



A CASE STUDY ON MEN MEDICAL REPRESENTATIVES AFFECTED BY STRESS IN PHARMACEUTICAL COMPANY IN THANJAVUR AND KUMBAKONAM CITY OF TAMILNADU

R. Rathika* & Dr. S. Subramanian**

* Research Scholar, Department of Mathematics, PRIST University, Thanjavur,
Tamilnadu

** Department of Mathematics, PRIST University, Thanjavur, Tamilnadu

Cite This Article: R. Rathika & Dr. S. Subramanian, "A Case Study on Men Medical Representatives Affected by Stress in Pharmaceutical Company in Thanjavur and Kumbakonam City of Tamilnadu", International Journal of Applied and Advanced Scientific Research, Volume 2, Issue 1, Page Number 33-39, 2017

Abstract:

Stress is a most persisting factor in professional & modern life. It is a natural and unavoidable feature of life experienced at one time or another by the vast majority of those engaged in professional work. Our objective of this paper to find out the peak age of men medical representatives gets stress in Thanjavur and Kumbakonam workers. For that we have studied the job stress among men workers. It has been classified into seven symptoms as Don't sleep well, Muscle pain, Frequent headache, Restlessness, Hair loss, Stomach pain, Wake-up tried. For the first time in the year 1998 matrix theory was developed by (Vasantha and Indira, 1998) to study the passenger transportation problem. To study this problem, they divided and defined four types of matrices are called Initial Raw Data Matrix, Average Time Dependent Data matrix (ATD Matrix), Refined Time Dependent Data matrix (RTD Matrix) and Combined Effect Time Dependent Data Matrix (CETD Matrix). In the year 2003 the same technique was used by (Vasantha, 2003) to study the migrant laborers who were affected by HIV/AIDS. In 2004 (Vasantha and Victor, 2004) used to study the agriculture laborers. (Victor and Clement, 2012) used it to study the dimensions of personality of women in Chennai. Now we use this model to study of men medical representatives affected by stress in Thanjavur and Kumbakonam districts.

Key Words: ATD Matrix, RTD Matrix, CETD Matrix, Men Medical Representatives & Stress

1. Introduction:

Stress is a most persisting factor in professional & modern life. The concept of stress was first introduced by the late Canadian-Hungarian medical scientist Hans Selye (1907-1983). It's an equivocal word, for some it means excitement and challenge (good stress or eustress) for many others it reflects an undesirable state of chronic fatigue, worry frustration and inability to cope (bad stress or distress) [1]. He looked it as a "nonspecific" response of the organism to any demand for change [2]. Stress can be further refined as the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressure of the situation. Signs of stress can be observed by people's behavior, peculiarly when changes occur in their behavior [3]. Acute responses to stress has been noticed in many diverse areas like feeling (e.g. anxiety, depression, irritability, fatigue), behavior (e.g. unmotivated, tearful, being withdrawn, aggressive), thinking (e.g. difficulties in problem solving and concentration) or physical responses (e.g. headache, nausea, palpitation). If stress persist for long time it can lead to the changes in the neuroendocrine, cardiovascular, autonomic and immunological functioning, which is further leading to mental and physical ill health (e.g. heart disease, depression, anxiety) [4]. There are some more studies according to which work stress can be an important determinant of CHD among working-age populations, it has indirect effect on health behaviors and direct effect on neuroendocrine stress pathway Job stress is defined as harmful physical and emotional responses that occur when the requirements of a job do not match the capabilities, resources, or needs of the worker and can lead to poor health and even injury [8]. Natures of the job or work contents have been found to be associated with stress and health risks. Some factors which are intrinsic to the work content include long hours, work overload, time pressure, difficult or complex task, lack of breaks, lack of variety and poor physical work conditions. According to the WHO (World Health Organization) definition, health refers to the "a state of wellbeing in which the individual is able to work productively and fruitfully [10]. A healthy working environment is one in which there is not only absence of harmful condition but an abundance of health promoting ones[11], and to get healthy environment is the right of every person involve in any kind of job including Pharmaceutical sales representatives (PSRs). PSRs are that cadres of people who are mainly involve in the sales promotion of the drugs or pharmaceuticals and this is the reason that they have to undergo many stressed condition. It is evident by a research that PSRs are at increased risk of ill health due to the nature of their work [12]. Previous researches also indicated that PSRs are exposed to long working hours, prolonged driving and manual handling of the promotional materials [13]. All the above factors may lead to the job stress among PSRs. One of the studies confirms the presence of job stress among PSRs and the noticeable responsible factors was unsupportive colleagues, work overload & continuous pressure for improved performance [14].

