ORIGINAL ARTICLE

KNOWLEDGE OF DENTISTS REGARDING DENTAL TREATMENT DURING PREGNANCY IN KARACHI

[1]ALINA NASIR
[2]SHAMA ASGHAR
[3]SYED ADEEL AHMED
[4]ERUM RASHID
[5]SARA IKRAM
[6]FASIHA MOIN

ABSTRACT

This study aimed to assess the knowledge of dentists in Karachi regarding the dental treatment of pregnant patients. The cross-sectional descriptive study was conducted by the Department of Operative Dentistry at Bahria University Medical and Dental College, Karachi over a period of eight months. A questionnaire with ten close-ended questions was used. Software IBM SPSS Statistics version 23.0 and Chi-square test were used for data analysis and p<0.05 was considered significant. From a sample size of 215 practicing dentists, 56 (26%) were male and 159 (74%) were female. All participants were between the ages of 23 and 41 years, with a mean age of 27.69 ± 3.2. The majority of participants were Bachelors of Dental Surgery (39.1%), according to practice 67% were general dentists, 52.1% had less than 3 years of experience in dental practice. 86.5% of practicing dentists were willing to provide dental treatment to pregnant patients, 35.3% chose the second trimester as the best time to take a radiograph, 33.5% prescribed amoxicillin, 76.7% considered paracetamol safe during pregnancy, 54% favored the use of local anesthesia with vasoconstrictor. 43.3% did not favor providing treatment to a pregnant patient during any trimester (p=0), 46.5% considered the use of amalgam as safe during pregnancy, 70.7% supported the use of composite and glass ionomer cement, 34.4% opted for the second trimester to perform endodontic treatment while 32.1% felt it was safe to perform at any time and 35.3% reported it was safe to perform dental extractions at any time. This study revealed that there was a general lack of knowledge among dentists in Karachi regarding the dental treatment of pregnant patients.

Key Words: *Dental treatment during pregnancy, pregnant dental patient, knowledge of dentists, medications during pregnancy, local anesthesia during pregnancy.*

INTRODUCTION

Many a times, dentists have to face the concerns of the pregnant dental patient regarding the safety of undergoing dental procedures. A pregnant woman who requires any form of dental treatment is one that should be given special consideration. During pregnancy, treatment may be modified but does not necessarily require any delay, although appropriate risk assessment should be made of the patient and the developing fetus.[1]

In 2006, the New York State Department devised the first evidence-based and comprehensive guidelines encompassing major aspects of dental care for pregnant patients. Later, in 2010, the California Dental Association Foundation, associated with District IX of the American College of Obstetricians and Gynecologists, issued an updated set of guidelines based on the former 2006 publication from New York.[2] Many international organizations including the American Dental Association (ADA), the American Academy of Pediatrics (AAP) and the American Academy of Pediatric Dentistry (AAPD) follow their developed protocols for enhancing the oral hygiene of pregnant patients and their babies. These organizations believe that the pregnant dental patient should not be managed differently than any other patient.[3]

[1] For Correspondence: Dr Alina Nasir, Lecturer, Operative Dentistry, Bahria Univesity Medical and Dental College, Sailors Street, Adjacent PNS Shifa Hospital, DHA-2, Karachi
Email: alina.nasir@yahoo.com
[2] Dr Shama Asghar, BDS, FCPS, Head of Department Operative Dentistry
[3] Dr Syed Adeel Ahmed, BDS, Lecturer, Operative Dentistry
[4] Dr Erum Rashid, BDS, Lecturer, Operative Dentistry, Bahria Univesity Medical and Dental College
[5] Dr Sara Ikram, BDS, Lecturer, Operative Dentistry
[6] Dr Fasiha Kazi, Lecturer, Operative Dentistry (All authors from Bahria Univesity Medical and Dental College)

Received for Publication: December 17, 2016
First Revised: January 20, 2017
Second Revised: February 7, 2017
Approved: February 14, 2017

Pregnant patients undergo several physiological changes during the course of pregnancy and every dental clinician should be aware of this significant and clinically relevant altered physiological state.[1] Notably, the cardiovascular and hematological systems undergo major changes due to hormonal alterations.[1] Preventive dental treatment and emergency dental services such as for acute dental infections should be provided as early as possible to a pregnant patient. Many dental and medical professionals believe it is ideal to provide elective dental treatment between 14-20 weeks of gestation without any harm to the developing fetus.[4-6] If necessary, the timing, type of treatment and drugs may be altered for the pregnant patient.

