

Dental Pain Perception In Different Genders : Psychological Evaluation And Pain Control Strategy

Tabassum N¹, Ahmed S², Al-abdulwaheed M³, Al-hammad H⁴, Al-habbib E⁵, Al-khudaimi Z⁶, Al-megran S⁷, Al-basheer A⁸

ABSTRACT

Aim

This study aims at evaluation and discussion of differences in pain perception, anxiety and behavior of male and female dental patients and highlight its significance in treatment planning and management, in the clinical set ups in Riyadh city, Saudi Arabia.

Material and methods

A comparative cohort study was carried out in 880 patients from various dental clinics in Riyadh city, Saudi Arabia. They were given a 23-question questionnaire based on extended DFAS (dental fear and avoidance scale) and DAS (dental anxiety scale). The variables included brief demographic data, medical history, psychological assessment, pain catastrophe, previous dental experiences and avoidance of dental treatment. Descriptive statistics were used to describe the categorized study and outcome variables in male and female patients and comparing the differences in psychology and pain perception.

Results and conclusion

Female subjects reported with less pain and phobia for dental treatment compared to male subjects. 91.6% females responded positively for DFAS-1 score (not afraid) against 45.8% of male subjects and 50.6% male subjects agreed that they are terrified of dental pain against 25.7% female subjects for DFAS score 4 (terrified of dental pain), which is statistically highly significant.

KEY WORDS: Dental phobia, Pain, Behavior, Pain Catastrophe, Anxiety, Dental treatment.

¹ Department of Oral and Maxillofacial Surgery
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

² Department of Oral and Maxillofacial Surgery
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

³ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

⁴ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

⁵ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

⁶ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

⁷ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

⁸ Dental Intern
Riyadh Colleges of Dentistry and Pharmacy,
Riyadh, Saudi Arabia

Contact Author

Dr. Nafeesa Tabassum
nafeesatabassum@riyadh.edu.sa

J Oral Health Comm Dent 2015;9(3)108-114

INTRODUCTION

Pain is defined as “An unpleasant emotional experience caused by noxious stimuli, carried by the complex neuronal network to the higher levels of central nervous system where it is interpreted as such (1).

Pain has been a complex subject for neurosurgeons, anatomists, researchers, dentists and they find it more fascinating to deal with it. Patients most often associate anxiety with dental pain. Highly anxious patients feel more pain during dental treatment (2).

Alleviating pain and anxiety before starting actual dental treatment is an integral part of successful dental practice. Dental students or practitioners must not only master the injection techniques, but also develop the skills to assess patient’s pain and psychological problems related to prior patient care in all the disciplines of dentistry. The level of anxiety, co-operation, age, medical condition must be assessed before starting the treatment. This helps in building up rapport between the dentist and patient and eventually making dental treatment more comfortable. Few guidelines have been put forth by ADA (American dental association) to recognize pain and anxiety and manage them through psychological and pharmacological modalities. ADA defined anxiety and pain control as the application of various physical, chemical and psychological modalities

to the prevention and treatment of preoperative, operative and postoperative patient anxiety and pain to allow dental treatment in a safe and effective manner.

It involves all disciplines of dentistry and, as such, is one of the most important aspects of dental education. Psychological strategies should include simple relaxation techniques for the anxious patient and more comprehensive behavioral techniques to control pain. Pharmacological strategies should include not only local anesthetics but also sedatives and other useful agents (3).

MATERIAL AND METHODS

Approval for the study was obtained from the research ethical committee, Riyadh colleges of dentistry and pharmacy, Riyadh, Saudi Arabia. A self administered 23 questions- questionnaire framed in Arabic and English was distributed among 880 patients undergoing treatment in all the disciplines of dentistry, in dental clinics and hospitals in Riyadh, Saudi Arabia. This included 440 male and 440 female patients. An extended DFAS (dental fear and avoidance) scale and DAS (dental anxiety scale) questionnaire was focused on a brief demographic data, medical history, psychological evaluation, previous dental experiences, pain catastrophe, anxiety and phobia of dental treatment. All the participants were informed and consent obtained.

