Research Article

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Assessment of Knowledgeable, Attitude, and Practices of Pregnant about Oral Health

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Abstract

Objective: *The present study aimed to determine the knowledge, attitudes, and practices of pregnant women at prenatal consultations, both in urban and rural areas, on their oral health with a view to improving the health of pregnant women in the Democratic Republic of Congo.*

Material and Methods: *A descriptive study carried out in a hospital environment in the city-province of Kinshasa for the urban environment, and in the province of Kongo-Central for the rural environment, from March 1 to November 30, 2023 among pregnant women selected by sampling non-probabilistic. A structured questionnaire was used to collect data. The chi-square test was used for data analysis.*

Results: *Of 363 pregnant women, the majority did not know that pregnancy could have an effect on their oral health. Most agreed that it was important to visit a dentist during pregnancy, and that good oral hygiene during pregnancy is important. A minority did not experience dental pain, and among those who did, most had consulted a dentist in rural areas, while those in urban areas preferred self-medication. Most, both from urban and rural areas, only ensured their oral hygiene once a day, with toothpaste, not knowing whether it was fluoridated or not, at any time, and with a manufactured toothbrush.*

Conclusion: *The KAP of pregnant women, both in rural and urban areas, is unsatisfactory. There is a need to implement strategies to improve their oral health.*

Keywords

Oral Health, Pregnancy, Knowledge, Attitudes, and Practices (KAP), Pregnant Women, Antenatal Care (ANC), Oral Hygiene, Dental Care Utilization, Rural vs. Urban Populations, Democratic Republic of Congo (DRC), Maternal Health

Introduction

According to the World Health Organization (WHO), nearly 3.5 billion people worldwide suffer from at least one form of oral disease [1, 2]. The global burden of oral disease exceeds the cumulative global burden of the five most prevalent non-communicable diseases at nearly one billion cases. Worldwide, the literature reports approximately 2 billion cases of untreated dental caries, nearly 1 billion cases of periodontal disease and 350 million cases of edentulism [2].

Pregnancy is regarded as a distinctive phase in a woman's life, marked by intricate physiological alterations, primarily attributable to hormonal fluctuations. These hormonal shifts have the potential to adversely impact oral health during pregnancy. Consequently, oral health is paramount to the comprehensive health and well-being of this demographic. The management of any oral conditions can be conducted throughout pregnancy, with efficacious outcomes in enhancing and preserving oral health. Nevertheless, health professionals frequently neglect to provide oral health care to pregnant women, and pregnant women, including those exhibiting overt signs of oral disease, often fail to seek or obtain appropriate care. Consequently, both pregnant women and health professionals frequently lack awareness of the pivotal role that oral health care plays in a healthy pregnancy [3].

A review of the literature reveals a discrepancy between the recommendations made by learned societies concerning the maintenance of optimal oral health during pregnancy and the actual behaviours exhibited by pregnant women regarding their oral health. This discrepancy is indicative of a gap in knowledge, attitudes, and practices (KAP) among pregnant women regarding their oral health [4].

A study conducted in Sudan revealed that a significant proportion of pregnant women exhibited a paucity of knowledge regarding their oral health and a negative attitude towards it. Regarding their oral hygiene practices, the majority displayed suboptimal habits, and only a small proportion had ever sought dental care [5]. If left unaddressed, oral health problems in pregnant women can result in discomfort, pain, infection, and anxiety, all of which can adversely impact quality of life [4]. Despite the presence of contradictory results, a correlation has been established between specific oral diseases and adverse neonatal outcomes [6-12].

Consequently, it is imperative that health professionals, particularly those working in antenatal clinics (ANC), possess the capacity to provide and/or prescribe suitable oral health care to pregnant women and to promote oral health education [3].

