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RESEARCH ARTICLE

Assessment of oral health knowledge, attitude and practice behaviour among Obstetricians- a questionnaire study.

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Abstract

The objective of this study was to assess oral health knowledge, attitude and practice behaviour among obstetricians in Mangalore city, Karnataka. A total of 135 participants responded to a self constructed questionnaire consisting of open and closed ended questions. The data was analyzed by applying descriptive & inferential statistical analysis. Level of significance was kept at 5% (p= 0.05). Results have shown that the obstetricians with the lack of knowledge and time (8.1%, 11.0%) regarding outcomes of poor oral health respectively were less likely to refer for comprehensive oral care services for pregnant patients (25.7% p=0.991). Obstetricians working in private hospitals showed significantly higher mean attitude score (59.1%,p=0.014) towards the referral of expectant mothers to dentists or periodontists regularly as compared to academicians (38.1%) and post graduates (30.0%). 87.0% (p=0.068) of obstetricians strongly recommend the need for dental treatment prior to conception. Majority of the obstetricians considered in the present study showed adequate knowledge, attitude and practice behaviour but there is a gap between knowledge and practice **(r=0.432, p=0.000)**.

Introduction:-

Oral health is an integral component of general health [Shah et al.2013]. Pregnancy is a delicate condition involving complex physical and physiological changes [Balla et al.2013]. Oral tissues are known to be affected by pregnancy with the most frequent and greatest changes occurring in the gingival tissues. Studies have shown that there is a relationship between pregnancy and periodontal status with a variability in the frequency of periodontitis among pregnant women, ranging from 35% to 100%. [Patil.S et al.2011, Ifesanya JU et al.2010, Wandera M et al.2009, Piscoya MD et al 2012, Vogt M et al.2012, Wu YM et al.2013, Dhaliwal et al 2013). Pregnant women may be more susceptible to periodontal disease, since higher concentration of estrogen and progesterone can induce hyperaemia, edema, bleeding in periodontal tissues and increased risk of bacterial infection [Rusell et al.2008].

Obstetrician due to frequent contacts with family are in an ideal position to provide guidelines for improving oral s much

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earlier than dentist [Balla et al.2013]. Thus it is essential for these specialists to be aware of the infectious nature of oral diseases and its associated risk factors to make appropriate decisions regarding timely and effectively.
Increasing the involvement of obstetrician during pregnancy care visits can actually play an important role in improving the oral health of their patients and thereby reducing adverse pregnancy outcome. Therefore, the present study was designed to assess the knowledge, attitude and oral health practices among Obstetricians. It is assumed that results obtained from this study will open new frontiers in the management of oral diseases during pregnancy.

Materials and Methods:-

There is no universally accepted or recommended index/ inventory to measure dental health attitude and behavior. The data was collected on the attitude and behavioral aspects which was derived from a series of open and closed end questionnaires. The Hiroshima University- Dental Behavioral Inventory (HU-DBI) questionnaire developed by Kawamura has been regarded as useful for assessing patient´s perceptions and oral health behavior and is widely used all around [Dagli et al.2005].

This is a cross sectional study with a sample consisting of 145 Obstetrician from Mangalore city, Karnataka with a population of approximately 600,000 and is a reputed center for education with five medical colleges, four dental colleges and twenty five private hospital centers. Questionnaire consisted of self constructed open and close ended questions. Participation in the survey was voluntary. Besides, confidentiality was also maintained about the personal *record*. Obstetricians who were not willing to participate in the study and who did not respond/gave back the questionnaire during the stipulated time period were excluded from the study. Prior to data collection ethical approval was obtained from Institutional ethical committee, Yenepoya University, Mangalore, Karnataka.

Questionnaire design:-

- The questionnaire was prepared by the principal investigator in consultation with other authors. Reliablity of the questionnaire was assessed using cronbach´s alpha internal consistency coefficient.
- A study specific questionnaire consisted of 27 questions which were divided into four parts.
- Personal data, their personal dental care histories, details relevant to professional practice.
- Knowledge about changes in oral health during pregnancy and their effect on pregnancy outcomes (1-9 scale).
- Attitude towards the oral health and pregnancy outcomes (10-18 scale).
- Their own practice behaviour to implement their knowledge (19-27 scale).

