
Menstrual Hygiene's and Early Pregnancy Among Adolescents, and Associated Factors in 2021, Commune of Lokossa, Benin

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Abstract: A poor management of menstrual hygiene and the occurrence of teenage pregnancies constitute a real public health problem in Benin. The aim of the research was to analyse the level of knowledge and practices of menstrual hygiene among adolescent girls and to determine the prevalence of early pregnancies as well as associated factors. A cross-sectional survey was conducted. A total of 230 adolescent girls was selected by three-stage cluster sampling. Adolescents aged 10 to 19 years old who had their menstruation and living in Lokossa commune were included in the study. The mean age (SD) of menarche was 14.17±1.18 years. The Kotafon was the majority ethnic group and concerned 81% of the adolescent surveyed girls. The prevalence of early pregnancy was 14.8%. Girls' level of good knowledge of menstruation was evaluated at 47.8%, the level of good practices was 17.8%. Early pregnancy is more observed among adolescent girls living in couple, those in school and those living outside the matrimonial home ($p < 0.0001$). At the multivariate analysis, the non-indigenous girls had a three times good menstrual hygiene practices than indigenous girls (Kotafon ethnic group) with OR=7.13 [CI95% 2.20-23.13], $p = 0.001$ and living outside the family (parents, guardians) increased the level of good menstrual hygiene practices more than seven times, OR=7.22 [CI95% 2.45-21.27], $p < 0.001$. The absence of religious beliefs among adolescents increased good menstrual hygiene practices by 10 times compared to the presence of religious beliefs OR=10.52 [CI95% 2.83-38.46], $p < 0.001$. Regarding access to drinking water, compared to 'sometimes' and 'never' access, 'always' access induced a higher proportion of good menstrual hygiene practices respectively by 6.25 times (OR=6.25 [CI95% 1.96-20.00]), $p < 0.001$ and 9.09 times (OR=9.09 [CI95% 2.78-33.33], $p < 0.001$). In addition, good menstrual hygiene knowledge increased good menstrual hygiene practices by 4.55 times OR=4.55 [CI95% 1.61-12.50], $p = 0.006$. Strong sensitization program on menstrual hygiene practices and/or continuous access to drinking water can induce best practices on menstrual hygiene and decrease early pregnancy.

Keywords: Menstrual Hygiene, Early Pregnancy, Knowledge and Practices, Adolescent Girl, Benin

1. Introduction

Menstruation is sometimes an important issue for adolescent's girls because it can have a negative impact on girls' daily lives in terms of isolation, restricted mobility and nutrition, and even schooling [1]. Low levels of knowledge and poor practices can have significant consequences on the health of adolescent girls, such as vaginal infections, fertility problems, early pregnancies, various psychological disorders,

etc. Despite all these problems, menstrual hygiene has been largely ignored by health, water and education professionals [2]. Menstrual hygiene management is then a real health issue that needs to be addressed to ensure better health for women and girls. Information on menstrual hygiene management is scarce. In the department of Mono, where the study took place, 12% of adolescent girls aged 15 to 19 have

already had their first child or are carrying their first pregnancy [3]. The phenomenon of early pregnancy is an important public health problem related to menstrual management and deserves to be explored. Knowledge, attitudes, practices and behaviours in the management of menstruation among girls are little or no documented. Very few studies have been conducted on these issues in Benin. Then, the aim of this work was to study the knowledge and practices of menstrual hygiene's, early pregnancy, and associated factors among adolescent girls in the commune of Lokossa in Benin country.

2. Materials and Methods

2.1. Study Area

The study was carried out in the commune of Lokossa, one of the six administrative subdivisions of the Mono Department. This commune is divided into five arrondissements: Lokossa-Centre, Agame, Koudo, Houin and Ouedeme-Adja. These arrondissements are subdivided into 15 town quarters and 29 villages, making a total of 44 localities. The population consists of a large number of socio-linguistic groups. Kotafon and Adja ethnic groups were the majority. The practice of traditional religion was the most important associated or not with the Catholics (24%), the Muslims (2%) and the Protestants (1%). The health district centre, the health department centre, five health centres, five isolated maternity, and one isolated dispensary were located at the commune of Lokossa.

2.2. Methods

2.2.1. Study Design

A cross-sectional study was conducted from 21 to 30 June 2021 by household survey.

2.2.2. Study Population and Inclusion Criteria

The adolescent's girls included in the study met the following criteria: 1) aged 10 to 19 years old, 2) had already menstruated and 3) lived in the commune of Lokossa since at least one year.