When prescribing medicines during pregnancy, a major cause for concern is the potential teratogenic affects on the developing embryo, owing to the fact the most active ingredients of drugs cross the placental barrier by simple diffusion. Prior to prescription of any medicine, the dentist should be able to make an accurate assessment on the benefit of the medication to the pregnant patient while also choosing one with the lowest potential toxicity. The type of medicine, its dosage and trimester of pregnancy should be cautiously evaluated.[7] Local anesthesia with vasoconstrictors are absolutely safe to use in pregnant patients on the condition that an absolutely precise technique is used to avoid the risk of intravascular injection.[8]

Pregnancy is not itself a contraindication for dental treatment, although all elective dental treatments should be deferred till after the first trimester is over due to the fragile state and vulnerability of the fetus. The second trimester is usually considered the safest for dental procedures, during which it is ideal to eliminate all potential dental pathologies that may arise during the course of the pregnancy. During the third trimester, it is best to avoid prolonged dental treatments due to the uncomfortable positioning the pregnant patient may have to undergo.[9]

There is no evidence to suggest that routine radiographs cannot be performed in pregnant patients, as long as appropriate barrier methods are used such as the lead apron and thryoid collar. The dosage of radiation and the timing of gestation are two important factors to consider, and it is suggested that the second trimester is the optimal timing for taking a dental radiograph with the use of a lead apron and thyroid collar.[8,9] Mercury contained in amalgam is thought to cause congenital defects but evidence suggests that the amount of mercury vapor released from amalgam restorations- that is 1-3µ - is far lower than the toxic level. Therefore there are no findings of teratogenecity of amalgam restorations in pregnant patients.[11-13]

METHODOLOGY

This cross-sectional descriptive study was conducted by the Department of Operative Dentistry at Bahria University Medical and College, Karachi, over a period of eight months, from March to October 2016. A pilot study was carried out with 20 random dentists to validate the content of the questionnaire. The questionnaire was designed to assess the knowledge of dentists on how to treat a pregnant patient in a clinical setting. The first part of the questionnaire contained five demographic questions asking age, gender, current educational qualifications, years of experience and type of practice. The second part contained ten close-ended and structured questions all directly related to the dental treatment of pregnant patients. Based on ten questions, the questionnaire targeted specific modalities that should be considered by dental clinicians while treating pregnant patients.

The questionnaire was circulated among various dental college hospitals in Karachi, aimed at practicing dentists who had knowledge of or had experience in treating pregnant dental patients. The software IBM SPSS Statistics version 23.0 was used to compile frequencies and Chi-square test was used for data analysis and P-values less than 0.05 were considered significant.

RESULTS

From a sample size of a total of 215 practicing dentists, 56 (26%) were male and 159 (74%) were female. All participants were between 21 and 41 years, with a mean age of 27.69 ± 3.2 years. According to type of practice, 67% were general dentists, 46% were PG trainees, 39% were specialists and 63% were lecturers at dental hospitals. Of the total sample size, 52.1% had less than 3 years of experience in dental practice, 33.5% had 4-6 years of experience, 4.7% had 7-10 years of experience and 9.8% had more than 10 years of experience in clinical dental practice.

Regarding the use of antibiotics, 33.5% prescribed amoxicillin to pregnant patients, 18.1% prescribed penicillin, 2.8% prescribed cephalexin, 3.7% prescribed clindamycin and 41.9% did not know which antibiotic to prescribe to a pregnant patient. When prescribing the analgesic paracetamol, 76.7% considered it safe during pregnancy, while 9.8% did not and 13.5% did not know whether paracetamol was safe to prescribe or not. For using local anesthesia with vasoconstrictor, 54% said it was safe to use during pregnancy, 30.7% did not render it safe and 15.3% did not know if it was safe to be used on a pregnant patient.