The question scale numbers 11,12 and 23 are open ended questions. [Personal oral care questions such as reason for visiting the dentist by the Obstetrician, how often they used to visit dentist and reason for not checking the oral cavity of expectant mothers respectively]. The questionnaires were handed to the subjects either in the clinics, colleges or the hospitals where they worked. The questionnaire was either collected the same day or next day. The filled responses were then transferred to the microsoft excel sheet for appropriate statistical analysis.

Statistical analysis

Sample size of 97 subjects was obtained based on the formula by assuming 50% of the obstetricians aware with 95% confidence interval and 10% allowable error. However in the present study we could able to collect data from 135 subjects. The data was analyzed by applying descriptive & inferential statistical analysis. The cronbach's alpha value for closed end question was 0.93 and for open ended questions was 0.6345.
Analysis was carried out using SPSS package version 23. Pearson's Chi Square test was used to check the difference in knowledge, attitude and practice among Obstetricians. A Karl Pearson's correlation co- efficient is used to assess the hypotheses that there is a positive linear relationship between the variables, a negative linear relationship between the variables, or no linear relationship between the variables. Kruskal Wallis test was used to compare the variables between the groups. But the difference was not significant, So Posthoc analysis was not performed. Level of significance was kept at 5% (p= 0.05).

Results:-

A. Basic characteristics:-

Table I shows the distribution of Obstetrician and their demographic characterstics. A total of 135 responses were collected from 145 Obstetricians (93.10% response rate) which included private practitioners (32.4%), academicians (30.9%) and post graduates (36.8%). Their average number of years of experience as an obstetricians was 9.23 years.

Table I-Basic characterstics of the participants

Age	**Percent (%)**
24-30	33.1
31-40	34.6
41-50	20.6
51-60	11.8
Total	100
Gender	
Male	32
Female	104
Total	100.0
Years in practice	
5 yrs and below	52.2
6-10yrs	24.3
11-20yrs	15.4
Above 20yrs	8.1
Total	100.0
Work sector	
Academicians	30.9
Post graduates	36.8
Private	32.4

Knowledge:-

Table (II) shows their responses to the various questions regarding their knowledge about oral health. We found that Obstetricians with the lack of knowledge and time (8.1%, 11.0%) regarding outcomes of poor oral health respectively were less likely to refer to comprehensive oral care services for pregnant patients (25.7%,p=0.528). 11 respondents in the study stated that gum disease does not affect the health of expectant mothers. Obstetricians who underwent regular dental examination themselves were slightly more attentive to report that they referred pregnant patients to dentists.

There was no co-relation between Obstetrician´s experience and knowledge (P= 0.69). There was significant co-relation between Obstetrician´s self reported knowledge and routine referral to a dentists **(P= 0.00001).**

Table II-frequency distribution of knowledge regarding oral health

Questions	**Academicians(%)**		**Pg(%)**	**Private(%)**	**Total(%)**	**P value**
1. Are you aware of a speciality in dentistry called periodontology?	No	7.1%	8.0%	11.4%	8.8%	0.762
	Yes	92.9%	92.0%	88.6%	91.2%	
2. Do any changes in dental health occur during pregnancy?	No	2.4%	2.0%	.0%	1.5%	0.608
	Yes	97.6%	98.0%	100.0%	98.5%	
3. Do you think gum disease can affect health of expectant mothers?	No	11.9%	10.0%	2.3%	8.1%	0.528
	Yes	88.1%	90.0%	97.7%	91.9%	
4. Do you think dental referral is important for expectant mothers?	No	11.9%	14.0%	6.8%	11.0%	0.991
	Yes	88.1%	86.0%	93.2%	89.0%	
5. Do you advice expectant mothers to undergo routine dental check up?	No	26.2%	26.0%	25.0%	25.7%	0.941
	Yes	73.8%	74.0%	75.0%	74.3%	
6. Can dental treatment be delivered at anytime during	No	81.0%	78.0%	79.5%	79.4%	0.195
	Yes	19.0%	22.0%	20.5%	20.6%	

pregnancy?						
7. Do you think periodic scaling causes harmful effects to teeth and gums in expectant mothers?	No	50.0%	46.0%	31.8%	42.6%	0.326
	Yes	50.0%	54.0%	68.2%	57.4%	
8.Does the pregnancy increases the tendency for gums to bleed or swell?	No	7.1%	8.0%	15.9%	10.3%	0.973
	Yes	92.9%	92.0%	84.1%	89.7%	
9. Can poor oral health be one of the causes for preterm labor and low birth weight in expectant mothers?	No	16.7%	18.0%	16.3%	17.0%	0.195
	Yes	83.3%	82.0%	83.7%	83.0%	

