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Health Behaviors Regarding Oral Hygiene AmongPregnant Women With Diabetes Who Attending Primary HealthCare Centers At BaghdadCity.

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Abstract:
Background*: Dental problems among pregnant woman with diabetes mellitus are one of the major medical and social problems with increasing prevalence in last decades.*
Objectives*: To identify health behaviors regarding oral hygiene among pregnant women with diabetics and find out the relationship between oral hygiene heath behaviors and studied variables.*
Methodology*: A cross sectional design was conducted from 7 July to 30 September 2014 on non probability (convenient sample) of 150 pregnant women with diabetes was selected from twelve Primary Health Care Centers at Baghdad city. Questionnaire format is tool for data collection which had designed and consisted of three main parts including: socio demographic, reproductive characteristics and items of oral hygiene behaviors among pregnant women with diabetes. Reliability of the questionnaire was determined through internal consistency of correlation coefficient (R= 0.940) and validity of content was determined through reviewing it by (12) experts in different specialties and was determined through pilot study. Descriptive and inferential statistics were used to analyze collecteddata.*
Result*: Result of study revealed that (35.3%) of study sample was (35-39) years old, (34.7%) of the study sample was graduated from primary school and less, half of the study sample was government employment and self employed, (42.7%) of the study sample had moderate socioeconomic status, the highest percentage (70.0%) of the study sample did not exposed to direct smoking, The result indicates that oral hygiene behaviors have moderate mean score in all items. There are no statistical significant association between oral hygiene domain and studiedvariables.*
Conclusions*: All items related to health behavior concerning oral hygiene is in moderate mean of score, which may expose pregnant women with diabetes to high risk of periodontal diseases.*
Recommendations*: Dental care provider should perform a dental examination at least every three months for each pregnant woman with diabetes, explanation of the effect of diabetes on periodontal health, oral hygiene instruction ,oral prophylaxis, professional cleaning and treatment of periodontal diseases (scaling and root planing) when needed.*
Keywords— *Diabetes, Health behavior, Pregnant women, oral hygiene.*

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I. Introduction

Diabetes mellitus is a metabolic disease and one of the major public health and social problems with increase prevalence in last decades. It is ranked as the 5th cause of death in Europe and 4th cause for physicians' visits [1]. In 2005, 1.1 million people died from diabetes. 80% of diabetes deaths are now occurring in low- and middle-income countries [2]. In 2012 the prevalence was 29.1 million Americans, or 9.3% of the population, had diabetes, while The incidence of diabetes in the same year was 1.7 million new diagnoses/year [3]. Iraq is one of the developing countries in which diabetes remain undiagnosed and it is a major public health concern and economic burden on health system in Iraq.

Diabetes may affect blood flow in all body organs, this making it harder for cuts or sores to heal then a small infection can become very serious. From evidence based practices reported that there is a strong relationship between diabetes and periodontal disease and considered as sixth complication of diabetes, therefore efforts should be directed for preventing periodontitis among diabetic pregnant women [4],[5].

Diabetic pregnant women with poor metabolic control should be seen more frequently, especially if periodontal disease is already present. Pregnant women with well-controlled diabetes, who have good oral hygiene and on a regular periodontal maintenance schedule, have the same risk of having periodontitis as non-diabetic patients. Periodontal (gum) disease is an infection of the tissues surrounding and supporting the teeth. It is a major cause of tooth loss in adults. In periodontitis, unremoved plaque hardens into calculus, gums graduallybegintopullawayfromtheteeth,andpocketsformbetweentheteethandgums.However,people

often do not know they have periodontal disease because it is usually painless [6]. Periodontal health may deteriorate more rapidly in poorly controlled diabetic pregnant women than in other women, and may not respond as well to traditional sanative therapy. Knowledge about oral health of pregnant women with diabetes can play an important role in keep her away from periodontal disease [7].

So Lack of Knowledge and awareness about diabetes with insufficient access to health services, can lead to periodontal complications therefore investigators try to assess oral hygiene among pregnant women with diabetes who attending primary health care centers at Baghdad City and find out the relationship between oral hygiene behaviors and studied variables.

