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## A COMPARISON BETWEEN PERCEIVED STRESS IN PATIENT WITH PEPTIC ULCER AND CONTROL GROUP AND DETERMINING THE EFFICACY OF STRESS INOCULATION TRAINING AMONG PRIMARY SCHOOL TEACHERS IN AMOL CITY OF IRAN

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### ABSTRACT

The role of stress in gastrointestinal diseases including peptic ulcer has been known since long time ago. Recently some (such as Lazarus) believe that person's assessment and coping skills have more important role than stress itself.

This research was designed to make a comparison between rates of perceived stress in teachers with peptic ulcer vs those without peptic ulcer and determination of effectiveness of « Stress Inoculation Training » program, on perceived stress in patients with peptic ulcer.

This was a cross-sectional study. Among 724 primary school teachers of Amol city, a sample of 300 people through «Cluster Sampling »was selected and among 43 people that had peptic ulcer, two groups each included 15 people was choose , one group as case and the other as control . Case group went on the program of « Inoculation Training against Stress ».

All sampling stages were randomized and the research design was pretest- posttest with control group type. Perceived Stress was scaled by Interview and «Perceived Stress Scale – PSS » in case and control groups before and after the execution of the procedure on the case group. PSS is normalized in Iran, By Sepahvand & Guilani and Zamani. The results were analyzed by ANCOVA and Independent.

The outcome of the study showed that:

- Rate of stress in patients with peptic ulcer was more than control group.
- Training of inoculation against stress was effective in reduction of perceived stress in patients with peptic ulcer.
- There were no statistical meaningful differences between male vs female in mean perceived stress scales.

This study showed that inoculation training program against stress in patients with peptic ulcer can reduce perceived stress.

**Key words:** perceived stress, stress inoculation training, peptic ulcer, stress in teachers

### INTRODUCTION

Since long before, the importance and impact of stressful life events in the

psychological description of disease and health, was on the focus of consideration [1]. The more stress may result the higher possibility of impairment [2]. However, the way and amplitude of this role is still on debate [3], [4], [5] recently, the objective

measures of this relation is more on the focus of attention. In the newer points of view [6] the role of threatening situations associated with lack of necessary resources to deal with the situation is more crucial.

The severity of perceived stress is one of the core models of health belief that based on learning theory of psychology [7], [8], [9]. Severity of perceived stress refers to person's belief on the acuity of stress. How high the amount and severity of perceived stress is, the possibility of reaction is higher [7].

There are three approaches about psychogenic stress concept:

In the first approach that focused on environment and stress described as an event or strains of specific situations .events and situations that are threatening or harmful and produce tension as result , are called stressor[10],[11],[12] .

In the second approach stress is considered as response and focused on person's reaction to stressors. From this point of view the tension that people feels, are called stress. The psychogenic and physical response to a stressor is called strains.

In the third approach stress is a process that included stressors and strains too [6], [13], [1], [12].

Stress is a condition that is a result of interaction between person and environment and may cause an incoordination in the necessities of a situation and biological, psychological and social resources of the person[1], [14],[6] .

Four component of this introduction includes:

1. Stress reduces bio psychosocial power of the person for coping with effects of events and problematic situations.

2. Necessities for a situation refer to resources that are needed to coping to a stressful situation. For example having a powerful volition to reduce weight.

3. Whenever lack of balance between a situation necessities and the person resources is exist, the conflict comes up. This conflict can be due to lack of resources or lack of utilization of those resources.

4. Necessities, resources and conflicts are assessed in confrontation of environment.

In Selye [15] definition stress is human general reaction to maladaptive and nonselective external events or in simple words disturbance in adaptive system and human body coping with external environment.

He emphasized three phases in « General Adaptation Syndrome – G.A.S » [15] that include:

1. Alarm reaction
2. Resistance stage
3. Exhaustion stage

Stress through nervous mechanisms mediated by neurotransmitters , endocrine reaction that mediated by hormones and also immune response that mediated by cellular and humeral immunity affect on the body[16].

Psychological and behavioral pattern of body reaction to stress refers to person reaction to stressor factors by utilizing of defense and confrontation mechanisms that finally make adaptation or maladaptation.