Attitude:-

The frequency distribution of dental attitude among study participants are shown in table (III). Obstetricians working in private hospitals showed significantly higher mean attitude score (59.1%,**p=0.014)** towards the referral of expectant mothers to dentists or periodontists regualarly as compared to academician(38.1%) and post graduates(30.0%).

Table III- frequency distribution of dental attitude regarding oral health

Questions	Academicians(%)		Pg(%)	Private(%)	Total(%)	P value
10. Have you been to a dentist?	No	21.4%	16.0%	13.6%	16.9%	0.614
	Yes	78.6%	84.0%	86.4%	83.1%	
13. Do you feel expectant mothers should maintain good oral hygiene?	No	7.1%	4.0%	4.5%	5.1%	0.775l
	Yes	92.9%	96.0%	95.5%	94.9%	
14. Do you insist the expectant mothers should maintain good oral hygiene?	No	16.7%	14.0%	11.4%	14.0%	0.778
	Yes	83.3%	86.0%	88.6%	86.0%	
15. Do you refer expectant mothers to dentists/periodontists regularly?	No	61.9%	70.0%	40.9%	58.1%	0.014
	Yes	38.1%	30.0%	59.1%	41.9%	
16. Would you consult or take advice from dentists/periodontists if you notice gum disease in expectant mothers?	No	26.2%	22.0%	18.2%	22.1%	0.670
	Yes	73.8%	78.0%	81.8%	77.9%	
17. Do you think expectant mothers require oral health supervision by dentists/periodontist in all the trimesters?	No	21.4%	18.0%	29.5%	22.8%	0.399
	Yes	78.6%	82.0%	70.5%	77.2%	
1118. Do you feel dentists/periodontist should be included in prenatal care team?	No	19.0%	18.0%	20.5%	19.1%	0.955
	Yes	81.0%	82.0%	79.5%	80.9%	

Practice behavior:-

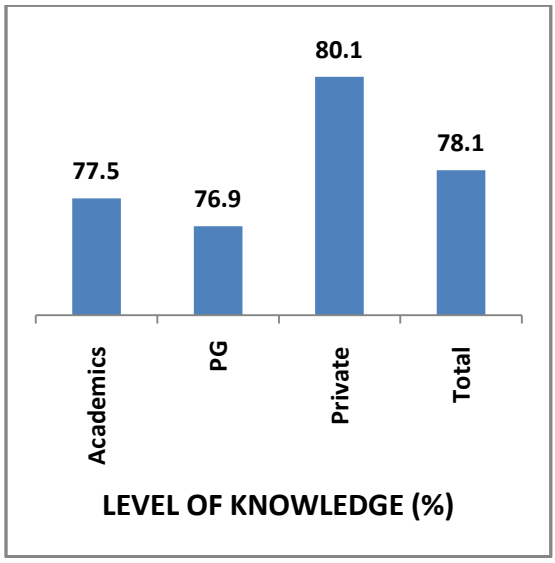
The frequency distribution of practice behaviour regarding oral health in Obstetricians are summarised in table(IV). 69.6% (p=0.073) of the respondents think that the examination of oral cavity should be integral part of prenatal care while 30.4% think it is not necessary. Lack of time is the major factor which made 69.6% of Obstetricians refrain from checking oral cavity of expectant mothers. Comparison of mean knowledge, attitude and practice scores among gender and age group of Obstetricians did not show any statistical significance (p>0.05).

However, Obstetricians with 20-25 years of experience showed higher mean attitude score towards prevention of oral diseases as compared to the others and the difference was statistically significant ($p<0.05$).