Exclusion criteria were subjects on medication for psychological problems and highly anxious patients.

STATISTICAL ANALYSIS

Data were analyzed using SPSS Pc+ 21.0 version statistical software. Descriptive statistics (frequencies and percentages) were used to describe the categorical study and outcome variables. Pearson’s chi-square test was used to compare the responses of categorical variables, between male and female study subjects. A p-value of <0.05 was used to report the statistical significance of the results.

RESULTS

Occurrence of pain during dental treatment and frequency of dental visits (Table 1)

There is highly statistically significant difference in the responses of male and female study subjects in relation to their feelings of pain for the dental treatment of “restoration”, “Orthodontics”, “surgical extractions”, and “Implants”. 19.2% male subjects expressed that they felt pain during restorative procedures compared with 7.7% of female subjects which is statistically significant ($\chi^2 = 24.38$, $p < 0.0001$). 40.4% of male subjects felt pain during orthodontic procedures as compared to 31.8% of female subjects which is statistically significant ($\chi^2 = 5.77$, $p = 0.016$). During surgical-extractions, 49.3% male subjects had expressed pain when compared to 40.5% of female subjects,

Table 1: Comparison of occurrence of pain during different dental treatment procedures between male & female study subjects

Study variables	Males(n=440)	Females(n=440)	X2-value	p-value
Do you feel pain in the following Dental treatment?				
Restoration (n=411;440)(Yes)	79(19.2)	34(7.7)	24.38	<0.0001*
Endodontic (n=407;440)(Yes)	231(56.8)	229(52)	1.89	0.169
Orthodontic(n=302;440)(Yes)	122(40.4)	140(31.8)	5.77	0.016*
Surgery-extraction(n=412;440)(Yes)	203(49.3)	178(40.5)	6.69	0.010*
Periodontics(n=414;440)(yes)	138(33.3)	148(33.6)	0.009	0.925
Prosthodontics(n=377;440)(yes)	115(30.5)	148(33.6)	0.913	0.339
Implants(n=368;440)(Yes)	51(13.9)	27(6.1)	13.70	<0.0001*

Table 2 : Comparision of male and female subjects believing in Misconceptions or myths heard from friends or others

	Male(n=440)	Female(n=440)	X2-value	p-value
Blindness following dental extraction				
Heard from a friend (Yes)and believed in it	73(16.6)	25(5.7)	26.46	<0.0001
Read in books(Yes) and believed in it	5(1.1)	8(1.8)	0.703	0.402

Table 3:Comparison of male and female subjects expressing happiness to visit dentists

Study variables	Male(n=440)	Female(n=440)	X2-value	p-value
Are you happy to go to dentists for dental treatment (n=438;438)(Yes)	225(51.4)	171(39)	13.439	<0.001

Table 4: Comparison of male and female subjects expressing fear for dental instruments

Study variables	Male(n=440)	Female(n=440)	X2-value	p-value
Are you scared of:				
Injecting needle, dental drills, reamers,files (Yes)	157(35.7)	115(26.1)	169(38.4)	93(21.1)
Complication following any dental procedure(Yes)	0.702	3.047	0.402	0.081

a statistically significant difference ($\chi^2 = 6.69, p=0.010$). During dental implant treatment there was highly statistically significant difference in pain perception between male and female subjects, wherein 13.9% of male and 6.1% female subjects felt pain during the procedure.

Misconceptions or myths heard from friends or others (Table 2)

The responses to the statement, “Blindness following dental extraction”, were expressed positively, as “heard from a friend and believed “by 16.6%

of male subjects, and 5.7% of female subjects which is statistically significant ($\chi^2 = 26.46, p<0.0001$) and as “it’s a misconception” by 77.7% male subjects and 89.8% female subjects which is highly statistically significant ($\chi^2 = 23.45, p<0.0001$).

