-diagnosed and in increase [**2**]. The average age of onset of MS is 30 years. Because this is the age when individuals may be beginning a family and workers have not typically reached their full earning potential, it has a particularly devastating impact on family, social, and professional relationships. Early diagnosis and early treatment are critical to prevent irreversible long-term sequelae in patients with MS **[12; 13).**

The current study sought to evaluate knowledge and attitude towards MS among healthy individuals in Taif, Saudi Arabia. Results of this study revealed poor knowledge and attitude towards MS. The mean knowledge score among the study cohort was 8.74 ± 2.7 and the mean attitude score was 2.19± 1.8 with no significant variation regarding age and sex of participants.

A small percentage of respondents actually heard about MS. Lack of knowledge about risk factors, presentations and complications of MS were evident with our study participants. Only 29% of the participant believed that MS can cause disability complications, which is a major sign of concern **[14].** MS is most commonly first diagnosed between the ages of 20 to 40 years, and over time, it results in varying levels of progressive mobility and sensory functional limitations affecting not only function but also appearance **[15].** A lack of knowledge about the disease symptoms may cause patients to present late and miss the opportunity to reap the benefits of early intervention **[16].**

The study participants reported "people around them" as a significant source of information about MS. Also, those who reported knowing someone with MS showed significantly higher scores for knowledge and attitude. These results are in line with the findings from studies reported from other parts of Saudi Arabia where the overall knowledge of the general population regarding MS was reported low **[17].** Reliance on family, friends and neighbors in MS knowledge may indicate shortage in the available information about the disease in the internet or TV. However, **Arhan et al. [18]** stated that written materials, can be an effective, inexpensive, and easy-to-implement strategy to improve popular understanding of a condition or its treatment especially for patient's family.

As expected and previously reported with other neurological diseases, people with higher education especially those who employed were more well-informed about the disease compared to those with lower level of education. This result is similar to several other reports **[19; 20; 21]**

In the current study, analysis of attitude questions revealed that about 36% of participants chose fear reaction if they get the disease and 43% of participants will talk to their families about it. Moreover, 28% only of participants chose talking with physician about the disease. Most of them (56%) preferred going to traditional healer if they had MS symptoms. 32% of study respondents were worried more about isolation from society and 36% recorded fearing from death.

An important feature of health care revolves around the Health Belief Model which highlights individuals' attitudes and beliefs responsible for particular health behavior **[22].** In addition, perceived benefits and barriers in the health care regimen play a vital role in achieving therapeutic success. Results from the current study revealed that study cohort was in habit of making independent assessments of their current health status and were favoring different health systems (traditional healer). Multiple opinions from such entities can complicate and disseminate irrational information and practices towards MS in the population.

The reasons for people resorting to traditional healers and other alternative medicine include dissatisfaction with Western medicine **[23],** and because it helps relieve a condition or injury **[24]**.However, their work quality should be monitored and controlled by the Ministry of Health. This may eventually lead to a more integrated and safer health care system **[25].**

Diagnosing MS can be a challenging process. In early MS, symptoms may be non-specific and suggestive of several disorders of the nervous system. Early symptoms that come and go may be ignored.

The positive correlations between knowledge-attitude, in this study reaffirm the relationship between them with disease prevention. It is concluded that adequate knowledge can lead to positive attitude resulting in good practices. The findings are in line with the results presented by **Abolfazli et al. [26].**

An early recognition of the inflammatory process enables patients to begin treatment with an immunomodulatory agent even before the technical diagnosis of definite MS so that the degenerative progression of MS can be retarded. Public awareness of MS is generally poor, and this limited understanding delays the early diagnosis and treatment of patients.[**6]** Helping others better understand the disease is critical to fueling the progress that changes lives for people affected by it and ultimately will increase quality of life and end the disease complications and disability forever **[18].** Therefore, extensive popularization should be implemented to raise awareness of these diseases, thus contributing to the efficient treatment of MS and reducing the burden of these diseases.

Conclusion and Recommendations:-

These findings indicate a lack of understanding of the basics of MS with poor knowledge and attitude scores. Learning from surrounding people was the only source of information with significantly high knowledge and attitude score. Also, participants who recorded knowing someone with MS was significantly had higher knowledge and attitude scores. Most respondents in our sample suffered from deficiency of background information about MS

and health education. Therefore, more intensified awareness programs among population are necessary to ensure reliable information reach the public in order for early detection and management of this serious disease.
Also, further researches are needed to identify causes of inadequate knowledge and attitude of MS among Saudi population. More utilization of Media as an important source of MS is important to improve awareness among the community.

Limitations:-
The study was conducted in one city and therefore results of the research are not representative of the entire population of Saudi Arabia.

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