Table IV-frequency distribution of practice behaviour regarding oral health

Questions	Academicians(%)		Pg(%)	Private(%)	Total(%)	P value
19. Do you ask expectant mothers whether they use toothbrush and toothpaste regularly?	No	55.6%	62.5%	66.7%	60.9%	0.905
	Yes	44.4%	37.5%	33.3%	39.1%	
20. Do you examine whether the expectant mothers visited dentists/periodontist on your advice?	No	66.7%	50.0%	83.3%	65.2%	0.429
	Yes	33.3%	50.0%	16.7%	34.8%	
21. Do you feel examination of oral cavity should be integral part of prenatal care?	No	22.2%	12.5%	66.7%	30.4%	0.073
	Yes	77.8%	87.5%	33.3%	69.6%	
22. Do you check oral cavity of all expectant mothers?	No	55.6%	75.0%	83.3%	69.6%	0.476
	Yes	44.4%	25.0%	16.7%	30.4%	
24. Do you think education of expectant mothers regarding maintenance of oral health is important?	No	11.1%	12.5%	0%	8.7%	0.676
	Yes	88.9%	87.5%	100.0%	91.3%	
25. Do you advice professional cleaning for expectant mothers as a part of prenatal care?	No	33.3%	25.0%	33.3%	30.4%	0.918
	Yes	66.7%	75.0%	66.7%	69.6%	
26. Have you used any of the available dental education aids to educate expectant mothers on oral health?	No	66.7%	75.0%	66.7%	69.6%	0.918
	Yes	33.3%	25.0%	33.3%	30.4%	
27. Do you think it is necessary to get dental problems treated prior to conception?	No	33.3%	.0%	.0%	13.0%	0.068
	Yes	66.7%	100.0%	100.0%	87.0%	

Level of knowledge, attitude and practice score regarding oral health care among Obstetricians have been shown in Figure 1, Figure 2 and Figure 3.



Figure(1) illustrates level of knowledge among obstetricians

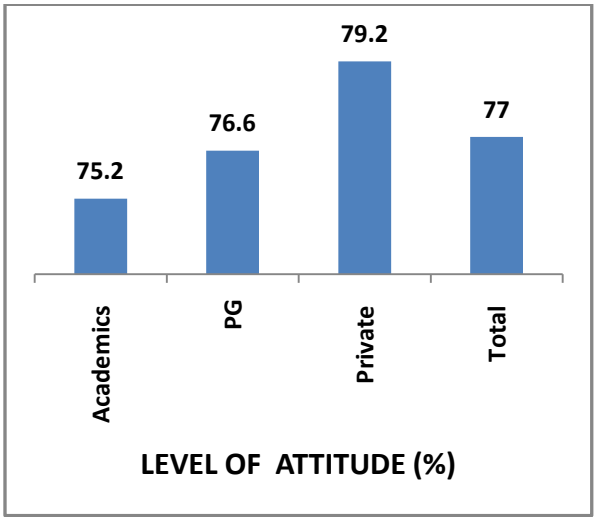


Fig (2) illustrates level of attitude among obstetricians

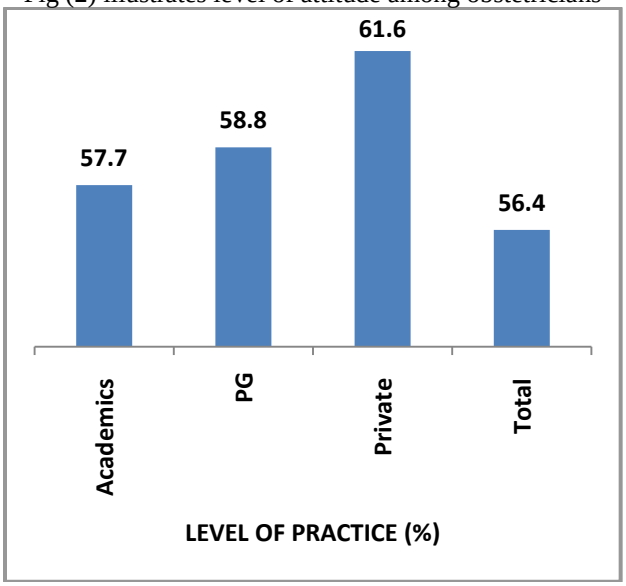


Fig (2) illustrates level of practice among obstetricians

Co-effecient correlation between knowledge, attitude and practice behaviour is illustrated in table (V). A linear positive co-efficient correlation between knowledge and attitude (r-0.55, **p=0.01**),attitude and practice (r-0.34,p-0.027) was observed in academicians, post graduates and private practitioners but a negative co-relation was observed between knowledge and practicing academicians (r-0.27,p-0.039) and private practitioners (r-0.35,p-0.019).