2.2.3. Sampling

A three-stage cluster sampling was conducted. The three levels of clustering were represented respectively by the arrondissement level, the village/town quarter level and the household level. A random selection was done at each stage. In total, three arrondissements out of the five in the commune of Lokossa were selected at random. These were Agamè (with 10 villages), Lokossa Centre (with 23 villages) and Houin (with 7 villages). Proportionally, the number of villages and town quarter were drawn by cluster. In total, 28 villages were selected, 7 in Agame, 17 in Lokossa centre and 4 in Houin. In each village, four cardinal points were delimited. The first itinerary was randomly identified by throwing a bottle. The first household chosen was the first on the route indicated by the bottle. Then the following households

were identified according to a sampling step of two. Within each household, a single adolescent girl who met the inclusion criteria was randomly selected.

2.2.4. Sample Size

The minimum sample size was calculated by the Schwartz formula: n equal to $(\epsilon^2 * p * q) / i^2 * c$ considering: n is a minimum the sample size, ϵ is the standard normal deviate (1.96 for 95% confidence level) and i equal to 0.08 is the desired precision. Since the level of indicator on the level of practice of menstrual hygiene management was not available, the value of p and q equal to 50% was considered. The cluster correction factor (c) was equal to 1.5. The minimum sample size was 225 adolescent girls.

2.2.5. Data Collection Procedure

Data were collected through a digital questionnaire administered to the adolescent girls using the CS Entry software installed on the smartphones for data collection after conducting a pre-test. Interviewers who were not fluent in local languages were accompanied by a community health workers to act as an interpreter.

2.2.6. Study Variables

The dependent variables were menstrual hygiene practices with the modalities "good practices" and "poor practices" and the occurrence of early pregnancy with the modalities "absence" and "presence". The independent variables were socio-demographic data, gynaeco-obstetrical history, environmental and cultural factors, and the level of knowledge about menstrual hygiene.

2.2.7. Data Processing and Analysis

The data were analysed using SPSS version 18.0 software. Cross-tabulations between the dependent variables and the independent variables were performed to assess the relationships between them in univariate analysis. The Pearson Chi-square test was applied at the 5% significance level. Several variables were used to calculate the menstrual hygiene knowledge and practice scores. For knowledge, the variables used were those relating to the notions of sexual education, traditional beliefs, perception of menstruation, the time of the cycle when pregnancy can occur and knowledge of the warning signs of menstruation. A wrong answer was scored 1 and a right answer scored 2. The good knowledge threshold was set at 80% correct answers. With regard to menstrual hygiene practices, the variables used were: cleaning of the vagina, equipment used during menstruation, washing and drying of equipment and waste management. The threshold for good practice was thus set at 80% of correct responses. The multivariate analysis by logistic regression was used to identify the factors associated with the practice of menstrual hygiene in the commune of Lokossa, but also to measure the strength of association of each determinant (Odds ratio) at the significance level α of 5%.

2.2.8. Ethical Considerations

The administrative and health authorities were informed

and they gave a research permit. Data collection was preceded by free, informed and consent. The data collected are strictly confidential and anonymous. For this purpose, the interview took place in a space chosen by the respondent and away from other household members.

3. Results

A total of 230 adolescent girls were enrolled in the study. Kotafon was the majority ethnic group and represented 81% of the adolescent girls surveyed. The majority of participants were single (89.6%), living with their parents/guardians (87.5%). Table 1 shows the distribution of adolescents according to socio-demographic characteristics.

The mean age (SD) of menarche was 14.17±1.18 years. Among the girls surveyed, the prevalence of early pregnancy was 14.8%. Figure 1 shows the main reasons for early pregnancy among these adolescents. Among these adolescents, 9.6% had their first sexual intercourse before the age of 15 and 3% had their first pregnancy between the ages of 14 and 15 (Table 2).

Table 1. Socio-demographic characteristics of adolescent girls, Lokossa, Benin, 2021.