This paper has four sections. In the first section we just recall the methods of applications of CETD matrix. In section two we describe the stress related to men medical representatives workers. The section three

we apply the seven symptoms of stress by using CETD model to find out the peak age of group of affected by stress. In final section we derived conclusions and gives suggestion based on our study.

The Method of Application of CETD Matrix: We give a very simple but a very effective technique on the collected data. From that data we recognized the men medical representative's gets stress. Based on the words, symptoms of stress is given by the men medical representatives seven attributes (symptoms) are chosen and the entries are recorded in a form of matrix by taking ages along the columns and the symptoms along the rows.

Average Time Dependent (ATD) Matrix: Raw data transform it into a raw time dependent data matrix by taking along the rows the age group and along the columns symptoms using the raw data matrix we make it into the Average Time Dependent men medical representatives Data (ATD) matrix (a_{ij}) by dividing each entry of the raw data matrix by the number of years i.e., the time period. This matrix represents a data, which is totally uniform. At the third stage we find the average and Standard Deviation (S.D) of every column in the ATD matrix. Refined Time Dependent (RTD) matrix Using the average μ_j of each j^{th} column and σ_j the S.D of the each j^{th} column we chose a parameter α from the interval $[0,1]$ and the Refined time dependent Matrix (RTD matrix), Using the formula

$$\begin{aligned} & a_{ij} \leq (\mu_j - \alpha * \sigma_j) \text{ then } e_{ij} = -1 \text{ else} \\ & \text{if } a_{ij} \in (\mu_j - \alpha * \sigma_j, \mu_j + \alpha * \sigma_j) \text{ then } e_{ij} = 0 \text{ else} \\ & \text{if } a_{ij} \geq (\mu_j + \alpha * \sigma_j) \text{ then } e_{ij} = 1 \end{aligned}$$

We redefine the ATD matrix into the refined time dependent fuzzy matrix for here the entries are -1, 0 or 1. Now the row sum of this matrix gives the maximum age group.

Combined Effective Time Dependent Data (CETD) Matrix: We also combine the above RTD matrices by varying the $\alpha \in [0,1]$, so that we get the Combined Effective Time Dependent Data (CETD) matrix. The row sum is obtained for CETD matrix and conclusions are derived based on the row sums. All these are represented by graphs and graphs play a vital role in exhibiting the data by the simplest means, which can be even understood by a layman.

2. Men Medical Representatives Stress:

This study was a descriptive cross-sectional study carried out during May to August 2016.

Sample Selection & Study Tool: Pharmaceutical companies were categorized into multinational, Indian and local propaganda companies. Twenty medical representatives from multinational, 100 from Indian and 107 from local companies were included in the study. Thus for the feasibility of study total hundred medical representatives were interviewed. It was observed that medical representatives from various divisions of companies participate in the study. All the subjects were educationally well qualified. Investigator requested the Medical representatives to fill in the self-administered questionnaire at the time of vis-a-vis session. The questionnaire was pretested and then used. Completion of the questionnaire was voluntary. The time taken by the Medical representatives for filling in the questionnaire was around 25 minutes. The questionnaire consists of four parts. First part is all about the socio-demographic characteristics. Second part tried to assess the job induced stress with the help of Work-Stress questionnaire 11 & the third part was to capture some of the factors responsible for the job induced stress among Medical representatives and lastly the fourth part tried to explore the some physical and emotional responses. The work-stress questionnaire consist of 15 statement with five alternative responses e.g. 5 for 'nearly all the time', 4 for 'often', 3 for 'sometime', 2 for 'seldom', 1 for 'never'. Total score on this scale is considered for the assessment of work stress (minimum & maximum scores were 15 & 75 respectively). More the stress on this scale indicates more stress. Factors for job induced stress capture by the small set of close ended questions. The physical and emotional responses explored by the list of 30 sign & symptoms, the subject had to tick these symptoms according to their understanding. These sign & symptoms selected from the list of 50 common signs and symptoms of stress given by The American Institute of Stress 12