Table 5 :Comparison of health problems habits and personality of male and female subjects

Study variables	Males(n=440)	Females(n=440)	X2 - value	p-value
Do you have any of these problems				
Diabetes (n=415;440)(yes)	33(8)	6(1.4)	21.293	<0.0001
Blood pressure(n=421;440)(yes)	45(10.7)	22(5.0)	9.703	0.002
Cardiovascular disease(n=414;440)(yes)	13(3.1)	4(0.9)	5.442	0.020
Allergies (n=417;440)(yes)	65(15.6)	66(15.0)	0.057	0.811
Hypo/Hyperthyroidism(n=410;440)(Yes)	4(1.0)	9(2.0)	1.613	0.204
Pregnancy (n=407;440)(yes)	0	28(6.4)	—	—
Asthma/wheezing(n=415;440)(yes)	25(6.0)	11(2.5)	6.576	0.010
Taking any medicines(n=417;440)(yes)	68(16.3)	31(7.0)	17.973	<0.0001
Previous surgeries/treatment (n=399;440)(yes)	69(17.3)	63(14.3)	1.397	0.237
Personal Habits				
Teeth grinding	58(13.2)	36(8.2)	5.765	0.016
Biting the cheek	57(13.0)	93(21.1)	10.415	0.001
Does your personality factors include any of these ?				
Dental anxiety (Yes)	117(26.6)	127(28.9)	0.567	0.451
Depression (Yes)	61(13.9)	35(8.0)	7.904	0.005

Table 6: Comparison of perception of pain during dental treatment between male and female subjects

Study variables	Males(n=440)	Females(n=440)	X2 - value	p-value
What is your perception on pain?				
DFAS-4 terrified(n=431;440)(Yes)	218(50.6)	113(25.7)	57.288	<0.0001
DFAS-3 very afraid(n=430;440) (yes)	262(60.9)	203(46.1)	19.129	<0.0001
DFAS-2 little afraid(n=425;440)(Yes)	53(12.5)	49(11.1)	0.370	0.543
(DFAS-1)I can tolerate pain or absolutely not afraid during dental procedures(n=426;440)(yes)	195(45.8)	129(29.3)	25.033	<0.0001

Table 7: Comparison of awareness about dental treatment between male and female subjects

Study variables	Males(n=440)	Females(n=440)	X2 - value	p-value
Do you think that dental health is the mirror of systemic health (n=439;438) (Yes)	387(88.2)	421(96.1)	19.129	<0.0001

Visits to dentist (Table 3)

A higher proportion of male subjects, 51.4% had expressed happiness to go to dentists for dental treatment when compared with 39% of female subjects which is statistically significant different. ($\chi^2 = 213.44, p < 0.0001$).

Phobia for dental instruments (needles, drills,reamers, files or any untoward complications) (Table 4)

Towards phobia of dental instruments, 13.4% of male subjects had responded positively when compared with 5.7% of female subjects which is statistically significant ($\chi^2 = 15.21, p < 0.0001$).

Health problems, Habits and personality evaluation (Table 5)

There was statistically high significant difference in the presence of health problems (diabetes, blood pressure, cardiovascular disease, asthma and taking medicines) between male and female subjects. About 8%, 10.7%, 3.1%, 6%, and 16.3% of male subjects were having diabetes, blood pressure, cardiovascular disease, asthma and taking medicines (analgesics or antianxiety drugs) when compared with the 1.4%, 5%, 0.9%, 2.5% and 7% of female subjects, which is statistically significant.

With regard to personal habits, there was statistically significant difference

in the positive responses between male and female subjects for the habits of bruxism and cheek bite.13.2% and 13% of male subjects had responded positively for the habits of smoking, alcohol, bruxism and cheek bite when compared with 8.2% bruxism and 21.1% cheek bite of the female subjects

which is statistically significant.