	Frequency	Percentage
Age (years)		
< 15	23	10.0
≥ 15	207	90.0
Ethnic groups		
Kotafon	187	81.3
Other (Adja, Mina, Fon)	43	18.7
Religion		
Christian	193	83.9
Traditional	37	16.1
Marital status		
Single	206	89.6
In couple (married or not)	24	10.4
Profession		
Student	105	45.7
Craftsman/apprentice	99	43.0
Retailer	26	11.3
Level of education		
Not in school	35	15.2
Primary	81	35.2
Secondary or university	114	49.6
Place of residence		
With father/mother or guardian	197	85.7
With spouse/friend/rental	33	14.3

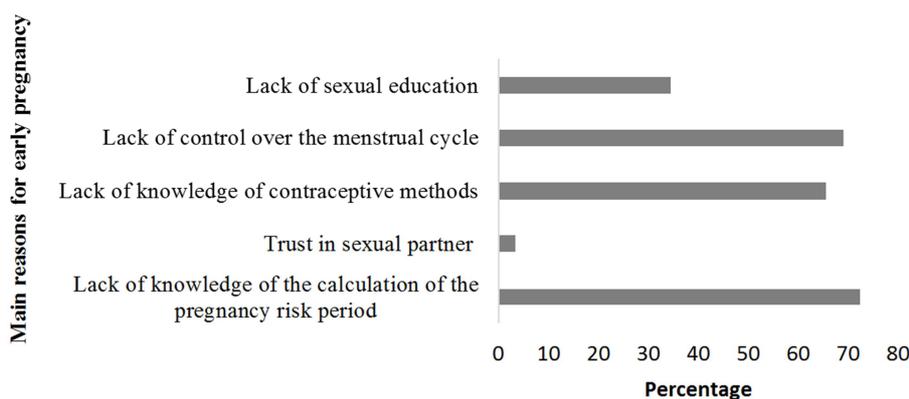


Figure 1. Main reasons linked to early pregnancy, Lokossa, Benin, 2021.

Table 2. Distribution of adolescent girls according to their gynaecological-obstetric history and pregnancy-related parameters, Lokossa, Benin, 2021.

	Frequency	Percentage
Age at first menstruation (years)		
< 14	64	27.8
14-15	91	39.6
> 15	75	32.6
Abundance of bleeding		
Very heavy	30	13.0
Fairly heavy	112	48.7
Not very heavy	88	38.3
Duration of menstruation (days)		
< 5	99	43.0
≥ 5	131	57.0
Age of first sexual intercourse (years)		
No intercourse	137	59.6
≤ 15	22	9.6
16-17	61	26.5
≥ 18	10	4.3

	Frequency	Percentage
Early pregnancy		
Yes	34	14.8
No	196	85.2
Age of 1st pregnancy (years)		
No early pregnancy	196	85.2
14-15	7	3.0
16-17	27	11.7
Use of family planning		
Yes	15	6.5
No	215	93.5
Awareness on sex education and menstrual hygiene		
Yes	145	63.0
No	85	37.0

Of the participants, 145 (63%) having received information on the sexual education and menstrual hygiene, mostly from parents (mothers, guardians, sisters) in 83.4%, 13.1% from school, 11.7% and 3.4% respectively from friends and from a health education training structure. The majority of adolescent

girls 169 (73.4%) considered menstruation as a divine punishment or even an illness, although it did not constitute a barrier to their activities in 97% of the cases, 80 (34.8%) of them pointed out cultural prohibitions to be observed during

this period and 191 (83%) continued to use old devices (cloth/chiffin, torn piece of clothing) for the management of their menstruation (Table 3, Figure 2).

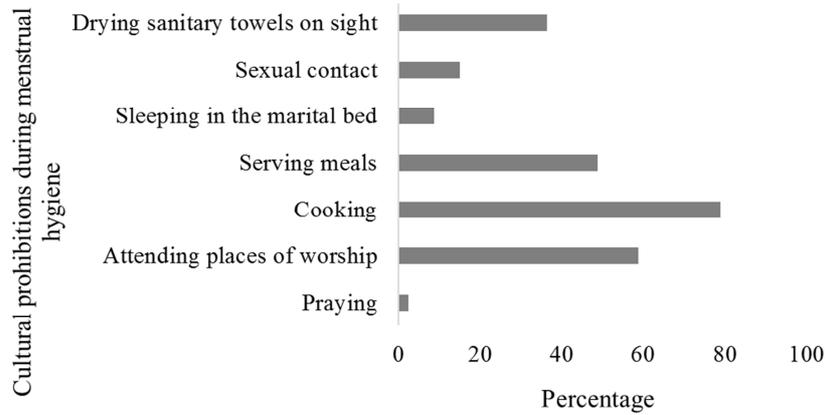


Figure 2. Cultural prohibitions during menstrual hygiene, Lokossa, Benin, 2021.

Table 3. Distribution of adolescent girls according to their knowledge, perceptions and practices of menstrual hygiene, Lokossa, Benin, 2021.

