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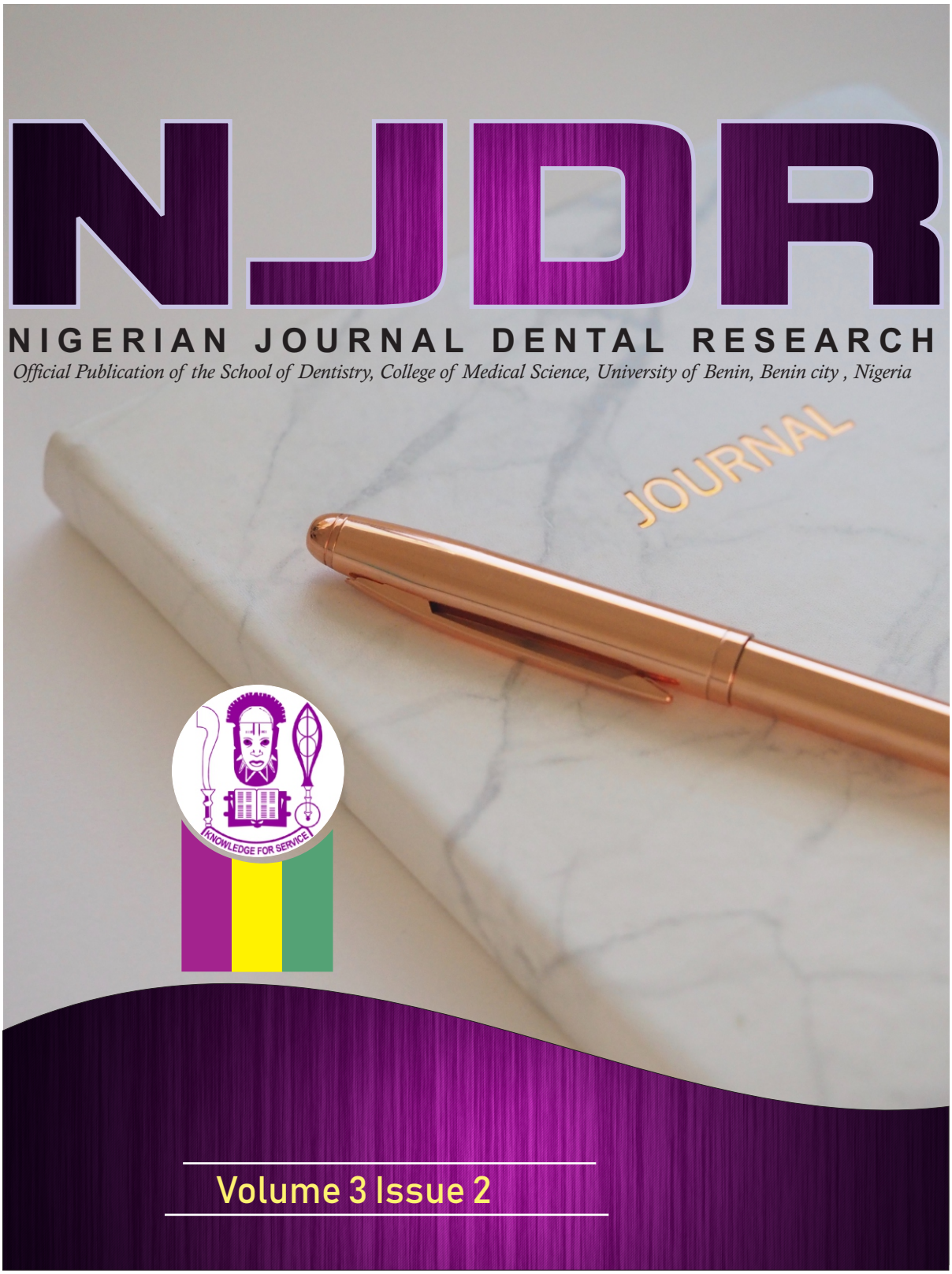

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Relationship Between Oral Hygiene Status and Oral Health Knowledge, Attitudes and Practices Among 12 Year Old School Children in Benin City

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ABSTRACT

Objective It has been shown that good knowledge, right practices and positive attitudes towards oral health are keys to minimizing the incidence of dental diseases and improving the standard of oral hygiene and dental health in general The objective of the study was to determine the relationship between oral hygiene status and oral health knowledge, attitudes and practices among 12-years old school children in Benin City.

