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White Coat Syndrome in Pediatric Dentistry: A Systematic Review

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Abstract

Background: White Coat Syndrome is a condition of abnormally elevated blood pressure in clinical situations that is felt by patients when they see operators or medical personnel wearing white coats. The phenomenon of White Coat Syndrome is the same in pediatric patients as well as adult patients, which means an increase in blood pressure when in a medical facility such as a clinic when compared to the normal blood pressure of patients who are monitored during outpatient care or before entering the clinic. Some research results indicate that the increase in blood pressure due to this phenomenon is caused by neuro-endocrine reflexes facilitated by the sympathetic nervous system, which arises because of the patient's fear of being diagnosed with a new condition at the time of the examination. **Aim:** Knowing about White Coat Syndrome in pediatric dentistry and how to manage the condition. **Methods:** Data was collected by searching the literature on article search sites, namely Pubmed and Google Scholar published from 2016 to 2021, the search was carried out in January 2021. The search for data was carried out systematically using the keywords White Coat Syndrome in Dentistry and White Coat Hypertension in Dentistry. **Result**: There were 7 articles that discussed White Coat Syndrome in Pediatric Dentistry. **Conclusion:** White Coat Syndrome is a psychological condition that can have an impact on pediatric patients with cardiovascular disorders, and can be treated using practice-level management to overcome anxiety and fear that are the causes of White Coat Syndrome.

Keywords: *White Coat Syndrome, Pediatric Dentistry, Dentistry*

Introduction

White Coat Syndrome is a condition of abnormally elevated blood pressure in clinical situations that is felt by patients when they see operators or medical personnel wearing white coats. White Coat Syndrome has the same meaning as White Coat Hypertension and this arises due to the stress the patient creates when he sees an operator or health worker wearing a white coat and is associated with an increased heart rate.[1]

The phenomenon of White Coat Syndrome is the same in pediatric patients as well as adult patients, which means an increase in blood pressure when in a medical facility such as a clinic when compared to the normal blood pressure of patients who are monitored during outpatient care or before entering the clinic. Some research results indicate that the increase in blood pressure due to this phenomenon is caused by neuro-endocrine reflexes facilitated by the sympathetic nervous system, which arises because of the patient's fear of being diagnosed with a new condition at the time of the examination.[1,2,3]

This condition is considered as a condition that can also arise in patients suffering from cardiovascular disorders, but under normal conditions it rarely occurs due to these conditions, however, White Coat Syndrome is a risk factor that can play a role in cardiovascular disorders, but it is not a major cause. the emergence of these conditions.[4]

The condition of White Coat Syndrome, in this modern world, has clear definitions and

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definitions, but the steps used in clinical conditions for this condition are still considered lacking. According to a study conducted by the Midwest Pediatric Nephrology Consortium with 74 pediatric respondents, as many as 85% of respondents refused to undergo further examination when diagnosed with White Coat Syndrome and none of the respondents wanted to take anti-hypertensive medication. This is influenced by the patient's habit of visiting the clinic and also monitoring blood pressure repeatedly.[4,5]

Methods and Materials

Data source

Data was collected by searching the literature on article search sites, namely Pubmed and Google Scholar published from 2016 to 2021, the search was carried out in January 2021. The search for data was carried out systematically using the keywords White Coat Syndrome in Dentistry and White Coat Hypertension in Dentistry.

Research Criteria

A. Inclusion Criteria

1. Articles published from 2016-2021
2. Articles in English
3. Scientific articles that have been published and available online
4. Articles that examine White Coat Syndrome and White Coat Syndrome in Dentistry and Pediatric Dentistry.

B. Exclusion Criteria

1. Articles that cannot be accessed for free
2. Articles that do not discuss White Coat Syndrome and White Coat Syndrome in Dentistry and Pediatric Dentistry

Research procedure

1. Literature search was conducted on the online database PubMed and Google Scholar. In addition, a search for the list of references to articles that fall into the inclusion criteria was also carried out to find out whether there were other related studies that were relevant to this research.
2. Keyword determination was carried out in literature search, namely White Coat Syndrome in Dentistry and White Coat Hypertension in Dentistry.
3. Eliminate duplicated literature
4. Articles are filtered on the basis of title, abstract, and keywords
5. Read complete or partial articles that have not been eliminated to determine whether the article meets the eligibility criteria.
6. Data collection was done manually by creating a research matrix containing: author's name, year, title, and conclusion.
7. Processing the data that has been obtained.