Regarding trimester, 36.7% of the participants thought it safe to provide dental treatment during any trimester of pregnancy, 43.3% did not ($p = 0.00$) and 20%

TABLE 1: EDUCATIONAL QUALIFICATION OF PARTICIPANT DENTISTS

S. No.	Educational Qualification	Frequency	Percentage
1	BDS	84	39.1
2	MSc/MCPS	39	18.1
3	MDS	49	22.8
4	FCPS	43	22.0

TABLE 2: ASSESSING THE KNOWLEDGE OF DENTISTS REGARDING DENTAL TREATMENT DURING PREGNANCY

Questions	Answers	
Q.1 Are you willing to provide dental treatment during pregnancy?	Yes	86.5%
	No	13.5%
Q.2 Do you know the best time to take a dental radiograph	First Trimester	7.9%
	Second Trimester	35.3%
	Third Trimester	17.2%
	At any time	20.5%
	I don't know	19.1%
Q.3 Which antibiotic do you prescribe during pregnancy?	Amoxicillin	33.5%
	Penicillin	18.1%
	Cephalexin	2.8%
	Clindamycin	3.7%
	I don't know	41.9%
Q.4 Is Panadol/Paracetamol a safe analgesic to use during pregnancy?	Yes	76.7%
	No	9.8%
	I don't know	13.5%
Q.5 Is Local anesthesia with vasoconstrictor safe to use in pregnancy?	Yes	54%
	No	30.7%
	I don't know	15.3%
Q.6 Dental treatment can be provided during any trimester	Yes	36.7%
	No	43.3%
	I don't know	20%
Q.7 Glass ionomer Cement and Composite can be used for restoration in pregnancy	Yes	70.7%
	No	24.7%
	I don't know	4.7%
Q.8 Is dental amalgam safe to use in pregnant women?	Yes	46.5%
	No	36.3%
	I don't know	17.2%
Q.9 Endodontic treatment can be performed in	First Trimester	8.8%
	Second Trimester	34.4%
	Third Trimester	7.4%
	At any time	32.1%
	I don't know	17.2%
Q.10 Dental extractions can be performed in	First Trimester	10.7%
	Second Trimester	29.3%
	Third Trimester	7.4%
	At any time	35.8%
	I don't know	16.7%

TABLE 3: DO YOU KNOW THE BEST TIME TO TAKE A DENTAL RADIOGRAPH?

S. No.	Response	Frequency	Percentage
1	First trimester	17	7.9
2	Second trimester	76	35.3
3	Third trimester	37	7.2
4	At any time	44	20.5
5	I don't know	41	19.1

TABLE 4: ENDODONTIC TREATMENT CAN BE PERFORMED IN

S. No.	Response	Frequency	Percentage
1	First trimester	19	8.8
2	Second trimester	74	34.4
3	Third trimester	16	7.4
4	At any time	69	32.1
5	I don't know	37	17.2

did not know if it was safe to provide dental treatment to a pregnant patient during any trimester. Most BDS dentists felt it was not safe during any trimester and a significant number of FCPS dentists said it was safe. In addition, majority dentists with less than 3 years of clinical experience thought treatment was not safe for pregnant patients (p=0.00) during any trimester while those with 4-6 years of experience did not know.

Regarding restorative materials, 46.5% participants considered the use of amalgam as safe during pregnancy, 36.3% did not and 17.2% did not know. About composite and GIC, 70.7% participants supported their use, 24.7% said it was not safe and 4.7% did not know whether composite and GIC were safe restorative materials to use on a dental pregnant patient. To decide upon the best time to perform dental extractions, 10.7% of the dentists opted for the first trimester, 29.3% the second trimester, 7.4% the third trimester, 35.3% said at any time and 16.7% did not know which period of pregnancy was ideal for dental extractions.

DISCUSSION

Pregnant patients undergo several physiological changes during the course of pregnancy and every dental clinician should be wary of this significant and clinically relevant altered physiological state.[14] Notably, the cardiovascular and hematological systems undergo major changes due to hormonal alterations.

