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The effect of accompany person to level of anxiety on tooth extraction patients using blood pressure, pulse rate, and dental anxiety scale

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ABSTRACT

Background: Tooth extraction is a common activity in dental practice. Anxiety is the initial challenge that immediately seen on the patient. Many factors affect patient anxiety, such as dental tools, room atmosphere, nurse and dentist, or the most important, the tooth extraction procedure itself. Anxiety can cause a significant delay in procedure while waiting for patient to be ready to be extracted. Social support is believed to minimize patient's anxiety during tooth extraction procedure. Accompany person may provide sufficient social support to the patient, yet conflicting studies results questioned its necessity to overcome patient's anxiety.

Objective: This paper aims to evaluate the effect of the accompanying person on the patient's anxiety level during tooth extraction.

Methods: The study was done using a cross sectional observational analytic design. Subjects were collected using accidental sampling at Dental Clinic Panti Swasti Tangeb Bali for the last one year. Data from 103 subjects who divided into two groups, 56 subjects for the accompany group (APG) and 47 subjects for the non-accompany group (NAPG), were analyzed. Level of anxiety was assessed based on blood pressure, pulse rate, and Dental Anxiety Scale (DAS) score.

Results: The result showed that on APG, systolic and diastolic blood pressures were lower than the NAPG group, systolic of 113.3 ± 6.1 mmHg and diastolic of 77.7 ± 5 mmHg compared to systolic of 119.4 ± 4 mmHg and diastolic of 78.9 ± 3.4 mmHg. Pulse rate was also lower in the APG group, 82.2 ± 7.6 bpm vs. 91.6 ± 5.4 bpm, respectively. The DAS score was 12.6 ± 1.7 in the APG and 14.3 ± 1.5 in the NAPG. The overall anxiety level based on systolic blood pressure, pulse rate, and DAS score were significantly lower in the APG compared to the NAPG ($p<0.05$).

Conclusion: Accompanying person provided less anxiety to the patients undergoing tooth extraction procedure.

Keywords: accompany person, anxiety, tooth extraction procedure

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BACKGROUND

Anxiety in tooth extraction is called dental anxiety. Prevalence of dental anxiety was around 5 – 20 % beyond the countries.[1] A study in Manado found that 43.6% of dental treatment patients got anxiety. Those data indicated that dental treatment should consider comfort procedure for the patient. Dental anxiety can affect dental treatment in which the patient may become not cooperative or even cancel the appointment. This condition can decrease the efficiency and effectiveness of dental health services.[2]

Several factors affect dental anxiety, particularly working condition in dental practice which includes facilities, dentists and nurses.[1] Dental practice conditions will affect the patient perception and subsequently be adapted physiologically as subjective and objective changes. Anxiety is a state of subjective perception and transferred within the body as a stimulus for sympathetic and parasympathetic feedback mechanisms. An anxiety state can be adapted as a fight or flight mechanism and manifested into many organ systems within the body. The cardiovascular system as one of the systems affected will show several changes in responding to sympathetic stimulations including increase blood pressure and pulse rate.[3]

Pre-operative anxiety is a subjective condition that feels by the patient as anxiety and tension. This condition physiologically may increase blood pressure and pulse rate through a feedback mechanism of sympathetic system. Some signs of anxiety are sweating, blood pressure and pulse rate increases, palpitation, dry mouth, diarrhea, muscle tension, and hyperventilation.[3] Normal blood pressure are systolic <120 mmHg and diastolic <80 mmHg, while the pulse rate is 60 – 100 bpm.[4] These conditions arise sufficient risk for patient undergoing tooth extraction as increase in blood pressure and pulse rate may cause the cardiovascular system to work harder and ultimately will increase oxygen consumption.[5]

There are some procedures routinely done in

dental and oral treatment. One of them is tooth extraction or *exodontia*.[6] Indication of exodontias are deep caries with pulp pathology and impossible for tooth care, root pathology tooth, the non-vital tooth, and periodontitis with more than 40 % alveolar bone loss. Malposition and overeruption, impaction, primary tooth persistent, line fracture tooth, preparation prosthodontic and orthodontic treatment, prophylaxis and before radiotherapy, supernumerary tooth, tooth related cyst, and jaw tumor, are also conditions that may need tooth extraction procedure.[7]

Tooth extraction is done following some procedures such as anesthetic, luxation and tooth flyer application, tooth extraction, tooth socket cleaning from necroses debris, or alveolar bone flakes for dry socket prevention and surgery.[8] Following the procedure, many tools is needed, and all items are placed in front of the patient's face even in the mouth. This condition can cause anxiety and fear and results in an uncomfortable feeling to the patient or even the dentist in the tooth extraction process.