In the Democratic Republic of Congo (DRC), the Multiple Indicator Cluster Survey with Malaria 2017-2018 (MICS-Palu 2017-2018) showed that the overall fertility rate was higher in rural areas than in urban areas for women of childbearing age (15-49), with 230.5 births per 1,000 women and 156.3 births per 1,000 women respectively [13]. Despite this, during the course of ANC, no information or awareness-raising on oral health was mentioned in the survey on the evaluation of healthcare service provision (EPSS 2017-2018) [14].

The absence of guidelines in DRC health policy regarding the significance of oral hygiene during pregnancy is likely a contributing factor to the dearth of information on the oral health of pregnant women during prenatal consultations. This lack of knowledge about their oral health exposes pregnant women to a lack of awareness regarding their oral health and results in delayed consultations at the stage of various complications [15].

It is imperative to ascertain the knowledge, attitudes, and practices of pregnant women during antenatal care (ANC) visits in both urban and rural regions. This will facilitate the acquisition of epidemiological data concerning the oral health of pregnant women and assist in the enhancement of their management during ANC.

Methods

Materials

Site of study: The present study involved the conduction of interviews based on a semi-structured questionnaire of pregnant women attending antenatal clinics (ANC) at the Hospital Center of Kingasani and Presbytérien Hospital Center of Yolo, in the city-province of Kinshasa (DRC) for the urban setting, and the General Referral Hospital of Kimpese, in the province of Kongo-Central (DRC), for the rural setting. The present study covered the period from March to November, 2023, and involved 363 pregnant women.

Methods

- **Type of study:** This was a cross-sectional, descriptive study.
- **Inclusion criteria:** was included in the study, all pregnant: a) having attended the ANC service of the target health facility at the time of the present study; b) available for interview; c) having given informed consent.
- **Exclusion criteria:** pregnants individuals who were deemed to be mentally unfit to participate in the interview.

Statistical Analysis

The collected data were exported to Excel using a data entry mask that was created with Epi-Data software (version 3.1). The subsequent data processing and statistical analysis were carried out using Statistical Package for Social Science (SPSS) software, version 27. Univariate analyses were performed on the variables of interest to obtain descriptive statistics such as proportions for qualitative variables and median and interquartile range for quantitative variables.

The Kolmogorov-Smirnov test was initially implemented to verify the normality of the distribution of quantitative variables. In bivariate analysis, the Chi-square test of independence was executed to examine the association between the independent variables and the origin of the gestating animals. Associations were deemed statistically significant when the p-value was less than or equal to 0.05.

Results

General Characteristics of the Study Population

Table 1: Socio-demographic characteristics of pregnant

Variables	Kimpese (Rural) n=150	Kimpese (Rural) %	Kinshasa (Urbain) N=213	Kinshasa (Urbain)	p
			n	%	
Age (years)					
<15	6	4	0	0	<0,001*
15-19	32	21,3	15	7,0	
20-24	36	24	54	25,3	
25-29	30	20	83	38,9	
30-34	24	16	36	16,9	
35-39	13	8,6	19	8,9	
40-44	8	5,3	6	2,8	
45-49	1	0,6	0	0	
Education level					
No diploma	108	72	71	33,3	<0,001*
Diploma	42	28	142	66,7	
Marital status					
Married	69	46	59	27,7	<0,001*
Alone	81	54	154	72,3	

In the present study, the average age of surveyed pregnant women was 26.7 ± 0.3 years. The age range of the respondents, their level of education and their marital status were related to the origin of the respondents.

In rural areas (Kimpese), the most common ages were 20-24 (9.9%) and 15-19 (8.8%), while in rural areas (Kinshasa), the most common ages were 25-29 (22.9%) and 20-24 (14.9%). However, it is noteworthy that in rural areas, a minority of pregnant women were under the age of 15 (1.7%).

In rural areas, the majority of respondents possessed a state diploma or below (72%), while in urban areas, the majority held a diploma above the state level (66.7%). In both rural and urban areas, the majority of pregnant women were in union (54% and 72.3%, respectively).