The literature search was conducted on the online database, Pubmed, using keywords, namely White Coat Syndrome in Dentistry and White Coat Hypertension in Dentistry. of which 110 articles were found.

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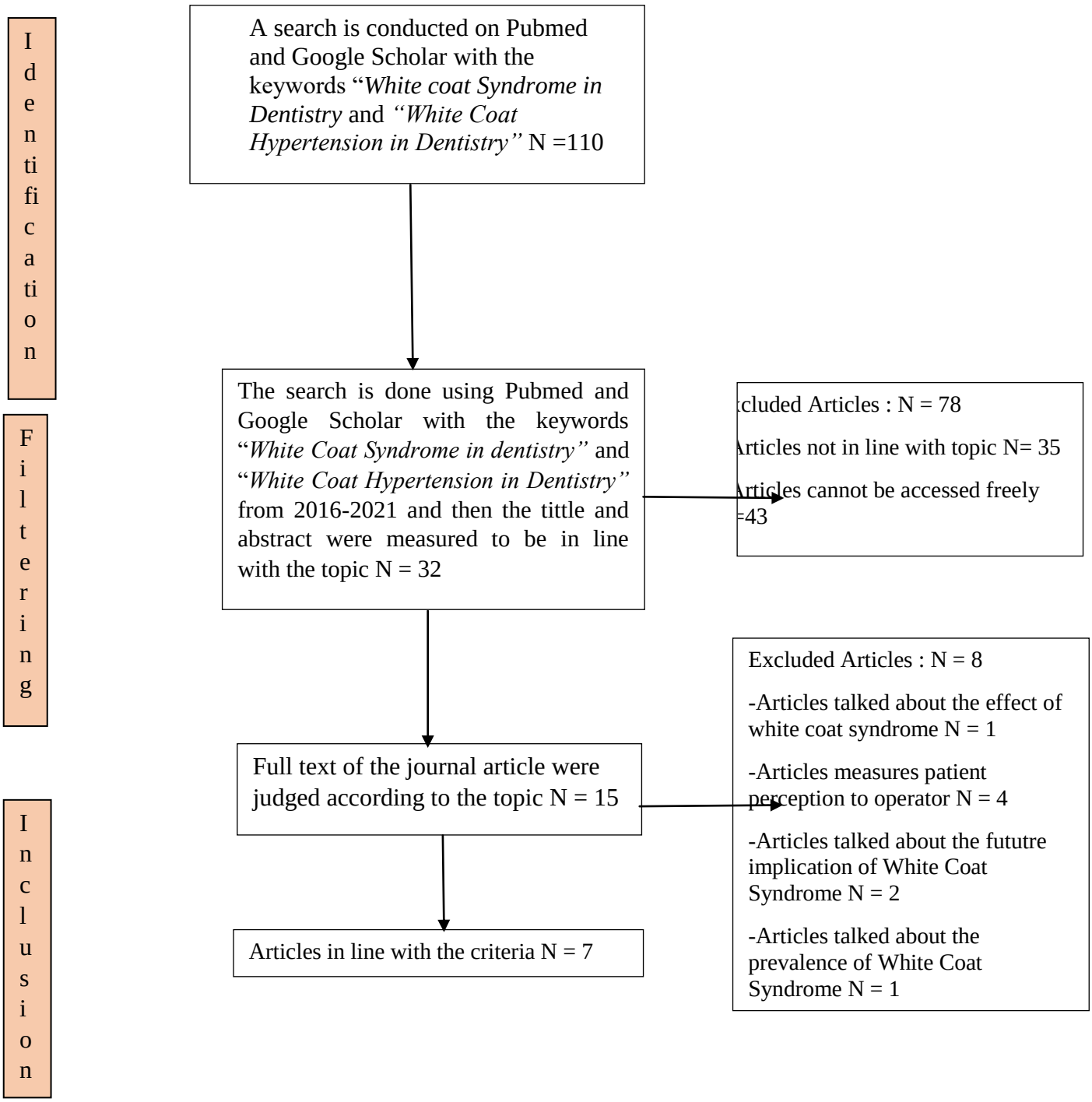