Level of anxiety can be measured objectively based on physiology parameters such as blood pressure, pulse rate, respiration rate, body temperature or subjectively using questionnaire such as Dental Anxiety Scale (DAS). DAS questionnaire asks the patient feeling before entering dental practice room, while in the room, after seeing the dental equipment in the room.[9] An assessment using physiology parameters and DAS questionnaire can give a comprehensive analysis of the level of anxiety.

One study has mentioned that social support is one thing that is needed to minimize anxiety.[10] Happiness is felt as an appreciation of caring and the needs which comes from a close relationship of the social supporter that may able to overcome anxiety in dealing with a new thing in life.[11] A social support provided through accompanying person can give comfort to the patients during a dental procedure. However, in some cases, the accompanying person may be felt like a burden and patients may ask for doing the procedure alone.

Anxiety is a common challenge that may occur before tooth extraction procedure. Accompany person is one factor that still debated among the patient and the dentist. This paper was aimed to compare the level of anxiety among patient with or without accompany person based on blood pressure, pulse rate and Dental Anxiety Scale. The result could be used as a reference to improve the safety and comfort in the tooth extraction procedure.

Methods

This study used a cross sectional observational analytic design. The subjects were all patient at Policlinic Pratama Panti Swasti Tangeb Bali who did tooth extraction procedure. A total of 103 subjects were collected during the last one year from April 1st, 2015 to April 1st, 2016 using accidental sampling method. Subjects were then divided into accompany person group (APC) and non-accompany person group (NAPG), 56 persons and 47 persons, respectively. Subjects were informed and planned for tooth extraction and came with or without accompanying person.

Data regarding age, gender, admission frequency, and dental health history were collected from admission chart. DAS questionnaire was asked before the procedure carried out, in conjunction with blood pressure and pulse rate measurements.

The data about age and gender were analyzed descriptively, whereas continuous data of DAS score, blood pressure, and pulse rate were analyzed using comparative test. If the data was normally distributed according to Kolmogorov-Smirnov test, the analysis was continued with unpaired T-test. If not, a Mann-Whitney U test was performed.

Results

The data from 103 subjects were collected including age, gender, blood pressure, pulse rate, and DAS score. The characteristic of subjects based on gender and age were depicted in **Table 1**.

Both groups had similar composition in gender and age distribution. Most of the patients belonged to the 31 - 60 years old groups.

Table 2 showed that both groups had similar mean age, 45.1 ± 8.6 years old on the APG and 45.6 ± 9.1 on the NAPG. All three parameters of anxiety level (blood pressure, pulse rate, and DAS score) were found to be lower in the APG compared to the NAPG. Before assessing the difference between

Table 1. The characteristic of subjects based on gender and age

Variable	APG (n = 56)	NAPG (n = 47)	Total (n = 103)
Gender			
Man	29	26	55
Woman	27	21	48
Age (years)			
21 - 30	1	-	1
31 - 40	17	16	33
41 - 50	22	16	38
51 - 60	12	12	24
61 - 70	4	3	7

APG: accompanying person; NAPG: non-accompanying person

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Table 2. Descriptive data of subjects based on age, blood pressure, pulse rate, and DAS score

Variable	APG		NAPG	
	Mean ± SD	Min - Max	Mean ± SD	Min – Max
Age (years)	45.1 ± 8.6	29 - 67	45.6 ± 9.1	30 – 67
Blood pressure (mmHg)				
Systolic	113.3 ± 6.1	90 - 125	119.4 ± 4.1	105 – 128
Diastolic	77.7 ± 5	70 - 89	78.9 ± 3.4	70 – 88
Pulse rate (bpm)	82.2 ± 7.6	67 - 99	91.6 ± 5.4	78 – 99
DAS score	12.6 ± 1.7	9 - 18	14.3 ± 1.5	11 – 18