Table v- co-efficient correlation between knowledge, attitude and practice behaviour

WORK SECTOR			Karl pearson correlation coefficient r value	p-value	
ACADEMICS	KNOWLEDGE SCORE	ATTITUDE SCORE	0.545	0.000	Sig
		PRACTICE SCORE	0.269	0.039	Sig
	ATTITUDE SCORE	PRACTICE SCORE	0.340	0.00	Sig
PG	KNOWLEDGE SCORE	ATTITUDE SCORE	0.657	0.000	Sig
		PRACTICE SCORE	0.616	0.000	Sig

	ATTITUDE SCORE		0.640	0.000	Sig
PRIVATE	KNOWLEDGE SCORE	ATTITUDE SCORE	0.487	0.001	Sig
		PRACTICE SCORE	0.351	0.019	Sig
	ATTITUDE SCORE		0.223	0.041	Sig

Discussion:-

This study was undertaken to assess knowledge, attitude and practices among Obstetricians regarding oral health of expectant mothers which reveals an adequate knowledge and attitude among Obstetricians but a considerable amount of difference between knowledge and practice behaviour was observed. The advantage of a questionnaire study is that, it allows information to be collected and analyzed easily and it also allows the concerned specialist to express freely their perception on oral health care.

In the present study it was observed that most of the Obstetricians had good knowledge, attitude and practice behaviour regarding oral health in expectant mothers however, there still exist minor misconceptions amongst Obstetricians regarding provision of dental treatments during pregnancy. This is of importance to the dentists as it acts as a barrier for them in providing the most appropriate treatment to their pregnant patients. Such misconceptions should be clarified in order to stop compromising on the quality of dental care due to unnecessary fears developed among patients. This conclusion is similar to the study done by shah et al (2013). In our study about 59.1% of private practitioners were very particular about referring expectant mothers to dentists or periodontists when compared to academicians(38.1%) and post graduates(30.1%).This may be due to the fact that they remained in continuous contact with the recent advances and new facts coming to light on the topic. Continuing education programs may also have had some role to play in the difference in knowledge levels. Studies conducted by Shenoy et al(2009) reveals that about 62% of the post graduates reffered their patients to dentists and 38.3% referred to periodontists which was much higher referral than our study. Another study by Rocha et al(2011) presented a situation in which the highest percentage of Obstetricians refer their patients to other professionals is when they are concerned with their oral health status(88.2%). 55% of the Obstetricians in the study conducted by Shenoy et al agreed that periodontal disease in expectant mothers may lead to preterm low birth weight babies whereas, in the present study 83.0% of the Obstetricians were aware of the fact because most of the studies revealed a direct relationship between periodontal disease and adverse pregnancy such as preterm birth, preterm prelabor rupture of membranes, pre-eclampsia and post-cesarean endometritis (Crowther CA et al. 2005]

Obstetricians with 20-25 years of experience had better knowledge than the other group. This can be due to combination of experience and knowledge by continued learning process towards oral health during Obstetrician care. No difference of knowledge among female and male gynaecologists was noted. Obstetricians with more than 40 years of age were having good attitude, this may be because they face number of cases in their routine practices and updated knowledge.

During pregnancy hormonal changes can cause exacerbation of periodontal or gingival clinical characterstics especially swelling and bleeding [Rocha et al.2011]. In our present study 89.7% of respondents said that pregnancy increases the tendency for swelling and bleeding from gingival but it is a well known fact that most of the physicians do not look into the mouth of the pregnant women due to lack of training [Wender EH et al.1992,Cunningham G et al. 2000] and because busy Obstetricians have no time to look into patients mouth unless patients have complained about this change [Singh S et al .2011,Varun S et al. 2014] . Rocha et al (2011) surveyed and found out that more than 90% of Obstetricians expected these changes during pregnancy.