In relation to personality factors, 13.9% of male subjects had responded positively for depression against 8% of females and 51.6% male subjects responded for dental anxiety against 69.8% females.

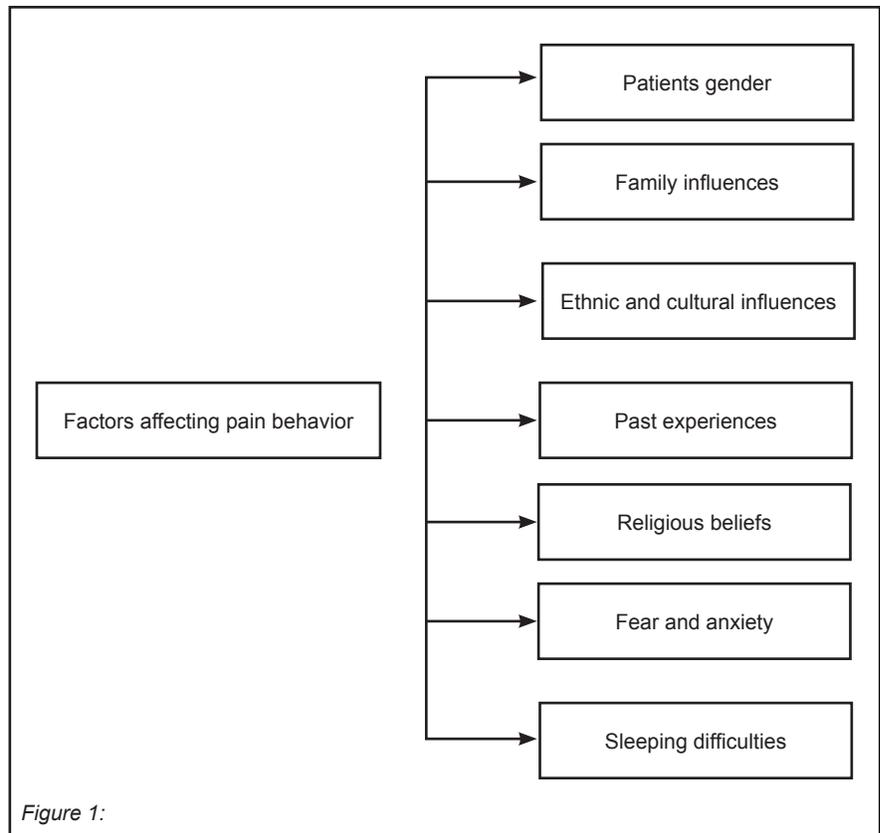


Figure 1:

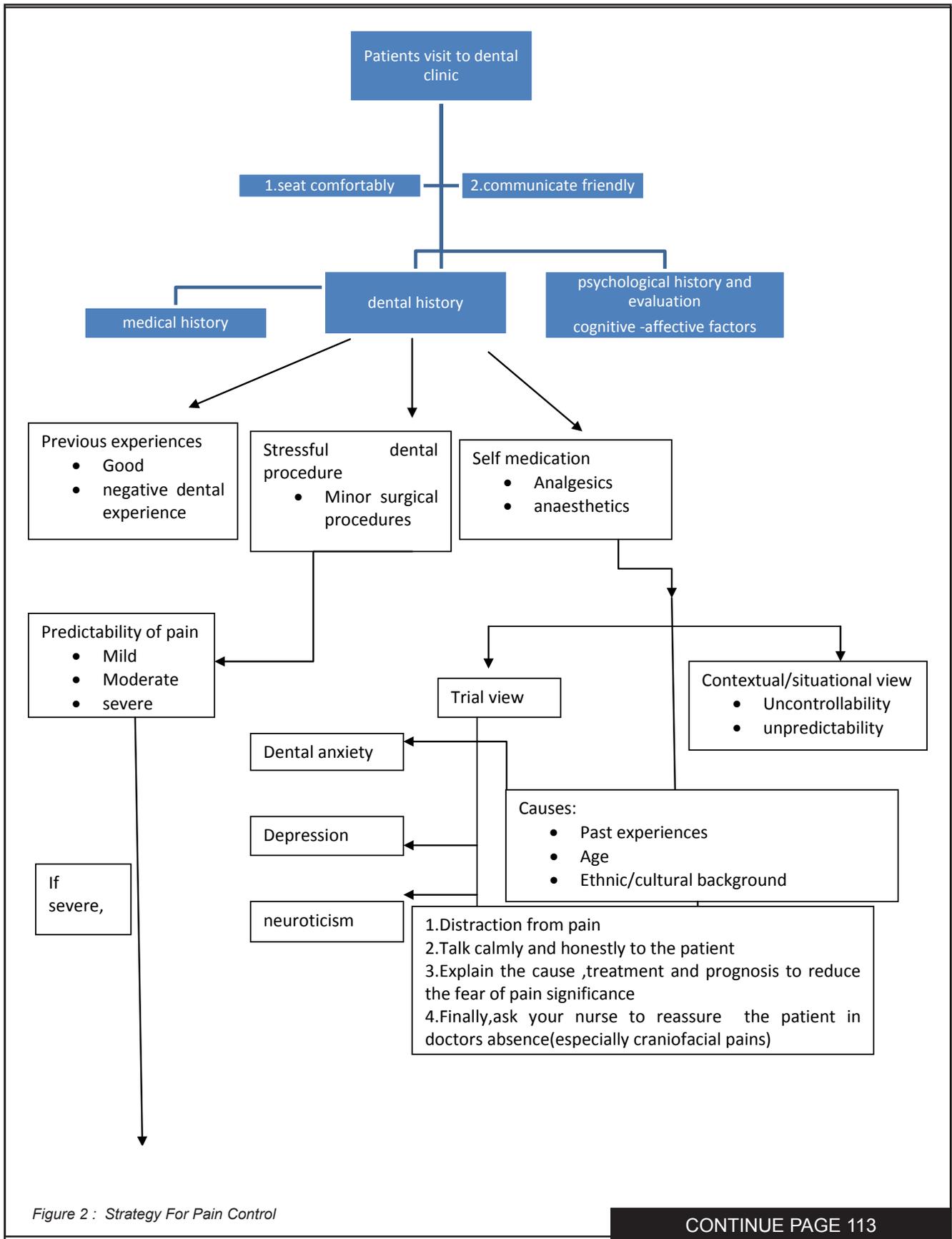


Figure 2 : Strategy For Pain Control

CONTINUE PAGE 113

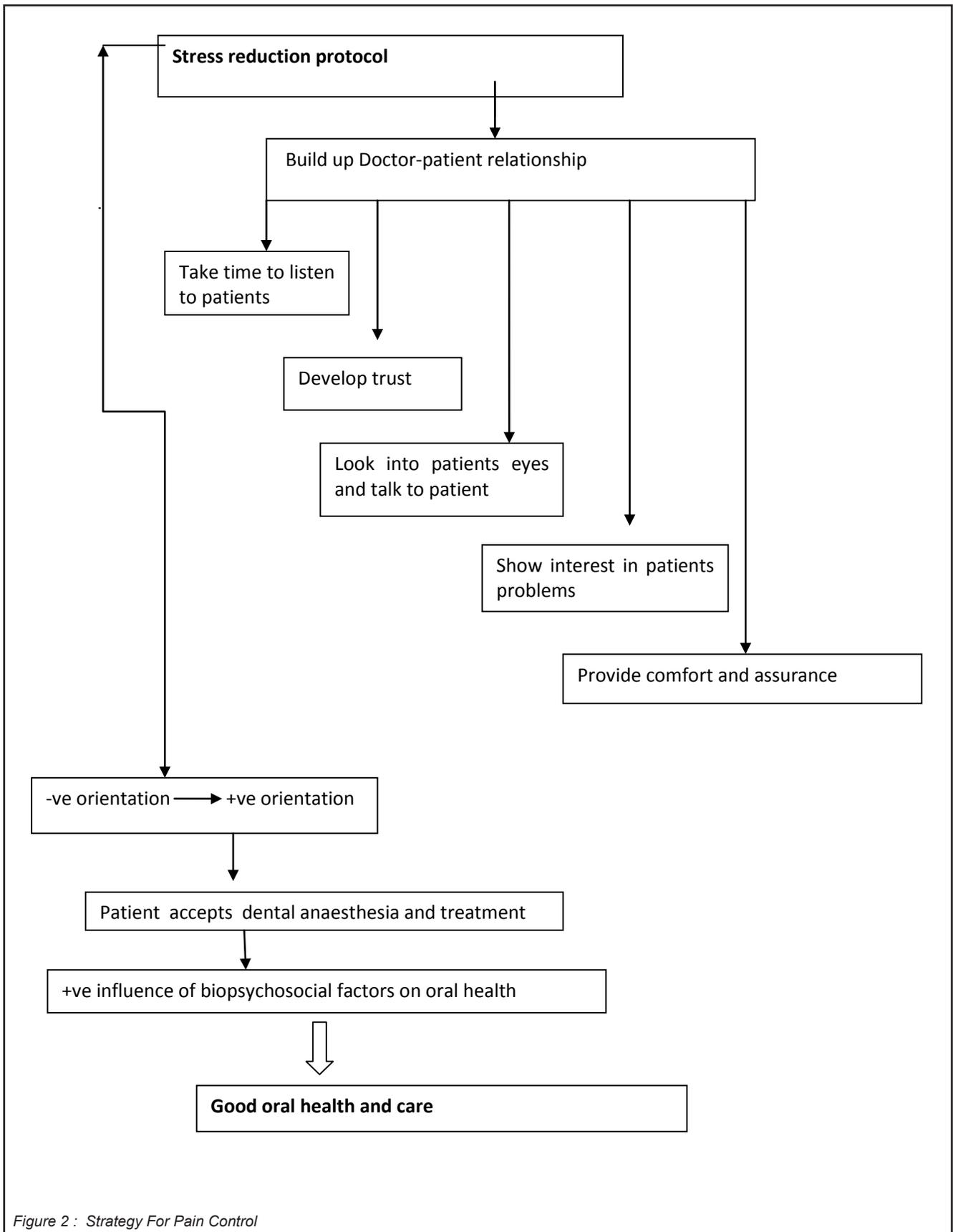


Figure 2 : Strategy For Pain Control

Perceptions of pain during dental treatment (Table 6)

In relation to statement of perception towards pain, there is statistically high significant difference in the responses of male and female subjects for the “terrified”(DFAS-4), in which 50.6% of male subjects had responded positively when compared with 25.7% of female subjects, for the statement, “very afraid”(DFAS-3), 60.9% of male subjects had responded positively when compared with 46.1% of female subjects, for the statement ‘ little afraid”(DFAS-2) after local anesthesia injection, 45.8% of male subjects had responded positively when compared with 96.1% of female subjects. All these responses are statistically significantly different between male and female subjects. However, there was no statistically significant difference between male and female subjects for the responses of the statement,absolutely not afraid during dental treatment”(DFAS-1)

Awareness about dental treatment (Table 7)

A higher proportion 96.1% of female subjects had responded positively for the statement that dental health is the mirror of systemic health when compared with 88.2% of male subjects which is statistically significant.