3. Description of the Problem:

In this paper, we analyzed the stress problem faced by men medical representatives in Thanjavur and Kumbakonam districts. Stress leads to rapid changes throughout the body. We give an effective technique on the collected data. From our interviews we saw the men medical representatives who are affected by the stress problem which were mainly suffered from tension and mental problems. For that we have interviewed and recorded 207 men medical representatives in different ages in Thanjavur and Kumbakonam districts. From our interview we recognized about 90% of men medical representatives are affected by these symptoms. Most of the men medical representatives in Thanjavur and Kumbakonam districts can adopt the same problems. Thus our study can be adapted to this field in Thanjavur and Kumbakonam districts. The major part of studies is the health problems faced by the men medical representatives was affected by the stress problem. Under the following diseases who are mostly suffered by seven symptoms i.e., M_1 - Don't sleep, M_2 - Muscle Pain, M_3 - Frequent head ache, M_4 - Restlessness, M_5 - Hair Loss, M_6 - Stomach Pain, M_7 - Wake up tired due to heavy work which are taken as the column-wise of the initial raw data matrix. The age groups in years 20-25, 26-31, 32-37, 38-42, 43-47, 48-53 and 54-58 are taken as the rows of the matrix. We analyze these problem using fuzzy matrix, we call the RTD Matrix as fuzzy matrix for that take their entries from the set $\{-1, 0, 1\}$. So the terms RTD matrix or fuzzy matrix mean one and the same matrix. The estimation of the maximum age group is five-

stage process. In the first stage we give the matrix representation of the raw data. Entries corresponding to the intersection of rows and columns are values corresponding to the live network. The 7 x 7 matrix is not uniform i.e. the number of individual years in each interval may not be the same. So in the second stage we in order to obtain an unbiased uniform effect on each and every data so collected, transform this initial matrix into an Average Time Dependent Data (ATD) matrix. To make the calculations easier and simpler we in the third stage using the simple average techniques convert the above average time dependent data matrix in to a matrix with entries $e_{ij} \in \{-1, 0, 1\}$. We name this matrix as the Refined Time Dependent Data Matrix (RTD Matrix) or as the fuzzy matrix. The value of e_{ij} corresponding to each entry is determined in a special way described. At the fourth stage using the fuzzy matrices we obtain the Combined Effect Time Dependent Data Matrix (CETD Matrix), which gives the cumulative effect of all these entries. In the final stage we obtain the row sums of the CETD matrix. The tables given are self-explanatory at each stage. The graph of the RTD matrix and CETD matrix are given.

Estimation of Maximum Age Group of Men Medical Representatives Affected by Stress Using 7 X 7 Matrices: In this section we apply seven symptoms i.e., M_1 –Don't sleep, M_2 –Muscle Pain, M_3 –Frequent head ache, M_4 –Restlessness, M_5 –Hair Loss, M_6 –Stomach Pain, M_7 –Wake up tired due to heavy work of men medical representatives to the CETD model.

Table 1: Initial raw data matrix of men medical representatives getting stress of order 7 x 7

Age	M_1	M_2	M_3	M_4	M_5	M_6	M_7
20 – 25	5	3	6	5	7	3	2
26 – 31	6	4	4	3	3	6	4
32 – 37	6	6	5	3	7	2	3
38 – 42	3	5	5	3	2	5	7
43 – 47	2	5	2	6	7	2	3
48 – 53	4	5	4	3	6	7	2
54 – 58	5	3	7	2	3	4	2

Table 2: ATD matrix of men medical representatives getting stress of order 7 x 7

Age	M_1	M_2	M_3	M_4	M_5	M_6	M_7
20 – 25	0.833	0.5	1	5	7	3	0.333
26 – 31	1	0.667	0.667	3	3	6	0.667
32 – 37	1	1	0.833	3	7	2	0.5
38 – 42	0.6	1	1	3	2	5	1.4
43 – 47	0.4	1	0.4	6	7	2	0.6
48 – 53	0.667	0.833	0.667	3	6	7	0.333
54 – 58	1	0.6	1.4	0.4	0.6	0.8	0.4

Table 3: Average and S.D of the above given ATD Matrix

Average	0.785	0.8	0.852	0.648	0.891	0.743	0.605
S.D	0.2371	0.2116	0.3207	0.279	0.388	0.332	0.374