Methods: A descriptive cross-sectional survey involving a sample of 704 12-year old school children drawn from three Local Government Area in Benin City, selected through a multistage technique. Data on oral knowledge, attitudes and practices were collected using a well-structured, interviewer-administered while Simplified Hygiene index was used to assess their oral hygiene status.

Results: About two-thirds (62.1%) of the participants had good oral hygiene status. The female participants had better oral hygiene compared to the male participants and this difference was statistically significant. About 96% of the participants had fair to good knowledge of oral health. Majority of the participants (90.3%), had positive attitudes towards oral health; the oral health practice of 27.6% of the participants was good, while most of them (47.9%) exhibited fair oral health practice with the remaining 24.6% having poor oral health practice

Conclusion: This study revealed that participants had good oral health knowledge, practices and with positive attitudes towards oral health had better oral hygiene status. Results of the study indicated theses children oral health knowledge, attitudes and practices need to be improved.

Keywords: oral hygiene, oral health knowledge, attitude, practices, children

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INTRODUCTION

Oral hygiene is the level of oral cleanliness of an individual, which is determined by a number of factors including oral health knowledge, attitudes towards oral health as well as the oral health practices

Primary and Junior secondary schools in Nigeria represent the formative phase of children hence they serve as a window of opportunity for the introduction of high capacity health programmes involving preventive health as well as preventive dentistry for children.

A recent study conducted in Nigeria reported a fair oral hygiene status among 12 year old children.[1]

There has also in recent times, been a steady increase of dental diseases among the young especially in developing countries. This occurrence can be traced to increasing urbanization which has greatly affected lifestyle particularly dietary patterns. A study carried out among a young Saudi population found dietary factors like excessive consumption of hard diets, carbonated drinks and fruit juices to correlate significantly with increased tooth wear.[2]

Oral health knowledge is considered to be an essential prerequisite for health related practices[3] and a clear cut association has been shown to exist between an increased knowledge and better oral health.[4,5]

Similarly, those who have assimilated the knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care practices.[6] Though little reported data on oral hygiene practices among Nigerians exist, several studies have however collaborated the relationship between oral health knowledge, attitudes and practices and oral hygiene status.

Due to this growing trend, we therefore set out to examine the effects of oral health knowledge, attitude and practices on oral hygiene status among 12 years old school children in Benin City, south-south, Nigeria.

MATERIALS AND METHODS

Settings

The study was a descriptive cross sectional survey, carried out in junior secondary schools in Benin City, capital of Edo State, south-south region of Nigeria. Benin City which is a metropolitan capital city comprises of three local government areas: Oredo, Egor and Ikpoba-Okha.

Sample size/Sampling

The survey was designed to generate a representative sample thus we obtained a calculated sample size totaling seven hundred and four (704) 12-year-old school children which were selected across 12 schools (6 public and 6 private) from the three Local Government Areas (LGAs) of Benin City.

A multi-stage sampling technique was used: The wards in each of the three Local Government areas (L.G.A) were divided into clusters (each of the consecutive wards) and one of the clusters in each LGA was selected through purposive sampling, by reason of proximity and considering the fact that the socio-economic factors are about the same all through the wards and the three L.G.A are almost entirely urban. This was a total of 6 wards. Two schools (one public and one private) were selected from each of the 6 wards through simple random technique of die casting, considering the homogeneity of the population, making a total of 12 schools (6 public and 6 private). Stratification was made into 6 strata by the school in each set of public and private schools (making a total of 12 strata) and the number of students selected from each school was calculated using equal sampling ratio (proportional allocation). Systematic random sampling technique was used to select the respective number of pupils in each of the 12 schools. A sample size of 704 was used.

Data collection

Data on oral health knowledge, attitudes and practices were collected using a well-structured interviewer-administered questionnaire. Five questions were each used to assess their knowledge, attitudes and practices of oral health. While oral health knowledge and practices were graded as poor, fair and good; oral health attitude was graded as positive and negative.

The clinical examination made use of the Simplified Oral Hygiene Index (OHI-S)[8] by Greene and vermillion, 1964, to assess the oral hygiene status. The OHI-S has two components, the debris index and the calculus index. Each of these indices in turn, is based on numerical determinations representing amount of debris or calculus found on pre-selected tooth surfaces. Six surface of index teeth were examined and scored for debris and calculus. These are the facial surfaces (labial or buccal surfaces) of maxillary first permanent molars, maxillary right central insisors and mandibular left central incisors and the lingual surfaces of mandibular first permanent molars. In the absence of the first molar, the second was scored and in the absence of any of the centrals, the opposite was scored. Kendall's coefficient of concordance was used to determine inter-examiner variability amongst five examiners involved in the clinical examination.