Izeng (1988) and Oman(1993) relates the differences in the people sensitivity to stress to structural and cognitive processing differences . On the Oman opinion emotional fear is the subject that is response by flight or conscious avoidance. Prevention of these responses may result in anxiety.

Asadi Noghabi and colleagues divided stress symptoms to 5 groups:

Physiological: dry mouth, sweating, diarrhea, nausea, vomiting, obesity, dermatologic impairment, body pain [17].

Psychological: anger, fear, anxiety, depression, dysphasia, emotional instability, hopelessness

Behavioral: insomnia, addiction to alcohol and substance, sexual problem

Social: lack of communication

Cognitive: decision making problem, memory and perception disturbance, concentration and judgment impairment

Noghabi and colleagues (2007) have divided stressors to 2 groups:

Biological: physiologic, pathologic, endocrine, hereditary and genetic, chemical

Psychosocial: daily stressor factors, significant events, chronic stress [17].

Stress may affect the health directly (changing in physiology) or indirectly (by behavior). In the stressful situations people might behave so that the probability of making illness or being injured increases.

Psychological factors by increasing secretion of acid may result in mucosal injury and finally ulcer in the stomach or duodenum.

Stress ulcers, are mucosal ulcers in the stomach and duodenum that follows some stressful events for instance burning, shock, septicemia, head trauma [18].

Digestive system ulcers may occur in the stomach or duodenum that is called peptic ulcer. Duodenal ulcer is more common than ulcer in the stomach [18].

Acute stress may cause physiological responses in some gastrointestinal organs. Stress can change the efficacy of superior esophageal sphincter and/or may reduce motility of antrum of stomach that may result in nausea and vomiting [18].

Stress also in the small intestine may reduce functional motility and in the colon bioelectrical activity might increase under acute stress [18].

Affect of stress on small intestine and colon might be the responsible of intestinal

symptoms of Irritable Bowel Syndrome-IBS [19], [20].

Anxiety disorders may include physiological changes in the esophagus that can result in functional esophageal symptoms [21]. Michenbaum have been proposed that modification of cognitive behavioral process may include three interwoven features:

1. Self – observation: observation of behavior by case him/herself
2. Beginning of new internal conversation
3. Learning of new skills

Michnbaum have designed a three phase's model to training inoculation against stress: 1-Conceptual Phase : main focus is on the making a working relationship with the case. Establishing a therapeutic alliance between the case and therapist and training of problem solving routes is essential. Case will become alert of his/her role in the producing of stress.

2-Acquisition and rehearsal phase : emphases are on delivery of variety of behavioral and cognitive ways to execution in the stressful situations . As well as behavioral manner training (Relaxation, Social Skills, Time Management, Self Training), cognitive confrontation routs (survey on the adaptive and maladaptive behaviors and communication with internal conversation – self talking) are utilized.

3-application and follow through phase: focuses on transferring the modifications from therapeutic situation to real world. Emphases on self – talking and utilization of trained skills in the real life situations [22].

Training, practicing and application of trained subjects are essential contents of Michenbaum model .

In a study on the married employees of Azad university of Tonekabon , « Inoculation Training Against Stress » was effective on reduction of marrietal conflics

on both men and women. In a research in China, there was a close association between fresh fruits and prepared foods intake with depression. They concluded that intervention through diet can be mixed with psychological preventive program among normal students of university [23]. In a study in Greece among telecommunication company employees, have been showed that negative affective states significantly can describe the association between stress and body pains [24] . In a research in the Austria, perceived stress and adaptation with it in adolescent was assessed and showed that there was a negative correlation between overcoming on stress with behavioral and affective problems. However, there were positive correlation between perceived stress and overcoming on it while utilizing maladaptive ways with coping problems, that in girls were stronger than in boys [25]. The correlation of perceived stress and function of the students are assessed on separate studies in Yazd, Iran [26], Tehran University [27], Amol, Iran [28] . All of them evaluate that its role was significant. The subject of a study in Medical Science University of Yasooj , Iran, was ways to confront to stress in patients with stomach and duodenal ulcer with the aim of determination and comparison of routs to confront to stress in these two diseases and control group was performed and concluded that people with disease utilizes the noneffective confrontation routs . Therefor , trying to modifying noneffective routs can be on the focus of attention to control the disease Relationship between life[29].