II. Methodology

A cross sectional design was conducted from 7 July to 30 September 2014 on a non probability (convenient sample) of 150 pregnant women with diabetes was selected from twelve primary health care centers. A pilot study was carried out on July10th - 25th / 2014 at Al- kadhimiya primary health care center. A pilot study was conducted before starting actual data collection for the following purposes: to identify any problem with the research design and to identify any barriers which may be encountered during data collection process. Questionnaire format was a tool for data collection which have designed and consisted of three main parts including: socio demographic, reproductive characteristics and items of oral hygiene behaviors among pregnant women with diabetes were scored according to likert - scale to three point as three for yes, two for sometimes & one for never, so the cut-off point was calculated equal two. So the Mean of score was rated according to the followings: Low =1 – 1.4 mean of score, Moderate = 1.5 – 2.5 mean score and High = 2.6 – 3 mean score. Reliability of the questionnaire was determined through internal consistency of correlation coefficient (R= 0.940) and validity of content was determined through reviewing it by (12) experts in different specialties and was determined through pilot study. Descriptive and inferential statistics were used to analyze collected data.

III. Results

Table (1) Distribution of the study sample according to socio demographic characteristics (n=150).

Socio - demographic variables.		
Age group / years	**No.**	**%**
20-24 year	13	**8.6**
25-29 year	22	14.7
30-34 year	43	28.7
35-39 year	**53**	**35.3**
40 year & above	19	12.7
X̄ SD = 33.57 ± 5.54		
Educational Level		
Primary school graduate and less	**52**	**34.7**
Intermediate school graduate	21	14
Secondary school graduate	43	28.7
Institute graduate and above **.**	**34**	**22.6**
Occupation status		
Government & self employed	**79**	**52.7**
Retired	**17**	**11.3**
Housewife	54	36
Socio-Economic status		
High Socio – Economic Status (121-150 score)	33	22
Moderate Socio – Economic Status (90-120 score)	64	**42.7**
Low Socio – Economic Status (89 score & Less).	53	35.3
Smoking Status		
Yes	45	30.0
No	105	**70.0**

Table (1) shows that the highest percentage (35.3%) of study sample is at age group (35– 39) years, with the mean age and SD is (33.57 ± 5.54) years. The highest percentage (34.7%) of study sample has been graduate from primary school & less. (52.7%) of study sample is government &self employed. (42.7%) of the study sample is from the moderate level of the socio economic status. The highest percentage (70.0%) of study sample does not have smoking habit, while they exposed to indirect or Negative smokers, (52.38%) of study sample had exposed to smoking from their husband, while the lowest percentage(13.33%) of them had exposed to smoking from other resources of family members (mother, father, Aunt anduncle).

Table (2): Distribution of the study sample according to their Reproductive Characteristics (N=150).

Reproductive Characteristics	No.	%
Gravidity (No. of pregnancies).		
Primagravida	5	3.3
Multigravida	145	**96.7**
Parity (no. of deliveries)		
Primipara	24	16
Multipara (had 2-4 pregnancies)	58	**38.7**
Grand multipara (had 5-6 pregnancies)	32	21.3
Great multi pare (had ≥ 7 pregnancies).	36	24
Age At First Pregnancy / Years		
16 – 20 **y**ear	54	36.0
21 - 25 year	58	**38.7**
26 – 30 year	20	13.3
31 year & above	18	12
Years of Marriage / years		
15 – 19 years	53	35.3
20 - 24 years	59	**39.3**
25- 29 years	20	13.3
30 years & above	18	12
No. of abortion		
No abortion	35	23.3
1-2 times	75	**50**
3 times and above	40	26.6

Table (2) Shows that the highest percentage (96.7%) of study sample is multigravida, (38.7%) is multipara (had 2-4 pregnancies), (38.7%) of study sample their age at first pregnancy is ranged between (21-25)years, (39.3%) of study sample their marriage at age is ranged between (20- 24) years, Half of study sample had (1-2) times of abortion.