The remaining full-text articles were 32 articles which were further eliminated and keaving 15 articles. Subsequently, a further and detailed elimination was carried out, leaving 7 articles included in the analysis.

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Table 1. Characteristics of each article included in the systematic review

No	Author	Titles	Year	Conclusion
1	Rosiak J, Kubic-Filiks B, Szymanska J	Hypertension in Pediatric Dentistry Practice	2016	Children's lifestyle in this modern era such as lacking exercise and a bad eating habit, has a role in hypertension condition in children.
2	Kimura Y, Tonami K, Tsuruta J, Araki K	Rise of blood pressure value in young patients at first visit at a dental university hospital in Japan	2019	Child patients has a higher systolic pressure than expected, it is presumed to stem form psycho-social background and medical conditions.
3	Babu S	Preference of Dentist's Attire Among children	2016	*White Coat*were found to be the preferred outfit on both children and parents, thus not proving the existence of*White Coat Syndrome*
4	Rank et al	Preferences and Perceptions of School Children in Relation to New Styles and Colors of Dental Attire	2019	Patients has a preference towards White Coat, the colour white and mask on dentists, this is due to that what is considered normal by the patients.
5	Aashar et al	Patient's Perception about Dental Professionals Attire	2020	Patients perception towards dentists are measured by their attire
6	Jurko A, Minarik M, Jurko T, Tonhajzerova I	White coat hypertension in pediatrics	2016	*White Coat Hypertension*is important to note due to having a higher number of cardiovascular occurences.
7	Zeren et al	What to wear when practicing on pediatric dental patients	2016	The majority if pediatric patients pick dentist to wear White Coat, however patients with Dental Anxiety preferred a more casual attire.

Discussion

The results of the analysis found that White Coat Syndrome is a phenomenon that does not generally apply to all pediatric patients, this is because it was found that there were pediatric patients who did not feel fear of the dentist when the dentist wore a white coat, but There were also patients who felt the condition if the patient had dental anxiety.[6] The main goal of a dentist and all medical practitioners who interact directly with patients is to build trust-based interactions

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between the practitioner and his patient, this is especially important with the patientpediatrics. Patients with a high level of trust will be more obedient to the dentist's instructions regarding the treatment to be given, the same applies to children. The condition of dental fear and also dental anxiety is a very contributing factor related to the importance of gaining patient trust because patients who have this condition will have a tendency to lack trust in dentists.[7,8,9,10,11,12,13,14,15]

Research conducted in 2015 shows that dental fear and anxiety are a common condition and covers approximately 10% of the population, however this number decreases with increasing age.[16,17] Other factors that can affect the anxiety and fear of pediatric patients. Regarding treatment at the dentist is the number of visits made by the patient, the more frequent visits, the less anxiety they suffer.[18,19,20,21,22,23,24,25]

Dental fear itself is a reaction to fear that arises because of previous experiences that cause the patient to experience fear, while dental anxiety is the patient's response to things that have never been done or things that are not known. The difference between dental fear and dental anxiety is the patient's condition. In dental anxiety, it is likely that the patient has never been to a dentist before so that he feels anxious and uncomfortable, whereas in dental fear, the patient has made a previous visit which causes a negative impact on the patient which causes the patient to be afraid to make a visit to the dentist. [26,27,28,29,30,31,32] However, a study conducted in 2012 showed that there was no significant relationship with the patient's blood pressure before and after treatment at the dentist who was anxious so that the impact of anxiety and increased blood pressure still requires further researchrelated to their relationship with one another.[11]