Data on Pregnant Women's Basic Knowledge of the Link between Oral Health and Pregnancy

Table 2: Pregnant women's basic knowledge of oral health and pregnancy

Variables	Kimpese (Rural)		Kinshasa (Urbain)		p
	n	%	n	%	
Did you know that pregnancy could have an effect on a pregnant woman's oral health?					
Yes	26	17,3	55	25,8	0,056
NO	124	82,7	158	74,2	
Visits to the dentist during pregnancy are important to prevent or treat oral diseases ?					
Yes	83	55,3	147	69,0	0,008*
No	67	44,7	66	31,0	
Good oral hygiene during pregnancy is important to prevent oral diseases ?					
Yes	94	62,7	140	65,7	0,549
No	56	37,3	73	34,3	

The following table illustrates the correlation between maternal awareness of the significance of dental visits for the prevention or treatment of oral diseases during pregnancy and the geographical origin of the pregnant women. The statistical significance of this correlation is indicated by a p-value of 0.008.

The majority of pregnant women, both in urban (74.2%) and rural (82.7%) areas, lacked awareness about the potential impact of pregnancy on their oral health.

However, the data indicate that there is a belief among pregnant women that it is important to visit a dentist during pregnancy to prevent or treat oral disease (55.3% and 69.0%), and that good oral hygiene during pregnancy is important to prevent oral disease (62.7% and 65.7%).

Data on Pregnant's Attitudes to Oral Health

Table 3: Distribution of pregnant women according to their attitudes towards oral health

Variables	Kimpese (Rural)		Kinshasa (Urbain)		p
	n	%	n	%	
Have you experienced dental pain since the beginning of your current pregnancy ?					
Yes	48	32,0	49	23,0	0,057
No	102	68,0	164	77,0	
What did you do?					
Consult a dentist	16	33,3	11	22,4	
Self-medication	8	16,7	18	36,7	
othing	13	27,1	17	34,7	
Other attitude	11	22,9	3	6,1	
Have you ever seen a dentist since the beginning of your current pregnancy?					
Yes	16	10,7	20	9,4	0,689
No	134	89,3	193	90,6	

A survey of pregnant women revealed that a minority had experienced dental pain (32% and 23%, respectively). Of those who had experienced dental pain, the majority had consulted a dentist in rural areas (33.3%), while those in urban areas would have preferred self-medication (36.7%). Furthermore, both rural and urban pregnant women had not attended oral health care institutions since the start of their current pregnancy, at 10.7% and 9.4%, respectively.

Data on Oral Health and Lifestyle Practices of Pregnant

Table 4: Distribution of pregnant women according to their oral health practices and lifestyle

Variables	Kimpese (Rural)		Kinshasa (Urbain)		p
	n	%	n	%	
Have you been exposed to alcohol consumption since the beginning of your current pregnancy??					
Yes	64	42,7	97	45,5	0,504
No	86	57,3	116	54,5	
Have you been exposed to tobacco use since the beginning of your current pregnancy?					
Yes	13	8,7	25	11,7	0,388
No	137	91,3	188	88,3	
Daily brushing frequency since the start of the current pregnancy					
1 time	127	84,7	108	50,7	<0,001*
2 times	23	15,3	94	44,1	
3 times	0	0	11	5,2	
Estimated time of daily brushing since start of current pregnancy					
Any time	150	100	212	99,5	
Mainly after meals	0	0	1	0,5	
Toothbrush materials used since beginning of current pregnancy					
Manual toothbrush only	111	74,0	191	89,7	
Manual manufactured toothbrush + dental floss and/or interdental brush	2	1,3	16	7,5	
Traditional toothbrush	30	20	0	0	
Others	7	4,7	6	2,8	

Use of fluoride toothpaste since the start of current pregnancy					
Yes	16	10,7	38	17,8	
No	44	29,3	19	8,9	
Ne sait pas	90	60	156	73,2	
Other adjuvants used during tooth brushing since the beginning of the current pregnancy					
No	123	82,0	165	77,5	
mouthwash	21	14,0	28	13,1	
Bicarbonate	6	4,0	17	8,0	
Others	0	0,0	3	1,4	

In terms of lifestyle, this table shows that both urban and rural pregnant women are exposed to alcohol consumption, while most of them have not used tobacco since the beginning of their current pregnancy.