We have taken the value $\alpha = 0.2, 0.3, 0.5$ and 0.7 to find the CETD matrix

The RTD matrix for $\alpha=0.2$ Row Sum Matrix

$$\begin{pmatrix} 1 & -1 & 1 & 1 & 1 & -1 & -1 \\ 1 & -1 & -1 & -1 & -1 & 1 & 0 \\ 1 & 1 & 0 & -1 & 1 & -1 & -1 \\ -1 & 1 & 1 & 0 & -1 & 1 & 1 \\ -1 & 1 & -1 & 1 & 1 & -1 & 0 \\ -1 & 1 & -1 & -1 & 1 & 1 & -1 \\ 1 & -1 & 1 & -1 & -1 & 0 & -1 \end{pmatrix} \begin{pmatrix} 1 \\ -2 \\ 0 \\ 2 \\ 0 \\ -1 \\ -2 \end{pmatrix}$$

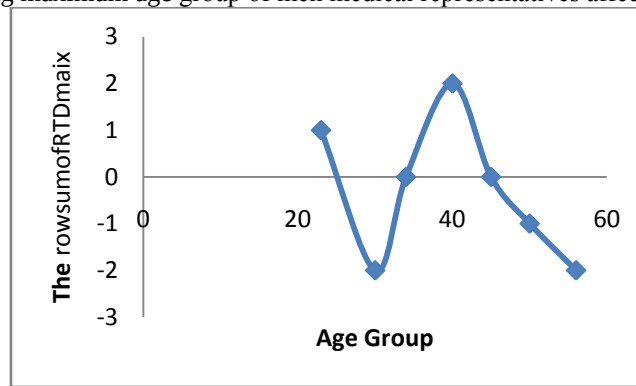
The RTD matrix for $\alpha=0.3$ Row Sum Matrix

$$\begin{pmatrix} 0 & -1 & 1 & 1 & 1 & -1 & -1 \\ 1 & -1 & -1 & -1 & -1 & 1 & 0 \\ 1 & 1 & 0 & -1 & 1 & -1 & 0 \\ -1 & 1 & 1 & 0 & -1 & 1 & 1 \\ -1 & 1 & -1 & 1 & 1 & -1 & 0 \\ -1 & 0 & -1 & -1 & 0 & 1 & -1 \\ 1 & -1 & 1 & -1 & -1 & 0 & -1 \end{pmatrix} \begin{pmatrix} 0 \\ -2 \\ 1 \\ 2 \\ 0 \\ -3 \\ -2 \end{pmatrix}$$

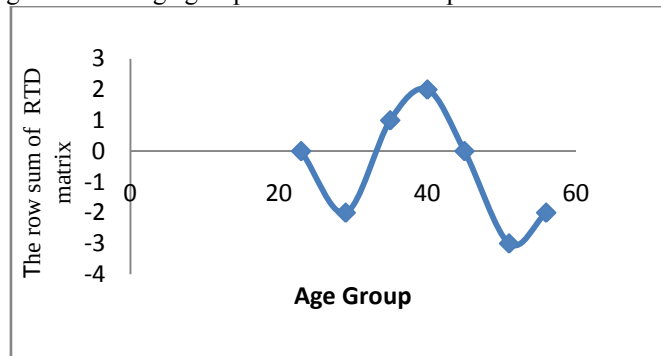
The RTD matrix for $\alpha=0.5$							Row Sum Matrix	
0	-1	0	1	1	-1	-1	-1	
1	-1	-1	-1	-1	1	0	-2	
1	1	0	-1	1	-1	0	1	
-1	1	0	0	-1	1	1	1	
-1	1	-1	1	1	-1	0	0	
-1	0	-1	-1	0	1	-1	-3	
1	-1	1	-1	-1	0	-1	-2	

The RTD matrix for $\alpha=0.7$							Row Sum Matrix	
0	-1	0	0	0	-1	-1	-3	
1	0	0	0	-1	0	0	0	
1	1	0	0	0	-1	0	1	
-1	1	0	0	-1	0	1	0	
-1	1	0	1	1	-1	0	1	
-1	0	0	0	0	1	-1	-1	
1	0	1	-1	-1	0	0	0	