DISCUSSION

Pain is a subjective experience and has significant effects on behavior,emotions,activity output and may lead to avoidance of dental treatment. Dental pain is influenced by psychological,psychogenic and psychosomatic factors (4). Since pain is a subjective factor,it cannot be measured,but only observed and assessed using various pain scales (2). Irrespective of any gender, all humans have the same anatomical structures to convey nociception to CNS.Several factors unconsciously influence the intensity with which the pain is perceived. However,pain perception is attributed to various factors (Figure 1) (2) but there are many neuro imaging studies that show how emotions and

psychological factors cause alteration in pain transmission (5). There are many studies supporting male and female pain perception differences(4) and it is noteworthy that women tolerate pain better than men of same cultural and ethnic background. Pain perception in women is influenced by several sex hormones,high pain threshold and experiences during puberty and childbirth (6),but women experience pain exacerbation during menstrual cycle due to decreased pain threshold although the pain threshold remains the same in men and women during low progesterone and high estradiol levels (7). According to integrative model put forth by c-s lin, DM niddam et al, pain experience is influenced or shaped by both situational factors and trait factors and stressful dental settings exacerbates pain experience (8). Situational factors are the factors specific to content regarding dental pain and its treatment such as uncontrollability or dangerousness (9).Trait factors have the influence of personality factors,such as dental anxiety,depression or neuroticism on the worst pain experience in dental sitting. According to Arntz et al., anxious people have the tendency to overestimate the anticipated pain (10). A normal healthy person feels pain himself on empathizing another persons pain.This may bedue to neuronal changes and sensitization of our own pain pathway while empathizing other person’s pain (11). Thus alleviating pain and anxiety, irrespective of gender is a crucial step before starting any dental procedure. But understanding differences in pain perception by different genders or individual differences in pain perception helps doctors lay out a different treatment plan and manage the subjects accordingly.This can be done by diverting patients’ attention by playing music, cartoons or comedy movies or by using pleasant odours. Limitations: Men are less comfortable in reporting pain than female patients.

CONCLUSION

The study was personally experienced,clinically observed and

reviewed in this paper and few suggestions putforth.The findings in this study showed that female subjects responded positively towards dental pain perception compared to male counterparts. The outcome of this study may be helpful in laying down a different treatment plan and management strategy individually depending on patients dental pain perception differences. Giving time and listening to patients calmly, understanding their emotions and behavior can help in reducing stress and gaining patient’s confidence and change catastrophic thinking about the dental pain and help patient cope with stress and pain during dental treatment.

REFERENCES

1. Bell's orofacial pain:the clinical management of orofacial pains:6th ed, okeson jp,Chicago,quintessence books 2005.
2. Welsley E. shankland , DDS, MS, “Factors that affect pain behaviour”. *Journal Of Craniomandibular Practice* 2011;**29**(2).
3. Available at: www.ada.org: “guidelines for teaching pain control and sedation to dentists and dental students”,(adopted by the oct 2007ADA house of delegates)
4. Richard rokyata anna yamamtova “sex differences in pain perception and interpretation Act Nerv Super Rediviva. 2013:st(3):125-34.
5. Marcol lloggia, Petra schweinhartd, et al. Effects of pain perception in dental environment JCD 2008;**74**;7.
6. Fillingim RB. Sex, gender and pain: men and women are really different. *Curr Pain and Headache Reports* 2007;**4**(1):24-30.
7. Giamberardino MA, Berkley KJ, et al. Pain threshold variation in somatic wall tissues as a function of menstrual cycle, segmental site and tissue depth in non -dysmenorrhoeic women,dysmenorrhoeic women and men. *Pain* 1997;**71**:187-97.
8. C-S lin, DM Niddam, MI HSU, JC Hsieh”pain catastrophizing is associated with dental pain in stressful context” *J Dent Res* 2013: 92(2).130-135.
9. S Armfield. cognitive vulnerability:a model of etiology of fear. *Clinical Psycho Rev Jm* 2006,**26**:746-68
10. Arntz A,dressen l, de jong. The influence of anxiety on pain:attentional and attributional mediators. *Pain* 1994;**56**: 307-14.
11. Singer.The neuronal basis and autogeny of empathy and mind reading :review of literature and implications of future research. *Neurosci Biobehav Rev* 2006;**30**(6):855-63.