Regarding oral hygiene practices, the frequency of daily brushing was associated with the origin of the pregnant women. Most pregnant women, whether from urban or rural areas, brushed only once a day. They did it at any time, without any specificity, and only with a commercial toothbrush.

Most of the pregnant women, in both urban and rural areas, did not know if they were using fluoride toothpaste and did not use any supplements.

Data on reasons why pregnant women do not visit the dentist, and integration of a dentist during ANC.

Reasons pregnant women do not visit the dentist during pregnancy

This figure shows that the main reason why pregnant women did not visit the dentist during their current pregnancy was that they did not experience any oral problems, whether in urban or rural areas.

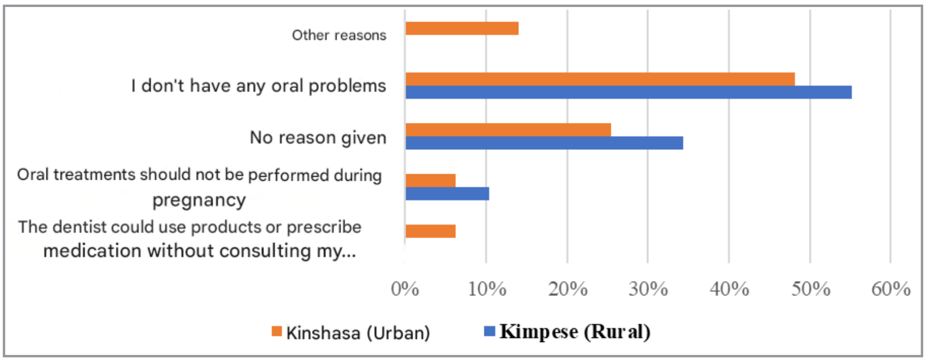

Figure 1: Reasons pregnant women do not visit the dentist during pregnancy

Integration of dental visits during prenatal consultations

This figure shows that the majority of pregnant women in both rural and urban areas, 72% and 81.7% respectively, wanted dental visits to be included in prenatal consultations.

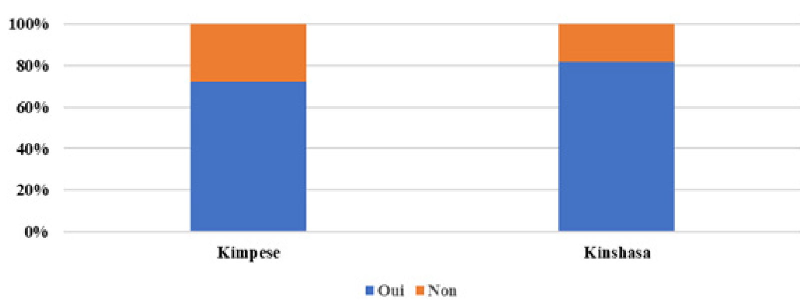

Figure 2: Integration of dental visits during prenatal consultations

Discussion

General Characteristics of the Study Population

At the time of the survey, the town of Kimpese (rural) had a high proportion of pregnant women under 15 years of age, as well as those aged 15-19 years, compared to Kinshasa, which had none. This finding is consistent with the MICS-Palu 2017-2018, which shows that the proportion of women aged 15-19 who had already had a live birth, were pregnant with their first child, had started their fertile life, and had a live birth before the age of 15, and the proportion of women aged 20-24 who had had a live birth before the age of 18, were higher in rural areas than in urban areas [13].