	Frequency	Percentage
Perception of menstruation		
Punishment/illness	169	73.4
Normal	2	0.9
Don't know	57	25.7
Deep intimate cleansing during menstruation		
Yes	160	69.6
No	41	17.8
Don't know	29	12.6
Time of risk of pregnancy during the cycle		
Just before menstruation	15	6.5
During menstruation	6	2.6
After menstruation	89	38.7
Between menstruation periods	77	33.5
Don't know	43	18.7
Informing the family at the 1st menstruation		
Yes	212	92.2
No	18	7.8
Menstruation as a barrier to activity		
Yes	7	3.0
No	223	97.0
Cultural factors and menstrual hygiene		
Yes	80	34.8
No	150	65.2
Hygiene device frequently used		
Cloth/Ribbon	143	62.2
Torn piece of clothing	48	20.8
Sanitary napkin	20	8.7
Tampon	19	8.3
Access to safe water during menstruation		
Always	83	36.1
Sometimes	70	30.4
Never	77	33.5
Type of toilet		
Flush toilet	16	7.0
Simple toilet with private latrine	21	9.1
Simple toilet with public latrine	101	43.9
No toilet	92	40.0

Overall, the level of good knowledge of girls about menstruation was assessed at 47.8%. The level of good practice was 17.8% (Table 4).

Table 4. Level of knowledge and practices of menstrual hygiene among adolescent girls, Lokossa, Benin, 2021.

	Frequency	Percentage
Knowledge		
Good	110	47.8
Poor	120	52.2
Practices		
Good	41	17.8
Poor	189	82.2

The variables (marital status, occupation, education and location) are statistically associated with the occurrence of early pregnancy among the adolescent girls. Early pregnancy was more prevalent among adolescent girls who were committed to living with a partner, those who were in school and those who lived outside the marital home (p<0.001).

The variables (ethnicity, place of residence, cultural prohibitions, menstrual management system, access to drinking water, type of toilet and knowledge of the time of risk of pregnancy) are statistically associated with the practice of menstruation (Tables 5 and 6).

At the multivariate analysis, the non-indigenous girls had a three times good menstrual hygiene practices than indigenous girls (Kotafon ethnic group) with OR=3.19 [CI95% 1.12-9.26], p=0.001 and living outside the family (parents, guardians) increased the level of good menstrual hygiene practices for girls more than seven times, OR=7.50 [CI95% 2.66-21.12], p<0.001.

The absence of religious beliefs among adolescents increased good menstrual hygiene practices by 10 times compared to the presence of religious beliefs OR=10.52 [CI95% 2.83-38.46], p<0.001. Regarding access to drinking water, compared to 'sometimes' and 'never' access, 'always' access induced a higher proportion of good menstrual

hygiene practices respectively by 6.25 times (OR=6.25 [CI95% 1.96-20.00]), $p < 0.001$ and 9.09 times (OR=9.09 [CI95% 2.78-33.33]), $p < 0.001$). In addition, good menstrual

hygiene knowledge increased good menstrual hygiene practices by 4.55 times OR=4.55 [CI95% 1.61-12.50], $p = 0.006$.

Table 5. Factors associated with menstrual hygiene practices and early pregnancy among adolescent girls, Lokossa, Benin, 2021.

	Early pregnancy			p	Menstrual hygiene practices			p
	Yes n (%)	No n (%)	Total		Good n (%)	Poor n (%)	Total	
Age (years)								0.185
< 15					7 (17.1)	51 (27.0)	58	
≥ 15					34 (82.9)	138 (73.0)	172	
Ethnie				0.865				<0.001
Kotafon	28 (82.4)	159 (81.1)	187		25 (61.0)	162 (85.7)	187	
Other (Adja. Mina. Fon.)	6 (17.6)	37 (18.9)	43		16 (39.0)	27 (14.3)	43	
Religion				0.074				0.224
Christian	168 (85.7)	25 (73.5)	193		37 (90.2)	156 (82.5)	193	
Traditional	28 (14.3)	9 (26.5)	37		4 (9.8)	33 (17.5)	37	
Marital status				<0.001				0.332
Single	13 (38.2)	193 (98.5)	206		35 (85.4)	171 (90.5)	206	
In couple (married or not)	21 (61.8)	3 (1.5)	24		6 (14.6)	18 (9.5)	24	
Profession				<0.001				0.420
Student	5 (14.7)	100 (51.0)	105		15 (36.6)	90 (47.6)	105	
Craftsman/apprentice	14 (41.2)	85 (43.4)	99		21 (51.2)	78 (41.3)	99	
Retailer	14 (44.1)	11 (5.6)	26		5 (12.2)	21 (11.1)	26	
Level of education				0.004				0.620
Not in school	11 (32.4)	24 (12.2)	35		6 (14.6)	29 (15.3)	35	
Primary	13 (38.2)	68 (34.7)	81		12 (29.3)	69 (36.5)	81	
Secondary or university	10 (29.4)	104 (53.1)	114		23 (56.1)	91 (48.2)	114	
Place of residence				<0.001				<0.001
With father/mother or guardian	16 (47.1)	181 (92.3)	197		22 (53.7)	175 (92.6)	197	
With spouse/friend/rental	18 (52.9)	15 (7.7)	33		19 (46.3)	14 (7.4)	33	