The knowledge of oral health, and oral health practices of the participants were graded on a scale of 5 based on each child's score as: Pool 0-1; Fair 2-3 and good 4-5. While oral hygiene status was grade as Good; 0-1.2, fair; 1.3-3.0 and poor; 3.1-6.0; the oral health attitudes were graded as Positive 0-2 and Negative 3-5.

Data analysis

Statistical analysis was done using SPSS (Statistical Package for Social Sciences) version 16. Chi-square test of association was used to assess association between variables. Cross tabulations, bar charts and pie charts were used in the presentation of results

Ethical considerations

This study was conducted according to the principles of the Helsinki declaration and approved by t

he Ethical committee of Edo State Ministry of Education on 11th May,2010. Parental consent was also obtained via the school authorities through the use of consent forms.

Study limitations

The data for the study relied partly on the information received from the respondents and so there may be overestimations or underestimations but, the explicit nature of the questions may have reduced its impact on the results.

RESULTS

Table 1 shows the demographic distribution of participants. Seven hundred and four (704)

Table 1: Demographic distribution of the participants

Sex	Male	350 (50.0%)
	Female	350 (50.0%)
Type of school	Private	350 (50.0%)
	Public	350 (50.0%)
Mother's Level of Education	Non-Formal	7 (1.0%)
	Primary	47 (6.7%)
	Secondary	128 (18.3%)
	Tertiary	518 (74.0%)
Father's Occupation	Senior Civil Servant	459 (65.6%)
	Junior Civil Servant	50 (7.10%)
	Self employed	189 (27%)
	Not employed	2 (0.30%)
Mother's Occupation	Senior Civil Servant	384 (65.6%)
	Junior Civil Servant	30 (4.3%)
Self employed	268 (38.3%)	
	House Wife	18 (2.6%)

Table 2: Relationship between Oral Hygiene status and Oral Health Knowledge

	Oral health Knowledge			
Oral Hygiene status	**Poor n(%)**	**Fair n (%)**	**Good n (%)**	**Total n (%)**
Good(4-5)	16 (3.7%)	210 (48.3%)	209 (48.0%)	435 (62.1%)
Fair(2-3)	9 (3.7%)	120 (48.8%)	117 (47.6%)	246 (35.1%)
Poor (0-1)	1 (5.3%)	15 (78.9%)	3 (15.8%)	19 (2.7%)
Total	**26 (3.7%)**	**345 (49.3%)**	**329 (47.0%)**	**700 (100.0%)**

$?^2$=7.676, P=0.104

Table 3: Relationship between Oral Hygiene Status and Oral Health Attitude

	Oral health Attitude		
Oral Hygiene Status	**Negative n (%)**	**Positive n (%)**	**Total n (%)**
Good(4-5)	48 (70.6)	387 (61.3)	435 (62.2)
Fair(2-3)	19 (27.9)	227 (35.9)	246 (35.1)
Poor(0-1)	1 (1.5)	18 (2.8)	19 (2.7)
Total	**68 (9.7)**	**632 (90.3)**	**700 (100.0)**

$?^2$=4.926, P=0.295

Table 5: Relationship between oral hygiene status and participants mothers level of education

Oral Hygiene Status	**Mother's level of education**				**Total**
	No Formal Edu.	**Primary**	**Secondary**	**Tertiary**	
Good (4-5)	3 (0.7%)	22 (5.1%)	63 (14.5%)	347 (79.8%)	435 (62.1%)
Fair (2-3)	3 (1.2%)	23 (9.3%)	57 (23.2%)	163 (66.3%)	246 (35.1%)
Poor (0-1)	1 (5.3%)	2 (10.5%)	8 (42.1%)	8 (42.0%)	19 (2.7%)
Total	**7 (1.0%)**	**47 (6.7%)**	**128 (18.3%)**	**518 (74.0)**	**700(100%)**

$?^2$=27.831, P=0.000

questionnaires were administered and 700 subjects responded, giving a response rate of 99.4%. There was an equal distribution of both sex and type of school of participants. Majority of participant mothers (92.3%) had post primary education with tertiary education status alone being 74.0% while only a small fraction (1.0%) had no formal education. Most of the participant's parents' occupation (more than 50% in both cases of both fathers and mothers) are senior civil servants (65.6% and 54.9% respectively). There is on the whole, less than 3% unemployment status of participant's (0.3% unemployed fathers and 2.6% house wives. Assessment with Simplified Oral Hygiene Index OHI-S showed sixty two percent (62.1%) of the participants had good oral hygiene status with 52.6% females. Most of the participants (67%) had no accumulation of plaque on their teeth surfaces after brushing; while 89% of the respondents also said that brushing teeth prevents tooth decay, 77% said sugar was responsible for tooth decay. 65% of the participants have never visited a dentist, while only 7% of them said they visit a dentist every 6 to 12 months. While most of the participants (64%) said they have never visited a dentist, 81% of them said it was however important to visit the dentist whether there was teeth pain or not. 62% of the participants reported brushing twice daily both mornings watch them while brushing.