Teenage pregnancy is not only a health issue, but also a development issue. It has many causes, including poverty, gender inequality, violence, forced child marriage, power imbalances between girls and their partners, lack of education, and the failure of systems/institutions that should protect their rights. They are often married off in childhood and face pregnancy before they reach the physical, emotional, and social maturity needed to become mothers. The consequences of teenage pregnancy are felt throughout their lives, affecting their children and subsequent generations [16].

Our study reported that the level of education was related to the origin of pregnant women at ANC. Pregnant women in urban areas were more educated than those in rural areas. The MICS-Palu 2017-2018 survey also showed that the percentage of educated women was higher in urban areas than in rural areas, both in the cities of Kinshasa and Kongo Central [13]. The improvement in the level of education of women in Kinshasa (urban areas) has largely contributed to the increase in this trend, to the detriment of rural areas where women are still devoted to domestic and rural activities [17].

Regarding marital status, our survey showed that most pregnant women lived alone, but this frequency was higher in urban areas than in rural areas. This finding is consistent with the MICS-Palu 2017-2018 survey, which showed that women in rural areas experienced early marriage more than those in urban areas [13]. Another study found that in urban areas (Kinshasa), the delay in entering into marriage could be accompanied by a significant decrease in the number of marriages in Kinshasa, in favour of cohabitation. This situation could be explained by the deterioration of living conditions, the cost of marriage, which has risen significantly in recent years, and the disappearance of the purely symbolic aspect given by custom to dowries, which now reach considerable amounts [17].

Data on Pregnant Women's Basic Knowledge of the Link Between Oral Health and Pregnancy

In this study, the majority of ` low awareness of the relationship between pregnancy and oral health among both urban and rural pregnant women [18]. On the other hand, in an Italian study, the majority of pregnant women were aware that hormonal changes during pregnancy could affect gum health [19]. These differences may be due to the presence of oral health promotion strategies and interventions for pregnant women in several countries [20]. However, in resource-limited countries such as the DRC, there is a lack of guidelines on the importance of oral health during pregnancy, which contributes to the lack of information on oral health during pregnancy in antenatal clinics [15].

The present study examined the correlation between the geographical location of pregnant women and their recognition of the significance of dental visits for both treatment and prevention. The findings indicated that pregnant women residing in urban areas, such as Kinshasa, exhibited a higher propensity to acknowledge the importance of dental visits compared to their counterparts residing in rural areas, such as Kimpese. This observation aligns with the findings reported by Ogunbodede et al., who documented that the frequency of knowledge regarding the importance of dental visits was higher in urban compared to rural regions [21]. The observed discrepancies can be attributed, in part, to the higher level of education among women in urban areas compared to their counterparts in rural areas [17]. However, this disparity is counterbalanced by the greater travel distances rural populations must endure to access healthcare services, in contrast to their urban counterparts.

Rural populations also face a paucity of dentists, which is further compounded by their limited access to primary care services and a more pronounced difficulty in accessing early intervention and preventive education and activities [22].

The majority of pregnant women were aware of the significance of maintaining good oral hygiene during pregnancy for the prevention of oral disease, both in urban and rural settings. These results contrast with those reported by Majekodunmi et al. in Nigeria, who found that the majority of pregnant women did not recognize the importance of this practice, either for pregnancy or for other parts of the body [23]. It is postulated that exposure to professional care during antenatal care (ANC), from pregnancy preparation to delivery messages, can contribute to a more profound understanding of oral hygiene as an element in improving the experience of pregnancy and in the prevention of oral diseases.

Data on Pregnant Women's Attitudes to Oral Health

A minority of pregnant women reported experiencing dental pain at the time of the survey. Of those who had experienced dental pain, most had consulted a dentist for treatment in rural areas, while those in urban areas resorted to self-medication. Self-medication in urban areas (Kinshasa) has been documented in the literature. Analgesics and antipyretics are the pharmaceutical molecules most commonly self-medicated by patients in Kinshasa. The increased use of paracetamol as an analgesic is attributed to its affordability and accessibility on the market, as well as its ease of self-administration, which is often recommended by nursing staff [24].