This study showed that most participants (33.5%) prescribed penicillin and amoxicillin. Nardiello et al[15] documented that the use of penicillins, cephalosporins and erythromycins are most favored for use during pregnancy. Haas et al[16] and Steinberg et al[17] further supported the use of penicillins and cephalosporins in pregnant patients. A large portion of the respondents of this study (41.9%) did not know which antibiotics were safer to prescribe during pregnancy.

Most participants in the present study (76.7%) prescribed paracetamol to relieve dental pain during pregnancy. Acetaminophen is considered to be the safest analgesic during pregnancy and lactation as it shows no signs of teratogenicity.[19] It is non-toxic to the newborn and it does not cause an increase in bleeding time, while aspirin does.[18] NSAIDS or non-steroidal anti-inflammatory medications are, however, contraindicated during pregnancy as they have the potential to inhibit labor and lengthen the duration of pregnancy.[19,20]

In this study, it was found that 86.5% dentists were willing to provide dental treatment to a pregnant patient. When asked about which trimester they preferred to treat a pregnant patient, only 36.7% dentists believed it was safe to treat during any trimester while 43.3% did not believe that treatment can be provided to a pregnant patient during any trimester. The second trimester is usually considered the safest for typical dental procedures, during which it is ideal to eliminate all potential dental pathologies that may arise during the course of the pregnancy. During the third trimester, it is best to avoid prolonged dental treatments due to the uncomfortable positioning the pregnant patient may have to undergo.[19-21]

Most dentists with BDS degrees did not think treating a pregnant patient was safe (p=0.00) while many post-graduate FCPS trainees thought it was. Those with less than 3 years of clinical experience also said treatment could not be given during any trimester (p=0) while those with 4-6 years did not know. This indicates there is a lack of knowledge being provided to under-graduate students in Karachi pertaining to pregnant patients. It also indicates that there is a direct correlation between years of clinical experience of dentists and knowledge of how to treat pregnant patients.

Kumar et al[13] stated that according to the American College of Radiology, diagnostic radiographs do not pose any risk to the developing fetus. In this study, most dentists believed that the second trimester was the safest to take a dental radiograph although radiographs are safe to be taken at any time.[22-24]

Local anesthetics with vasoconstrictors are absolutely safe to use in pregnant patients. Using local anesthesia allows absolute pain relief and definitive dental treatment for the pregnant patient, therefore eliminating the need for excessive use of antibiotics and analgesics during pregnancy.[8,22] A point to be noted is, pregnancy has the potential to modify the response of nerves to local anesthesia. Early studies suggest that the velocity of nerve impulses slows down as pregnancy advances.[2]

Although mercury contained in amalgam is thought to cause congenital defects, evidence suggests that the amount of mercury vapor released from amalgam restorations (1-3μ) is far lower than the toxic level.

Furthermore, Kumar et al [13] verify that mercury from amalgam fillings do not harm a developing fetus. Therefore there are no findings of teratogenecity of amalgam, composite resin or glass ionomer cement restorations in pregnant patients. However, further studies should be carried out in order to detect possible reactions in pregnant patients to composite resin or glass ionomer cement.

CONCLUSION

There is a general lack of knowledge among dentists in Karachi regarding the treatment of pregnant patients. A significant number did not know which antibiotic to prescribe to a pregnant woman. Many were not willing to provide dental treatment to a pregnant patient and most did not know which antibiotic to prescribe and the second trimester was safest to perform radiographs. This indicates a dire need to emphasize on the guidelines provided in the dental curriculum for the management of pregnant dental patients, and also through continuing education programs and seminars.

REFERENCES

1 Cengiz SB. The pregnant patient: considerations for dental management and drug use. Quintessence Int 2007;38(3): 133-42.

2 Kloetzel MK, Huebner CE, Milgrom P. Referrals for Dental Care During Pregnancy. J Midwifery Womens Health 2011; 56(2): 110-17.

3 Achtari MD, Georgakopoulou EA, Afentoulide N. Dental care throughout pregnancy: what a dentist must know. OHDM 2012; 11(4):169-74.

4 Carpenter W, Glick M, Nelson S, Roser S, Patton L. American Dental Association Council on Access, Prevention, and Interprofessional Relations. Women's Oral Health Issues. Chicago: American Dental Association;2006:3-8.