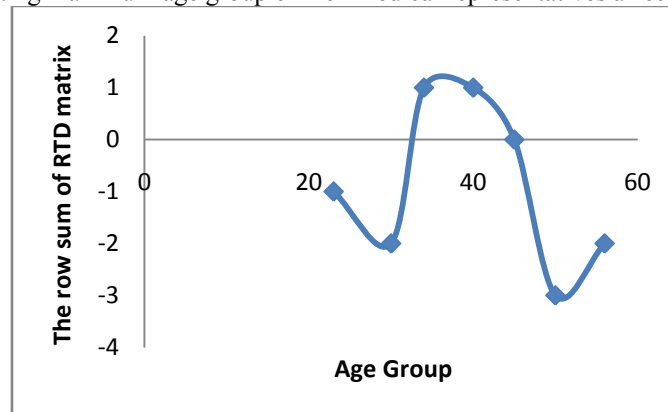
Graph 1: Depicting maximum age group of men medical representatives affected by stress $\alpha=0.2$



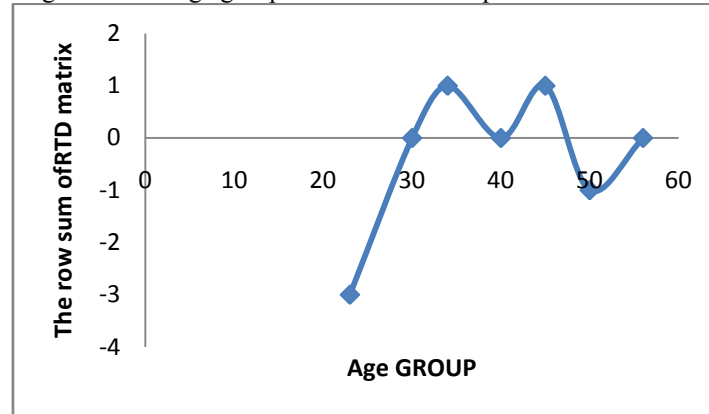
Graph 2: Depicting maximum age group of men medical representatives affected by stress $\alpha=0.3$



Graph 3: Depicting maximum age group of men medical representatives affected by stress $\alpha=0.5$

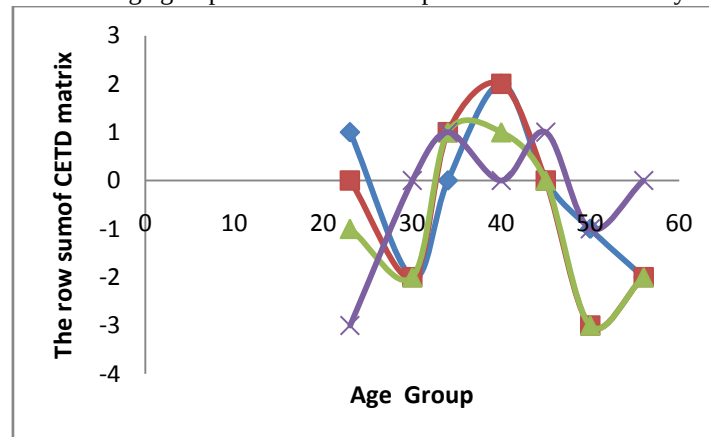


Graph 4: Depicting maximum age group of men medical representatives affected by stress $\alpha=0.7$



CETD Matrix							Row Sum Matrix	
1	-4	2	3	3	-4	-4	-3	
4	-3	-3	-3	-4	3	0	-6	
4	4	0	-3	3	-2	0	6	
-4	4	2	0	-4	3	4	5	
-4	4	-3	4	4	-1	0	5	
-4	1	-3	-3	0	1	-4	-9	
4	-3	4	-4	-4	0	-3	-6	

Graph 5: Depicting maximum age group of men medical representatives affected by stress for CETD matrix



4. Conclusion and Suggestions:

Conclusion:

The men medical representatives affected by stress begin at the age 34. The maximum age group of stress for men medical representatives 36 to 45 as they have don't sleep, Muscle Pain, Frequent head ache, Restlessness, Hair Loss, Stomach Pain, Wake up tired due to heavy work. But some of the symptoms start at the earlier stage in the age from 26 to 30 when they started their courier. It's happened only due to family situation, society pressure, target of the company and manager pressure. This study found that the men medical representatives were under pressure and they were facing work induced stress. At this present time many major changes are being imposed on the men medical representative's job and it is unclear if the profession is able to adequately deal with these changes. Any development in the nature of job profile and working hours need to be considered in the context of the well being of the men medical representatives who implement, and were affected by the changes. Further research is necessary to delve deeper in to the various reasons for work induced stress and the solutions which could be applied to meliorating work induced stress in men medical representatives.