Obstetricians who are undergoing regular dental visits more recently showed greater intrest in recommending the same for their patients **($p < 0.001$).** It can be suggested that such an attitude shows that the health care of patients is a reflection of the attitudes of Obstetricians toward their personal oral health. In this sense, it is also relevant to stress the importance of self-care to each member of the healthcare team, since they are the disseminators of knowledge to those under their care.

Regarding pregnancy guidelines, it was strongly suggested to include dental visits as an integral part of antenatal check ups [Patil et al.2013]. The introduction of mandatory dental examinations for women in early stage of pregnancy should motivate dentists to introduce a new approach of preventive services which result in closer cooperation with Obstetricians in order to reduce the prevalence of delivery of pre-term low birth weight babies

[Stupak A et al. 2013].Professionals involved in prenatal care should discuss the importance of oral heath with pregnant women and refer patients to dental treatment when necessary [Al-Habasneh et al.2008]. In our study 69.6% of Obstetricians carried out oral health examination of their patients. This is in accordance with the study done by Patil et al and Shah et al who observed that about 39% of Obstetricians performed oral examination of expectant mothers during the first trimester and 65% recommended every 6 months interval.

Limitation for the oral examination during antenatal visits is due to lack of time and lack of demand for the service. In our study about 31% of practitioners refrained from oral examination due to lack of time and higher percentage (44.5%) was seen in academicians compared to private practitioners(25.7%) and post graduates(16.7%).

Preconception and antenatal knowledge and habits reduces the oral diseases in expectant mothers [offenbacher et al.1996,Lyndon-Rochelle et al. 2004]. To best of our knowledge no reported literature added the necessity of dental treatment prior to conception but in our study 87.0% of respondents were aware of the importance of dental problems treated prior to conception and an 100% agreement by post graduates and private practitioners. It can due to the fact that hormonal changes taking place during pregnancy render the women more susceptible to plaque accumulation and gingival inflammation [Singla N et al.2013] and it has been observed that phase I therapy in pregnancy patients with chronic periodontitis reduced adverse periodontal outcome such as preterm low birth weight, still births etc [Tarannum F et al 2007, Schwendicke F et al.2015,Reddy BV et al.2014]

It has been found out that dental treatment can be rendered at any time during pregnancy (Wasylco et al.1998,American dental association.1999, Lee at al.1999) but due to the morning sickness experienced by most pregnant women during the first trimester and great deal of risk of postural hypotension during the third trimester, second trimester of pregnancy is the ideal period of delivering efficient dental care [Kumar J et al .2009]. In our study only 20.6% opined that dental treatment can be delivered at any time during pregnancy.

Obstetricians exhibited relatively lower practice score of 59.38% towards prevention of oral diseases. However, Obstetricians working in private sector showed significantly higher mean practice score indicating that they practiced prevention of oral diseases relatively better than post graduates and academicians. This could be due to the time constraints, as large number of patients seeking care in hospitals make it difficult for the Obstetricians to focus on the issues related to the oral health. Other possible barrier may be lack of understanding of oral health care during pregnancy[Bassey et al.2010].

In our study there is a negative correlation between knowledge and practice among academicians(r-0.269, p-0.039) which shows that they have adequate knowledge about oral disease prevention in expectant but certain factors are refraining them to implement it.

The highlights of the study were the participation of the majority of the Obstetricians in the Mangalore city and the categorisation of the study groups into academicians, private practioners and post graduates aided in assessing their practice behaviour. The major shortcoming of the study is the restriction of the study population to a specific area hence the results of the study should be generalised with caution. Therefore further randomised controlled clinical trails has to be carried out. Some of the Obstetricians refrained from the study due to lack of time, interest or conflict with their busy schedule.

Conclusion:-

Majority of the Obstetricians considered in the present study showed adequate knowledge, attitude and practice behaviour but there is a gap between knowledge and practice. Since our study shows moderate practice behaviour, it should be emphasized that knowledge and attitude cannot make it certain that it will be implemented effectively. And it is necessary that specialists should keep their knowledge updated. They should be encouraged to refer the patients for oral health examination. A multidisciplinary team that includes the Family Physician, Obstetricians and Dental practitioner should assume an active role in providing health education to pregnant women which can significantly decrease the possibility of oral diseases. Oral health education can be included in the medical curriculum to emphasize a positive attitude towards oral health.

All authors have no conflicts of interests to declare.

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