Relationship between Oral Hygiene Status and Oral Health Knowledge

Table2 shows the relationship between oral hygiene status and oral health knowledge,results shows that about half (62.1%) of the participants with good oral hygiene status also displayed good knowledge of oral health although, the relationship was not statistically significant (P>0.05).

Relationship between Oral Hygiene Status and Attitudes towards Oral Health

Oral health attitudes graded as positive and negative, revealed majority (90.3%) of the participants had positive attitude towards oral health. Table 3 show a relationship between oral hygiene status and attitudes toward oral health; more than half of the participants (61.3%) who had good oral hygiene status also showed a positive attitude towards oral health. The relationship was however, not statistically significant P<0.05.

Relationship between Oral Hygiene Status and Health Practices

Oral health practices were graded as good, fair and poor oral health practices. 27.6% of the participants indicated good oral health practices, 47.8% of the participants presented with fair oral health practices, and 24.6% of the participants showed poor oral health practices.

Table 4 also shows the relationship between oral health status and oral health practices and approximately half (47.9%) of the participants with good oral hygiene status also had fair oral health practices. However, this relationship was not statistically significant. Relationship between oral hygiene status and participants mother level of education.

Table 5 shows the relationship between participants' mother' level of education and the oral hygiene status. 79.8% of the participants who showed good oral hygiene status had mothers with tertiary levels of education. And this relationship was statistically significant

DISCUSSION

In this study, we reported a relatively higher (62.1%) proportion of participants with good oral hygiene status which is contrary to other studies that reported mostly poor oral hygiene in their study population [9,10]. This development may be attributed to an increase in oral health awareness as well as improved efforts at securing dental care as a result of improved affordability associated with people of higher socio-economic status as revealed by both parents'occupation where more than 50% of both parents occupation are senior civil servants. It is well documented that the oral hygiene status of children is largely influenced by the attitude, awareness, educational level and socio-economic status of their parents[11,12].

Our study also shows that female participants had better oral hygiene than their male counterparts and this difference was statistically significant(P<0.05. This gender difference also corroborates several observational studies [13,14]. A previous study [15] has also suggested that such difference may partly be explained by the fact that girls tend to have more interest in their appearance than boys.

Knowledge of Oral Health

47% of all participants had good knowledge of oral health; 49.3% had fair knowledge and only 3.7% had poor knowledge of oral health. Hence, about 96% of the participants had fair to good knowledge of the oral health. These findings showing a greater proportion of participants having a relatively good knowledge of the oral health are in consonance with the results of

similar surveys carried out in Lagos (South West, Nigeria)[16] and other parts of Africa. Two other studies done in Tanzania[17] also share similar result as well as other surveys carried out in developed countries[18,19], where it was found that most school children had adequate knowledge of the health.

Attitudes toward Oral Health:
Majority of the participants (90.3%) had positive attitudes toward oral health while only 9.7% had negative attitudes toward oral health. These findings are in agreement with some other studies[20,21]. It is important to mention that emphasis on the link between oral health and well-being of the rest of the body might help promote oral health care and oral self-care practice among school children and the public.

Oral Health Practices:
The oral health practice of 27.6% of the participants was good, while most of them (44.9%) exhibited fair oral health practice with the remaining 24.6% having poor oral health practice. One hundred and thirteen (32.3%) of the participants from private schools had good oral health practice whereas, 80 (22.9%) of the participants from public schools had good oral health practices. This study therefore showed that the oral health practice of the children from private schools was better than those from public schools and this difference was statistically significant.

Maternal Level of Education and Oral Health Knowledge, Attitudes & Practices
This study shows a strong relationship between maternal level of education and oral hygiene status. Well over half (74%) of the participants' mothers had tertiary education, and these participants displayed better oral health knowledge, participants as well as a more positive oral health attitudes, compared to children whose mothers had no formal education.
This suggests the vital role mother s play in inculcating better oral health habits and training into their children. This is in consonance with a previous study [22] that found out maternal education, occupation, age, current knowledge, attitude and behavior can indirectly improve health habits of their children.