A minority of pregnant women had visited a dentist since the start of their current pregnancy, a finding that aligns with the results reported by Majekodunmi and Owuka in Nigeria. These researchers found a low proportion of visits to the dentist during the current pregnancy among both urban and rural pregnant women [23, 25]. The literature also shows low compliance with antenatal dental care. The factors contributing to access and utilization of these services have been linked to socio-ecological, economic, cultural, and educational issues [26].

Data on Pregnant Women's Oral Health and Lifestyle Practices

In terms of lifestyle factors, the consumption of alcohol among pregnant women was not associated with geographical origin.

However, the findings of the present study indicate that nearly half of all pregnant women, both in urban and rural settings, consume alcohol during their current pregnancy. These proportions contrast with those reported by Atebew and Bete, who observed that urban pregnant women exhibited higher alcohol consumption rates compared to their rural counterparts. Atebew and Bete also address the absence of a link between alcohol consumption and the origin of the pregnant women [27, 28]. It is important to note that the consumption of these substances is harmful to the progress of pregnancy, and is strictly prohibited [27]. The extant literature posits that alcohol consumption may be attributable to a number of factors, including but not limited to: younger maternal age, marital status, lower level of education, unplanned pregnancy, lack of awareness regarding the effects of alcohol consumption, the husband's alcohol consumption, the presence of partners and friends who consume alcohol, unemployment, and low socio-economic status [29].

In the present study, a small percentage of pregnant women had been smoking since the start of their current pregnancy, a finding that aligns with the results reported by Verma et al. in India [30]. In sub-Saharan Africa, studies indicate that tobacco consumption is relatively low, and that factors such as the partner's smoking status, education, profession, occupation, place of residence, marital status, number of previous pregnancies, and adequate prenatal care may be important risk factors associated with tobacco consumption during pregnancy [31]. Not with standing these proportions, it is imperative to establish significant regulations prohibiting the use of these substances by pregnant women.

In relation to oral hygiene practices, the frequency of daily brushing was found to be associated with the geographical location of the pregnant women. The majority of pregnant women, irrespective of their urban or rural residence, performed a single daily brushing routine, often at an arbitrary time and utilizing only a commercially available toothbrush and toothpaste. These observations are consistent with those reported by Singh in India and Majekodunmi et al. in Nigeria, who similarly noted the predominance of the use of a manufactured toothbrush and toothpaste for oral hygiene maintenance in both urban and rural contexts [18, 23]. However, our findings differ from those of Majekodunmi et al. with respect to the frequency of brushing, as most of her subjects brushed twice daily [23].

Data on Reasons why Pregnant Women do not Visit the Dentist, and Integration of a Dentist During ANC

The prevailing lack of awareness regarding oral health concerns, irrespective of geographical location, constitutes the predominant rationale for pregnant women's decision to refrain from seeking dental care since the onset of their current pregnancy. This observation has been replicated in the study conducted by Majekodunmi et al. [23]. Conversely, Okuma et al. postulate that dental complications during pregnancy are perceived by pregnant women as an inherent component of the pregnancy experience, potentially impeding their utilization of oral health services [25].

The utilization of oral health care services by pregnant women can be enhanced through integration of dental visits, a strategy that has been identified in the literature as a means of reducing the burden of oral disease in pregnant women and their offspring. The literature also indicates the value of guidelines, policies, and programs to integrate oral health into prenatal care, though their impact is limited. Despite the existence of information regarding integrated general care, there is a paucity of evidence concerning the optimal forms of integrating oral health care during antenatal care. Consequently, there is an imperative for additional research to address the identified gaps and to advance the concept of integrated oral health care during pregnancy [32].

Conclusion

The current state of knowledge, attitudes, and practices among pregnant women in both rural and urban areas is deemed to be unsatisfactory in general. It is imperative to implement specific strategies during antenatal care (ANC) visits to enhance their oral health and ensure their overall quality of life is maximized in the Democratic Republic of Congo.

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