Table (4) : Distribution of the Study Sample According Oral Hygiene Behaviors (N=150)

No.	***Oral Hygiene Behaviors***	Yes		Sometime		No		Ms	Assess
		No	%	No.	%	No.	%		
1.	Visit dentist when get find one of these signs:								
1.1.	Redness of the gums.	61	40.7	26	17.3	63	42.0	1.99	M
1.2.	Pain and swelling of the gums.	61	40.7	30	20.0	59	39.3	2.01	M
1.3.	Bleeding in the gums.	61	40.7	34	22.7	55	36.7	2.04	M
1.4.	Vibration and sensitivity in the tooth.	75	50.0	30	20.0	45	30.0	**2.2**	M
1.5.	Bad odor.	60	40.0	32	21.3	58	38.7	2.01	M
1.6.	Sense of discomfort during biting	60	40.0	33	22.0	57	38.0	2.02	M
1.7	Dryness of mouth	70	46.7	25	16.7	55	36.6	2.1	M
2.	Drinking adequate amounts of water to increase the secretion of saliva.	68	45.3	29	19.3	53	35.3	2.1	M
3.	Did you know dry mouth may produces many problems such as:								
3.1	Tooth decay.	57	38.0	33	22.0	60	40.0	1.98	M
3.2	Gum disease and tissues supporting the teeth (Gingivitis and periodontitis).	54	36.0	31	20.7	65	43.3	**1.93**	M
3.3	Fungal infections.	56	37.3	35	23.3	59	39.3	1.98	M
3.4	Infection and delayed wound healing.	56	37.3	30	20.0	64	42.7	1.95	M
3.5	A disorder of the sense of taste.	57	38.0	32	21.3	61	40.7	1.97	M
4.	Brushing teeth twice day with a soft brush and toothpaste contains fluoride to decrease probability of caries incidence	60	40.0	38	25.3	52	34.7	2.05	M
5	Changing manual teeth brush every 3-4 months	70	46.7	25	16.7	55	36.6	2.1	M

Low mean score =1- 1.4, Moderate mean of score = 1.5 – 2.5 and High mean of score = 2.6 – 3.

Table (4) shows that the highest mean score (**2.2**) of study sample is related to Oral Hygiene Behaviors in item No.(1.4) Vibration and sensitivity in the tooth, while the lowest mean score is (1.93) of study sample in item No.(3.2) Gum disease and tissues supporting the teeth (Gingivitis and periodontitis). So all items are in moderatelevel.

Table (5) Association between oral hygiene behaviors among pregnant women with diabetes andStudied variables (n=150)

Studied variables	X^2	Df	P.value	Sign.
Age	0.56	2	0.76	NS
Level of education	1.47	2	0.48	NS
Occupation status	1.48	2	0.48	NS
Socio – Economic status	2.69	2	0.26	NS
Family History	0.73	1	0.39	NS
Gravidity	10.46	1	0.690	NS
Parity	3.448	3	0.063	NS
Age At first pregnancy	1.229	3	0.764	NS
No. of abortion	8.095	3	0.44	NS

Table(5) Shows that there are no statistical significant association between oral hygiene behaviors among pregnant with diabetes, and independent studiedvariables.

IV. Discussion

The present study reported that the highest percentage (35.3%) of study sample is at age group was ranged between (35-39) years old with mean and SD is ($\bar{X}$3.57 ± 5.54) years, more than half of study sample were within ideal age between (20-34) years for pregnant as shown in table (1). The findings of present study supported evidence is available in the study reported the highest percentage (44.2%) of pregnant women was in age group ranged between (30-39) years [8]. And also agree with a study which was reported that the (32.9%) of pregnant was with age ranging from (31-36) years(5). The highest percentage (34.7%) of the study sample was graduated from primary school and less, while the lowest percentage (14%) were graduated from institute graduate and above as shown in table (1). It was reported that the highest percentage of pregnant women do not have an education, (52.9%) were primary school and one third was intermediate graduates and nearly two –third of the study sample were low level of education [9]. The highest percentage (52.7%) of study sample was government and self employed while the lowest percentage (11.3 %) of study sample were retired as shown in the table (1). Diabetes mellitus is the leading cause affect their continuous absenteeism from their work and between 10% to 18% of pregnant believed that it hampers functions of daily life [10]. It was reported that diabetes mellitus is the leading cause of absenteeism of pregnant women nearly half of study sample were employed so pregnant women with diabetes may affect production in their work[11].