5 American College of Obstetricians and Gynecologists Committee Opinion. Number 299, September 2004. Guidelines for diagnostic imaging during pregnancy. Obstet Gynecol 2004; 104(3):647-51.

6 Adams J, Lui CW, Sibbritt D, Broom A, Wardle J, Homer C, Beck S. Women's Use of Complementary and Alternative Medicine During Pregnancy: A Critical Review of the Literature. Birth. 2009 Sep;36(3):237-45.

7 Haas DA. An update on local anesthetics in dentistry. J Can Dent Assoc 2002;68:546-51

8 Rosenberg P. Case selection and treatment planning. Pathways of the Pulp. St.Louis:Mosby. 2002:91-102

9 Rainchuso L. Improving Oral Health Outcomes from Pregnancy through Infancy. J Dent Hyg 2013; 87(60): 330-35

10 Uçar Y, Brantley WA. "Biocompatibility of Dental Amalgams," Int J Dent, Vol. 2011

11 Wahl MJ. Amalgam – Resurrection and redemption, Part 2: The medical mythology of anti-amalgam. Quintessence Int 2001; 32:696-710.

12 Lygre GB, Björkman L..Comments on Prenatal exposure to dental amalgam and pregnancy outcome' Community Dent Oral Epidemiol. 2016;44(5):514.

13 Kumar J, Samelson R. Oral Health Care During Pregnancy Recommendations for Oral Health Professionals. NY State Dental journal 2009;75(6).

14 Turner M, Aziz SR. Management of the pregnant oral and maxillofacial surgery patient. J Oral Maxillofac Surg 2002;60:1479-88

15 Nardiello S, Pizzella T, Ariviello R. Risks of antibacterial agents in pregnancy. Infez Med. 2002;10(1):8-15

16 Haas DA, Pynn BR, Sands TD. Drug use for pregnant or lactating patient. Gen Dent 2000;48:54-60

17 Steinberg BJ, Hilton IV, Iada H, Samelson R. Oral health and Dental Care During Pregnancy. Dent Clin N Am 2013;57:195–210

18 Liu FM, Zhao M, Wang M, Yang HL, Li L. Effect of regular oral intake of aspirin during pregnancy on pregnancy outcome of high-risk pregnancy-induced hypertension syndrome patients. Eur Rev Med Pharmacol Sci. 2016;20(23):5013-16.

19 Riley LE, Cahill AG, Beigi R, Savich R, Saade G. Improving safe and effective drugs during pregnancy and lactation: workshop summary. Am J Perinatol. 2017 Jan 31

20 Michalowicz BS, DiAngelis AJ, Novak MJ, et al. Examining the safety of dental treatment in pregnant women. J Am Dent Assoc. 2008;139(6):685-95.

21 Amini H, Casimassimo PS. Prenatal dental care: A review. Gen Dent. 2010;58(3):176-80.

22 Morgan MA, Crall J, Goldenberg RL, Schulkin J. Oral health during pregnancy. J Matern Fetal Neonatal Med. 2009;22(9):733-39.

23 Vamos CA , Walsh ML , Thompson E , Daley EM , Detman L , DeBate R. Oral-systemic health during pregnancy: exploring prenatal and oral health providers' information, motivation and behavioral skills. Maternal and Child Health Journal 2015, 19(6):1263-75

24 George, A., Shamim, S., Johnson, M., Dahlen, H., Ajwani, S., Bhole, S. and Yeo, A. E. (2012), How Do Dental and Prenatal Care Practitioners Perceive Dental Care During Pregnancy? Current Evidence and Implications. Birth, 39: 238–47.

CONTRIBUTIONS BY AUTHORS

1 Alina Nasir	Topic selection, Write-up of paper, Data Analysis
2 Shama Asghar	Supervised the article from topic selection to write-up
3 Syed Adeel Ahmed	Data collection and Data analysis
4 Erum Rashid	Helped in searching literature reviews, references
5 Sara Ikram	References and Data analysis
6 Fasiha Kazi	Helped in searching literature reviews, references