Relationship between oral hygiene status and oral health knowledge, attitudes and practices:
This study also revealed that the participants that had good oral health knowledge, practices and with positive attitude towards oral health had better oral hygiene status while, participants that had poor oral health knowledge, practices and with negative attitudes toward oral health had poor oral hygiene status. The difference observed in the relationship between oral hygiene status and oral health knowledge, attitudes and practices was however not significant statistically (P>0.05).

CONCLUSION
This study on the oral health status of 12-year-old children in public and private schools in Benin City revealed that participants that had good oral health knowledge and practice and those with positive attitude towards oral health had better oral hygiene status. However, the relationship between oral knowledge, attitude and practices was not statistically significant. Our study also shows a strong association maternal levels of education and oral hygiene among 12-year olds. Though these results are somewhat satisfactory, the knowledge, attitudes and practices of children generally however need to be improved through comprehensive oral health educational programs for both children and their parents (particularly mothers).

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Cervicofacial Necrotizing Fasciitis of Odontogenic Origin Following Chemotherapy: A Case report and Implications for Oral Care in Cancer Treatment

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ABSTRACT

Objective: Cervicofacial necrotizing fasciitis (CNF) is a rapidly spreading and often fatal infection of the soft tissues of head and neck characterized by tissue necrosis and profuse purulent discharge. This report describes a cancer patient, who had undergone chemotherapy and developed CNF of odontogenic origin to highlight the need for oral examination before commencement of chemotherapy.

Case description: A 68 years old retired gardener who developed CNF from infected right permanent mandibular first and second molars. He had undergone surgery and had 3 cycles of Cisplastin, 5-Fluorouracil and Adriamycin on account of carcinoma of the head of pancreas. No oral assessment was carried out prior to commencement of chemotherapy to detect a potential source of infection. Management included removal of the causative teeth, incision and drainage, repeated debridement, daily dressing of wound with Povidone-iodine solution and intravenous antibiotic based on pus microscopy, culture and sensitivity report. He however succumbed to the disease 23 days later.

Conclusion: CNF of odontogenic origin is an extremely fatal condition. Early detection and prompt aggressive treatment is a key to successful outcome. Clinicians involved with management of cancer patients should routinely seek the expertise of a dentist for a pre-chemotherapy oral assessment and all potential sources of infections are removed before chemotherapy begins.

Keywords: Cervicofacial necrotizing fasciitis, chemotherapy, oral care, carcinoma

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INTRODUCTION

Cervicofacial necrotizing fasciitis (CNF) is a fulminating soft tissue infection characterized by extensive necrosis of the subcutaneous tissue along the fascia planes in the head and neck region. It is considered a rare occurrence in the head and neck region, but it commonly affects the limbs, perineum, scrotum and abdomen. Tung-Yin et al reported an incidence of 2.6%.[1] CNF is often fatal, with a high rate of morbidity and mortality ranging from 8.7% to 84%, with sepsis and multiple organ failures as the cause of death.[2]

Necrotizing fasciitis in the head and neck region results mainly from odontogenic infections,[3] other causes are mild injuries to the head and neck,[3,4] insect bites, throat infections,[5] ear infections,[4] sinusitis[6] and infected dental cysts.[7] Mathieu et al.[8] reported that 75% of the 45 cases of CNF in the head and neck region was from odontogenic sources. Predisposing factors are cancers, chemotherapy, diabetes mellitus, chronic alcoholism, human immunodeficiency viral (HIV) infection, severe nutritional anaemia and renal problem.[1,9,10,11]

This report describes a cancer patient, who had undergone chemotherapy and developed CNF of odontogenic origin, to highlight the need for oral assessment before commencement of chemotherapy.

CASE DESCRIPTION

A 68-year old retired gardener was referred from the general surgery unit to the oral and maxillofacial clinic of the University of Benin Teaching Hospital on account of toothache and right facial swelling. He had been managed by the general surgery unit for carcinoma of head of pancreas. He had a triple bypass surgery as well as 3 cycles of chemotherapy before the incidence of toothache. The chemotherapy regimen was intravenous Adriamycin 50mg/m2/day on day 1, 5 Flourouracil 300mg/m2/day days 1 to 5, intravenous Cisplastin 20mg/m^2/day day 1 to day 5. Medical history reveals that he had prostatectomy and was diagnosed with diabetes mellitus 2 years earlier and has been on