The highest percentage (42.7%) of study sample was with Moderate Socio-economic status as shown in Table (1) , The findings of the present study is not consistent with a study which revealed that pregnant women who belong to a low socio-economic status had severe symptoms of diabetes mellitus than the pregnant women of high socio-economic status [12]. The highest percentage (70.0%) of study sample did not expose to positive smoking status. while the lowest percentage (30.0%) has smoking habit. It was reported that the cigarette smoking has been associated with increased insulin resistance [13]. Smoking impairs blood flow to the gums which affect wound healing, so women with diabetes, who smoke, are at even a higher risk up to 20 times more likely than nonsmokers for periodontal disease [14].

The findings of present study indicates that majority of study sample was multigravida and multipara, (38.7%) of them was their first pregnancy at age between (21-25) years old which means ideal age for become pregnancy. While the lowest percentage (12%) was the first to have them in the age (31years & above) which means was old primagravida . The result indicates that (39.3%) of study sample married at age (20-24 years). Half of study sample (50. %) has one to two abortion. It was stated that the major abortion risk on the pregnant women with diabetes are spontaneous abortion or with chromosomal abnormalities and which increased risk for hyperglycemia [15].

Oral hygiene behaviors: The present study results show that the highest mean score (2.2) of study sample is related to oral hygiene behaviors in item No.(1.4) sensitivity in the tooth, while the lowest mean score is (1.93) of study sample in item No.(3.2) Gingivitis and periodontitis. So all items are in moderate level as shown in table (3). There are no statistical significant association between oral hygiene behaviors among pregnant with diabetes, and independent studied variables.

Gilbert (2002) who has reported that dental care is important for pregnant women with diabetes, because they face higher risk of oral health problems due to poorly controlled blood sugar; the less well control the Blood sugar the more likely oral health problems will arise; this is because uncontrolled diabetes impairs white blood cells, which are the body's main defense against bacterial infections that can occur in the mouth [14].

Schweizer et al., (2012) who has reported that the adequate oral care is important as well as maintaining healthy teeth, gums and tongue to prevent oral problems, including bad breath, dry mouth, ulcer, temporo-mandibular disorder (TMD), tooth decay, or thrush; all are treated with proper diagnosis and care[16].

This study agree with (Rochelle., 2004) states that uncontrolled diabetes can decrease saliva flow, resulting in dry mouth (xerostomia). So this will lead to soreness, ulcers, infections, tooth decay and gum inflammation (gingivitis and peridontitis).In addition impairment of white blood cells shows another complication of diabetes and it is to that it causes blood vessels to thicken, which slows the flow of nutrients and waste products from body tissues, including the mouth. when this combination of events happens, the body's ability to fight infections is reduced, since periodontal disease is a bacterial infection, diabetics with uncontrolled disease may experience more frequent and more severe gum disease; poor healing of oral tissues in the pregnant with uncontrolled diabetes do not heal quickly after oral surgery or other dental procedures, because blood flow to the treatment site can be impaired. women with diabetes, who frequently take antibiotics to fight various infections, are especially prone to develop a fungal infection of the mouth and tongue such as: thrush the fungus thrives on the high levels of sugar in the saliva of pregnant women with uncontrolled diabetes [17].

The risk of periodontitis is increased by approximately threefold in diabetic women compared with non-diabetic women [18]. Periodontal disease is one of complication that facing pregnant women with diabetes and it is a silent devastating condition and initially may not be taken seriously by women because early symptoms are less alarming and painless, in addition this complication is much more than a localized oral infection and may change in systemic physiology [19]. Overall oral hygiene measures were found to be deficient, therefore it is important for pregnant women with diabetes practice high standard of daily oral hygiene including brushing and flossing, use an antibacterial mouth rinse twice a day to help curb bacteria that can cause plaque buildup on teeth and gums and have regular dental check-ups to detect periodontal disorders early as possible.

V. Conclusions

All items related to health behavior concerning oral hygiene is in moderate mean of score, which may expose pregnant women with diabetes to high risk of periodontal diseases.

VI. Recommendations

Dental care provider should perform a dental examination at least every three months for each pregnant woman with diabetes, explanation of the effect of DM on periodontal health, oral hygiene instruction ,oral prophylaxis, professional cleaning and treatment periodontal diseases (scaling and root planing) when needed.

Regular visit of pregnant women with diabetes to primary health care center for following up and counseling them to control their diabetes by diet, exercise, insulin, self monitor of blood sugar and urine in addition to emphasize on lifestyle intervention and health education.

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