There are several methods that can be used to measure the condition of the patient's fear and anxiety, the first way is to do a Self Report Assessment which is done by interviewing patients directly and having conversations with patients, other methods are Parental Proxy or conducting interviews with parents. From patients who describe the condition of the patient, the next method is Observation Based Assessment, namely by directly observing the patient and determining the condition of patient anxiety, the last method is Physiological Assessment, which is by measuring stress markers such as increased blood pressure and heart rate, this is directly related with White Coat Syndrome.[18,20] These methods have their respective advantages and disadvantages so it is important for dentists to know about this and adapt it to clinical conditions that suit the patient so that the patient and doctor can use it. gi can work together and facilitate the treatment process.[19,28] It is important to improve and maintain the level of patient cooperation because it is directly related to the treatment process, if the patient is cooperative, the chances of successful treatment can also increase.[21]

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One thing that is very important to consider in providing care to prevent anxiety which can lead to White Coat Syndrome is the trust building that dentists do to their patients, especially in children. In the world of pediatrics, the concept of clown doctors or clown doctors is known, which aims to relieve children's anxiety levels before taking action. Another thing that can contribute to relieving anxiety from pediatric patients is the choice of color and design of the PPE worn, or it could be with additional attributes apart from the white coat worn which has a bright color or cartoon design, with the aim of creating a more relaxed clinical atmosphere. and giving pediatric patients the impression that the dental clinic is not “scary” or “worrying”. Apart from the dentist's clothes and dress, other things that can affect the condition of the pediatric patient and its correlation with anxiety and White Coat Syndrome are the dentists' way of explaining and establishing good communication with patients. A study in 2020 shows that even though there are cases of White Coat Syndrome, this can be overcome when the dentist who will take the action can introduce himself to the patient and also interact in a way that calms the patient, even in this study it also shows that there are pediatric patients who the dentist prefers to treat using a white coat even though he has White Coat Syndrome. This shows that the condition of White Coat Syndrome can be overcome with certain actions and in a professional capacity, it should not have too big an impact on the patient's condition and also the patient's level of cooperation.

Figure 1. Attire worn by dentists

Source : Zeren AE et al. *What to wear when practicing on pediatric Dental Patients.* 2016

Patients also have their own perceptions regarding dentists. It is undeniable that the most common perception that patients associate with the word "doctor" is the white coat worn by the doctor, so it is normal for a patient to have a general perception of hearing the word "doctor" and associating it with an impression of professionalism and also a general description that they have

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to the doctor, so they associate the white coat with the doctor. This is formed from the paradigm of society which comes from the general picture that occurs in society regarding medical practitioners and doctors. [15,24,25]

There are several methods that can be done to overcome the patient's anxiety and fear conditions, and indirectly overcome the White Coat Syndrome during the action, one of these methods is sedation, but this sedation is still a less common thing to do because there are potential side effects that can occur in patients and not all dentists have the ability to act according to the condition.[33,34,35,36,37] Another method that can be done is to carry out treatment at an effective, effective time in the context that the patient is in the most comfortable condition, namely at the hour certain hours of the day. A study in 2018 showed that the ideal time for treatment is 2 hours before noon and 2 hours before sunset because at that time pediatric patients show a quite low tantrum tendency, this of course is supported by the intrapersonal ability of the dentist himself. and its ability to adapt to a method that can be suitable for each individual.[26,27] Furthermore, another method that can be done is distraction or diverting attention and focus from patients before doing treatment and also Positive Reinforcement, namely by giving positive things or rewards to patients who cooperative, this has an impact on the condition of the patient who will be more cooperative if accustomed to this condition, there are also other relaxation methods such as relaxation but in the end the ultimate goal of this is to make the patient more cooperative and also experience severe desensitation. Face the fear and anxiety that may arise during treatment as well as White Coat Syndrome or increased blood pressure that occurs in clinical conditions.[38,39]

Dental and oral care should have a dual function, in addition to treating dental and oral health problems but also to eliminate negative stigma and stereotypes towards doctors, dentists and other clinicians with the aim of increasing patient cooperation and also making patients more comfortable and relaxed when treated.[40]