Suggestions:

Take a Break: This is one of the simplest methods of anger management. Whenever you are angry about something or someone, you can ideally stay from that person or that thing for a brief period of time. This will help you to regain a composed mindset and think over the issue to find a possible solution. If you can't just walk out, just keep calm and count to ten. It may sound absurd, but it is effective when it comes to controlling outbursts of anger. . Sometimes you're tired brain is just craving a little time off from your busy day. Stop what you're doing, and find a quiet spot where you can put your feet up. Drink some tea (without caffeine), or take a

bath. Read a book or magazine, or even watch TV, if it's a non-stressful show. These things sounds so basic, you might think, "why bother?", but when your feet are up, your stress level drops

Identify Possible Solutions: During the break, you can evaluate all the possible options to avoid further complications or damage. Your mind may tend to divert to the "cause" which made you angry, but you will have to deviate from the cause, and think about the possible effects of your outburst. Remember that damage control is the need of the hour, and being mature enough to understand the consequences will help you not to take any drastic step which would lead to dire consequences.

Humor: Humor, is no doubt the best way to resolve tension between two people. As soon as you realize that the "discussion" is turning into an "argument", and may deteriorate even further, you can add a hint of humor to the conversations. This will help in releasing all that pent up tension, which could otherwise lead to a "clash of egos".

Don't Hold a Grudge: This is the worst thing you can possibly do, and it will just add to the pent up tension within you. Every time you come across the person, you will recollect the moment and your temper will flare all over again. You can simply forget the issue and carry on with life, and if that is not impossible, avoid the person till you forget or forgive.

Control of the Situation: Anger is such a powerful expression that it controls your entire body, mind and soul. But here, in the conquest of winning over anger, you need to control the situation and let not the situation control you by making you angry, controlling the situation starts with to remain silent on angry occasions. You just need to go into the situation and resume with your work or else try to sort out the matter, with loads of assertive and WIN-WIN thoughts in mind. Based on our research we derived some suggestion for how to reduce stress for men medical representatives

Exercise is a great way to lower your stress. While exercising, you can focus on what you're doing with your body, which helps free your mind from other worries. Vigorous exercise also triggers the release of chemicals in your body called endorphins, which make you feel happier and more relaxed. You don't have to be a super-athlete to exercise. Even something as basic as walking for half an hour can help you relax and improve your mood. Or, you can sign up for a class at your local YWCA or YMCA. Choose something fun and friendly, such as dancing, volleyball, or swimming.

Meditation and Prayer offer you ways to calm, focus your thoughts, and feel more positive. There are many styles of meditation which have grown out of spiritual practices around the world. Meditation involves sitting still in a quiet place, focusing your thoughts on your breath or on a slow chant, and trying to be aware of what is going on in the present moment, instead of stressing about the past or freaking out about the future. With prayer you focus on feeling connected to a higher spiritual power, and on wishes and hopes you may have for yourself or people you care about. You might like to contact your local church, temple, Yoga center, or Buddhist center about a prayer or meditation group. If you're shy about attending a group, you can check out DVDs from the library about different meditation and prayer techniques.

Massage can work wonders on a stressed out body. A gentle massage can untie knotted muscles, and make you feel relaxed all over. A professional massage can be expensive, but even a simple foot rub or shoulder-rub from a good friend can take the edge off your stress - you can check out local massage schools to see if they offer discounted rates.

Journaling: If you enjoy writing, this can be a good way to de-stress. Write down what's been happening with you on a daily basis. If you're facing a scary situation, imagine the best-case and worst-case scenarios. Write about the worst thing that could happen if everything goes wrong. Then write about the wonderful things that would happen if everything goes right. By letting your mind explore all the possibilities you'll feel less stressed. Another thing you can do in your journal is write a letter to someone you're really mad at. Later on you can edit it and actually mail it, but sometimes it helps just to write it down.

Have a Good Cry: You may know that little kids get upset easily, cry and make a fuss, and then get over it pretty quickly. This approach can work for you too. At the end of a particularly hard day, if you find yourself crying to a supportive friend, family member, or to your pillow, this can help you de-stress. In our culture we often try to convince people not to cry, as if it were a sign of weakness, but that's really not true. If crying helps you communicate your frustration, vent your stress, and get some support, than there's nothing wrong with a good cry every now and then.