Stresses and digestive illness (peptic ulcer) was assessed in a study in Tabriz, Iran. In this study researchers have suggested the reduction of life stresses as a way to prevent the illness [30]. The efficacy of«

Stress inhibition training – SIT» on decreasing of psychogenic pressure rate in female cancerous patients was assessed in a study in Razi Hospital in Rasht , Iran[31].In a study in Tehran ,Iran, Training the ways of confrontation to stress to parents of mental retarded children resulted in more satisfaction and less stress in them [32]. Training the strategies of confrontation to stress was effective on life satisfaction of spouses of Addicts. Assessed in a research in Kermanshah,Iran [33]. In the similar study it was effective on PTSD [34]. In a study in the Noor Hospital of Isfahan, Iran, application of confrontation routs to stress in patients that was under dialysis and had hypertension, affect on stress rate more than blood pressure[35].Training of problem solving skills and communication skill was effective on self steam of second level of high school girls in Lahijan,Iran[36]. Training of inoculation against stress had positive effect on quality of life of infertile women in Rasht,Iran [28]. Cognitive – Behavioral Therapy was effective on reduction of their depression and Anxiety [37]. Muscular relaxation and problem solving skills were effective on anxiety rate of high school girls students [38]. Perceived stress was effective on health quality of life in pregnant women in Makao,China. Sims , Gordon,Garcia, Mani, Campbell [23] ,in a study have shown a correlation between perceived stress and overeating. Nosek , Kennedy, Beyene , Taylor , Gilliss & Lee[39]in a study in North California found that severe perceived stress affect on the negative attitude to elderly and positive attitude to menopause was effective on menopausal symptoms . In a study on teachers there was an correlation between perceived stress and heart rate and gender differences was meaningful.

Burns, Carroll, Drayson, Whitham, & Ring [16] in a research found that there was a positive correlation between perceived stress and influenza incidence. In Taiwan, Chou, Avant, Kou, & Fetzer [40] showed that there was a correlation between severe nausea and vomiting in pregnancy and perceived stress that can be reduced by social support. In a survey in Midwest University, Reilly, Fitzpatrick & Faan [41], showed that there was a negative correlation between perceived stress and the sensation of belonging. In a study, Alfvén, Ostberg, & Hjern [42] the existence of a correlation between perceived stress and pain incidence in Sweden students was shown. In a study in Babol, Iran, an increase in salivary amylase enzyme in the condition of examination stress compared with post exam, was shown, [43] In a study in three hospital in the Babol and Sari, Iran, showed that Stressor events in patients with myocardial infarction was more than control group, [44].

### METHOD

Sampling was cluster and randomized. Among all primary school teachers, 300 people, were selected as cluster sampling, among these people 73 people had perceived stress test higher than mean (26/605).

From these, 43 people had peptic ulcer with approval of physician. Among them 30 people selected as random and divided in two equal groups each include 15 people.

In order to make a comparison between patients with peptic ulcer and control group, among 43 people with peptic ulcer, 20 people was selected as random and among 257 people without peptic ulcer, 120 was selected as random, too.

To compare perceived stress in men and women, among 178 female teachers, 90

people, and among 122 men teachers, 60 people all in random were selected.

As sampling tool, Interview and «Perceived Stress Scale – PSS» that assesses perceived general stress during the last month and risk factors in behavioral disturbances, was applicator. This inventory have been already approved by Sepahvand, Guilani, Zamani [27]. This inventory has a questionnaire with 14 questions that each can receive scales of 0-1-2-3-4, therefore final score may vary in the range of 0 to 56.

The inoculation against stress course for reduction of stress in patients with peptic ulcer performed through two and half month, based on weekly interval, each session 45 minutes, total 9 sessions.

Order and amount of sessions and training subjects were included:

1st session: Rapport and Alliance and introduction to the rules of work

2nd session: Interactive component of stress and Reconceptualization

3rd session: Stress outcomes and relaxation training

4th and 5th session: Cognitive reconstruction

6th session: Problem Solving Training

7th session: Self - Direction Skills Training

8th session: Lack of Distractibility Training

9th session: Summation and providing systematized exposure to reality

In this research inoculation training was independent variable, perceived stress is dependent variable and education, gender and age were control variables.