Other things that can affect the condition of the patient's blood pressure are the frequency of visits to the dentist, the impression of these visits and also of course the congenital medical conditions that the patient may suffer such as congenital cardiovascular disorders suffered by the patient.[29,30] Hypertensive conditions that may occur and not associated with White Coat Syndrome can also occur in pediatric patients, this occurs because of the poor lifestyle and diet carried out by the patient and the patient's family.[1] In 2016 a study showed that the level of hypertension in dental clinics was quite high , as many as 63.7% admitted that they knew the condition of hypertension while 52.9% did not know, this shows the importance of a thorough diagnosis and examination related to existing hypertensive conditions, whether purely from White

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Coat Syndrome or originating from a cardiovascular disorder.

According to research conducted in 2002, the prevalence of White Coat Syndrome in pediatric patients suffering from hypertension showed that among 70 hypertensive patients, 33 patients or 47% had White Coat Syndrome, but it should be noted that the condition of White Coat Syndrome has no correlation with age. gender or hypertension, which indicates that White Coat Syndrome can still occur in patients who have no history or previous hypertensive conditions, however, White Coat Syndrome is more common in pediatric patients and in patients with higher blood pressure.[33] White Coat Syndrome can be distinguished from hypertension by routine or ambulatory blood pressure monitoring, which shows a prevalence of 20% -60% in adults, this difference which will indicate whether the condition arises from cardiovascular disorders or White Coat Syndrome.[34] However, this is the opposite of research which conducted in 2010 which showed that 67% of patients from 400 respondents preferred dentists to wear white coats for the purpose of identifying the dentist on duty.[35] White Coat Hypertension is commonly found in children which is found from differences in blood pressure measured at home or Ambulatory Blood Pressure and performed in the clinic, this is used to identify the condition of White Coat Syndrome in patients in the clinic.

Hypertensive conditions and White Coat Syndrome are closely related, so there needs to be a management method for hypertensive conditions as well as White Coat Syndrome that may arise. White Coat Syndrome in the context of anxiety already has treatment and management techniques psychologically, but there is also a physiological method, this method is to use medication that lowers the patient's blood pressure and returns the blood pressure to a normal condition.[40,41] This condition was found that the condition of blood pressure Children with White Coat Syndrome are higher than children with normal blood pressure, but lower when compared to children with hypertension, this indicates that the condition is still manageable and medical measures that may have long-term effects are not indicated as initial treatment but as a follow-up care when psychological management is unsuccessful.[42] Prevalence of White Coat Syndrome and White Coat Hypertension, a study conducted in 2021 on 142 patients showed 15 patients suffering from White Coat Syndrome showed no urgency for this condition. k is too urgent in normal conditionsand a study conducted in 2006 showed that 20% of cases of hypertension were white coat hypertension cases and was associated with stress and anxiety responses from patients when they saw a white coat in clinical conditions, this is a consideration to improve the accuracy of the examination procedure physical for determining the treatment plan, therefore dentists are advised to carry out routine blood pressure checks on their patients.[43,44,45]

Hypertension is defined as blood pressure that exceeds normal limits and exposes the patient to the dangers that come from the condition. Continuous increase in blood pressure can cause strokes and myocardial disorders.[46] To diagnose these conditions, routine blood pressure measurements are carried out in clinics or patients.[47] However, the significance of White Coat Hypertension has not been found, but its prevalence in pediatric patients is 10% -60% depending on the method used and the threshold used in the clinic to determine blood pressure.[48] Research in 2007 showed that many hypertensive conditions in pediatric patients and young adults, many hypertensive conditions in this age group have undiagnosed hypertension. , this shows the importance of checking blood pressure at each visit to get vital conditions and also helps the process of diagnosing the patient's blood pressure condition whether it comes from cardiovascular disorders or comes from dental anxiety or White Coat Syndrome.[49,50,51,52,53,54,55] Therefore it is important dentists to create comfortable conditions for patients to relieve the anxiety conditions suffered by patients so that patients are more cooperative and to reduce the possibility of White Coat Syndrome.

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