APG: accompany group; DAS: dental anxiety scale; NAPG: non-accompany group

Table 3. The result of Normality test using Kolmogorov Smirnov (n > 30)

Variable	*p-value*	
	APG	NAPG
Blood pressure		
Systolic	0.001	0.001
Diastolic	0.001	0.001
Pulse rate	0.001	0.001
DAS score	0.006	0.001

APG: accompany group; DAS: dental anxiety scale; NAPG: non-accompany group

Table 4. The comparison of mean differences between APG and NAPG using Mann-Whitney U test

	Systolic blood pressure	Diastolic blood pressure	Pulse rate	DAS score
Mann-Whitney U	504.500	1075.000	393.500	561.500
Z	-5.413	-1.649	-6.130	-5.073
Asymp. Sig. (2-tailed)	.000	.099	.000	.000

those two groups, a normality test using the Kolmogorov Smirnov test and variance test using Levene test were done (**Table 3**).

All variables in **Table 3** were not distributed normally ($p<0.05$). therefore, the comparative test was then performed using a non-parametric test (**Table 4**)

The result depicted in **Table 4** showed that the mean differences in systolic blood pressure but not diastolic blood pressure, pulse rate and DAS score between the APG and the NAPG groups were statistically significant, given the p-values were 0.000. The lower level of anxiety as shown by lower systolic blood pressure, pulse rate, and DAS score in the APG suggested that the presence of accompanying person was able to decrease patients anxiety during the tooth extraction procedure.

Discussion

Dental anxiety is an immediate problem that commonly faced in routine dental treatment practice.

To overcome this unpleasant feeling, some suggested that the presence of the accompanying person may help in reducing anxiety level in patients who will do a tooth extraction procedure. In the current study, the effect of accompanying person on anxiety level was analyzed using the comparison of blood pressure, pulse rate, and DAS score.

Gender is believed to affect anxiety. According to the previous study, women were more frequent to experience anxiety during tooth extraction, even for those who already experienced it several times in the past.[12] In this study, the effect of gender and age to the anxiety level were not analyzed further due to the similarity of their composition in APG and NAPG. However, the association of between age and gender with anxiety during tooth extraction procedure should not be ignored entirely, and specific care for a particular gender or age group is mandatory.

The blood pressures level including systolic and diastolic blood pressures, pulse rate, and DAS scores were collected before the procedure to obtain the anxiety level in both groups. The APG had significantly lower anxiety level as depicted by lower systolic blood pressure level, pulse rate, and DAS score than the NAPG. This result showed that accompany person was effective in providing less anxiety and needed by the patient during the procedure of tooth extraction. There are many ways to aid in appropriately facing anxiety such as psychodynamic, human, learning, and biological approaches.[13] The presence of the accompanying person including friends or families can make the patient feels comfortable and relax. Physiologically, comfort and relax condition during the procedure will decrease catecholamine hormone and increase endorphin release and stimulate comfort feeling. Comfort condition will suppress sympathetic nerve activity and stimulate parasympathetic nerve activity that causes vasodilatation and decrease in the pulse rate.

Meanwhile, clinic condition and previous experience that collected using DAS questionnaire showed lower score. The condition of patient and clinic will affect the patient's perception about tooth extraction. In this study, the presence of the accompanying person can encourage patient's self-confidence to follow tooth extraction procedure and ultimately manifested as a lower DAS score. Accompany person not only gives good effect to the patient but also can affect dental services in which procedure can be done in a more safe, comfortable,

effective and efficient way. The company, patient and dentist can get equal benefit through the proper extraction procedure and will be able to increase productivity. A study about mental fatigue in metal crafters found that worker mental conditions improved when working condition ameliorated adequately, thus supported current idea regarding the effect of working condition on patient mental status.[14] Eventually, dental practice needs an appropriate working condition to provide comfort condition for everyone who will do activities such as in tooth extraction.

Conclusion

The presence of the accompanying person significantly decreased anxiety level in the patients undergoing tooth extraction procedure in dentist clinic. Lower anxiety level as depicted by lower systolic blood pressure, pulse rate, and DAS score was thought to be mediated by the effect of accompanying person in stimulating parasympathetic nerve activity and increased patient's comfort perception in the clinic. This result can be used as a suggestion to the patient who will do tooth extraction to come with people to accompany them during the procedure in the dentist.

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