Sleep: Teens in our culture are often sleep deprived on a daily basis, and even just a few nights in a row of not-enough-sleep can make you feel irritable and nervous. You actually need *more* sleep at this time in your life (about 9 hours per night) than you will as an adult. Although your school schedule and social life make it difficult, try to put sleep at the top of your priority list, right up there with eating healthy foods and watching your favorite TV shows. If you can squeeze in an extra hour or two of sleep per night, you'll feel a lot better, and your overall stress level will likely drop.

5. References:

1. A. Victor Devadoss, M. Clement Joe Anand, "A Solution to Control Suicide in the Domestic using Combined Disjoint Block Fuzzy Cognitive Maps (CDBFCM)", International Journal of Scientific & Engineering Research, Volume, 3, Issue 6, June- 2012.
2. A. Victor Devadoss, M. Clement Joe Anand, "Dimensions of Personality of Women in Chennai using CETD Matrix", International Journal of Computer Application, 10-17, Volume 50, No. 5, July-2012.
3. Victor Devadoss, M. Clement Joe Anand and A. Felix, "A Study on the Impact of Violent Video-Games playing among Children in Chennai using Neutrosophic Cognitive Maps (NCMs)", International Journal of Scientific & Engineering Research, Volume 3, Issue 8, August - 2012.
4. Victor Devadoss, M. Clement Joe Anand and A. Felix, "A Study of Divorce using Combined Overlap Block Neutrosophic Cognitive Maps (COBNCMs)", International Journal of Computer Information Systems, 32 - 54, Vol. 5, No. 1, 2012.
5. Kosko, "Fuzzy Cognitive Maps", International Journal of man-machine studies, January, (1988), 62-75.
6. Kosko, "Hidden patterns in combined and Adaptive Knowledge Networks", Proc. Of the First, IEE International Conference on Neural Networks (ICNN-86(1988) 377-393).
7. Kosko, "Neural Networks and Fuzzy systems: A Dynamical System Approach to Machine Intelligence", Prentice Hall of India, 1997.
8. George J. Klir/Bo Yuan, "Fuzzy sets and Fuzzy Logic: Theory and Applications", Prentice Hall of India.
9. H. J. Zimmermann, "Fuzzy Set Theory and its application", Fourth Edition Springer 2011.
10. R. Axelrod, "Structure of decision: The cognitive maps of political elites". Princeton, N.J: Princeton University Press, 1976.
11. W. B. Vasantha Kandasamy and Smarandache Florentin, "Analysis of social aspects of migrant labours living with HIV/AIDS using Fuzzy Theory and Neutrosophic Cognitive Maps, Xi-quan, Phoenix (2004)
12. W. B. Vasantha Kandasamy and A. Victor Devadoss, "Some New Fuzzy Techniques", Jour. Of Inst. Of. Math. & Comp. Sci. (Math.Ser.), Vol. 17, No.2, (2004), 157-160.
13. W. B. Vasantha Kandasamy and Florentin Smarandache and Ilanthenral, "Special Fuzzy Matrices for Social Scientists", Printed in United States of America, 2007.
14. W. B. Vasantha Kandasamy and Florentin Smarandache and K. Kandasamy, "Fuzzy and Neutrosophic Analysis of Periyar's views on Untouchability", Printed in United States of America, 2005.
15. Schmidt, B. 2002. "How to give agents a personality" .In Proceeding of the third workshop on agent-based simulation, Passau, Germany.
16. Kosko, Bart (1992). Neural Networks and Fuzzy Systems, Prentice-Hall, Englewood Cliffs, New Jersey.
17. Kosko, Bart (1986), Fuzzy Cognitive Maps, International Journal of Man – Machine Studies, 34, 65 – 75.
18. Leshan, L. 1999. "Action Theory and Cognitive psychology in Industrial Design: User Models and User Interfaces" (Ph.D. Thesis). Braunschweig: Art University of Braunschweig.
19. Oren, T.I, Nasser Ghasem - Aghaee, Bardia Khalesi and Mohammad Kazemifard, "Anger and Aggressive Behavior in Agent Simulation".
20. McEwen B. Stressed or stressed out: what is the difference? J Psychiatry Neurosci .2005; 30:315-318. Selye H. the general adaptation syndrome and the disease of adaptation. J Clin. Endocrinol. 1946;6:117-20
21. The American Institute of stress. New York: The non-profit 501(c) 3 corporation: c1979.Effects of stress. Available at: <http://www.stress.org/topic-effects.html>. Accessed on May 9, 2011