### Findings (Data analysis)

For testing of first hypothesis, the effectiveness of inoculation against perceived stress on reduction of perceived stress in patients with peptic ulcer, at the beginning data of analysis of co – variance (ANCOVA) was assessed.

Posttest scores in case group are not equal to control group.

**Table 1: Analysis of Co-Variance results**

resource	Squares sums	Df	Mean squares	F	p	η <sup>2</sup>
pretest	115.873	1	115.873	37.666	0.00	0.582
group	321.899	1	321.899	104.638	0.00	0.795
Error	83.061	27	3.076			
sum	493.467	29				

As showed in Table 1 , The mean scores in case group are less than control group , that shows the inoculation training was effective on reduction of stress in patients with peptic ulcer .

Mean score of each question in the questionnaire in pretest compared to posttest. In the most of the items the mean score were decreased and finally

summation of the percent reduction was 26.75.

As result the first hypothesis was proven.

When second hypothesis was tested as has shown in Table 2 the outcome pointed that mean, minimum and maximum score of perceived stress in peptic ulcer patient were higher than control group.

**Table 2: Comparison of statistical indicators of teachers with peptic ulcer and without peptic ulcer**

	No.	mean	Min.	Max.	SD
With ulcer	20	30.35	27	38	3.26
Without ulcer	120	19.41	8	35	5.06

T-test results (Table 3) reject the hypothesis of equality of perceived stress mean scores in patient with peptic ulcer in comparison with the people without peptic ulcer.

**Table 3: Survey of hypothesis of equality of means in teachers with or without peptic ulcer**

Equality test of mean			Confident interval area 0.95	
T	Df	P	Up	Down
9.33	138	0	13.26	8.62

When second hypothesis – differences between perceived stress rate in men and women - was tested p-value was 0.63 that was more than 0.05 and the equality of

perceived score of men and women was accepted and no differences was proved . (Table 4 and Table 5)

**Table 4: Survey of statistical indicators in teachers with and without peptic ulcer**

	No.	Mean	Min.	Max.	SD
Men	60	19.8	7	36	5.86
Women	90	20	7	36	6.43

As shown in table 4 mean, minimum and maximum score of perceived stress in men were equal to women.

**Table 5: Survey of statistical indicators in teachers with and without peptic ulcer**

Equality test of mean			Confident interval area 0.95	
T	Df	P	Up	Down
- 0.483	148	0.63	1.54	- 2.54

As shown in table 5 the equality of perceived stress score of men and women was accepted ( $p=0.63 > 0.05$ ).

Data gathered from completed inventories before and after inoculation training procedures against perceived stress for reduction it, were used to analysis by SPSS [45] from many different features. The Accuracy of three designed hypothesis were tested.

### DISCUSSION

This research performed with three hypotheses:

First, inoculation against perceived stress training is effective on diagnostic symptoms of peptic ulcer disease. Survey and analysis of hypothesis showed that the mean crude scores in stress inventory in case group after execution of training inoculation against perceived stress (posttest results) , in comparison with pretest , were decreased . This finding had similarity to other researches in literature.

Second, perceived stress in teachers with peptic ulcer is different from those without peptic ulcer. Findings showed that mean perceived stress in teachers with peptic ulcer was statistically meaningful higher than those without peptic ulcer. This finding had similarity to findings of other researchers in the most studies in the world. Third, perceived stress in men vs women teachers are different. Considering the equality of means in two independent groups in perceived stress test, was not approved. This finding was different from the findings of other researchers.

Limitations: Absence of follow up of cases was among limitations. Considering that acceptance and application of new skills need time, probably data from follow up could approve the research findings [22].

Another limitation was cases falling down; however researcher had her best struggle to conserve them.

### RESEARCH SUGGESTIONS

- In the future researches consider the time to follow up the findings.
- Training of these skills on community is considered as a necessity.
- The role of financial problems as a stressor in teachers, in the future researches, could be considered.
- In the future researches pay more attention to behavioral assessments and by using the behavioral lists that measure correlation of negative and positive interactions evaluation during therapy performs.

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