Table 6. Relationship between menstrual hygiene practice among adolescent's girls and other associated factors, Lokossa, Benin, 2021.

	Menstrual hygiene practices			p
	Good n (%)	Poor n (%)	Total	
Time of risk of pregnancy during the cycle				
Just before menstruation	-	15 (6.5)	15	
During menstruation	-	6 (3.2)	6	
After menstruation	9 (22.0)	80 (42.3)	89	<0.001
Between menstruation periods	28 (68.3)	49 (26.0)	77	
Don't know	4 (1.7)	39 (17.0)	43	
Cultural factors and menstrual hygiene				
Yes	4 (9.8)	76 (40.2)	80	<0.001
No	37 (90.2)	113 (59.8)	150	
Hygiene device frequently used				
Cloth/Ribbon	1 (2.4)	142 (75.1)	143	
Torn piece of clothing	1 (2.4)	47 (24.9)	48	<0.001
Sanitary napkin	20 (48.8)	-	20	
Tampon	19 (46.4)	-	19	
Access to safe water during menstruation				
Always	30 (73.2)	53 (28.0)	83	
Sometimes	6 (14.6)	64 (33.9)	70	<0.001
Never	5 (12.2)	72 (38.1)	77	
Type of toilet				
Flush toilet	14 (34.1)	2 (1.1)	16	
Simple toilet with private latrine	6 (14.6)	15 (7.9)	21	<0.001
Simple with public latrine	18 (44.0)	83 (43.9)	101	
No toilet	3 (1.3)	89 (47.1)	92	

4. Discussion

This work studied adolescent girls' menstrual hygiene management behaviours and prevalence of early pregnancy among girls and associated factors.

The first observation was that a large community of Kotafon

(81.3%) lived in the commune of Lokossa. The Kotafon form a population of Benin living in the south-west of the country, in the Mono department, particularly in the localities of Lokossa where they are in the majority (70%) [4]. Their habits and customs could have an impact on the behaviour of local girls. The majority of the girls (67.4%) had their menarche before the age of 16 years old without being prepared for this

experience. Among the 230 participants to the study, 52.2% had poor knowledge about menstruation and related menstrual hygiene. That can justify the low level of understanding, information and knowledge on menstruation and menstrual hygiene observed during the study. The similar results observed in Ethiopia [5] and by several authors in Senegal [1], Nigeria [6] and Cameroon [7] revealing that adolescent girls claimed to have never been informed about the issue before their first menstruation. This low level of knowledge among girls about their menstruation could also explain the occurrence of early pregnancies observed in the present study (14.8%). This phenomenon is on the increase in the Lokossa commune and constitutes a real public health problem. Menstruation is a taboo subject in the study area. Thus, girls do not talk about it much with men (fathers, teachers or health workers), but also with their mothers or guardians. Some of them are subject to socio-cultural prohibitions based on beliefs and preconceived ideas. Most studies in Africa corroborate these observations [1, 8, 9].

The second objective of the study was to identify factors associated with menstrual hygiene practice and with the occurrence of early pregnancy in order to conduct community-based high-impact reproductive health intervention packages in the locality. The results showed that occupation, education level, marital status and location were statistically associated with the occurrence of early pregnancy among the adolescent girls in the study. This could be explained by the fact that 67.6% of pregnancies among these girls are among those who are in school, and the occurrence of the first pregnancy most often leads to a systematic entry into a conjugal union. As for the place of residence, the localities in the study are largely rural where young girls marry very early and thus have their first pregnancy early.

With regard to menstrual hygiene practices, the study showed that 62.2% of the girls resort to the use of cloths or rags and 20.8% to torn pieces of clothing. These practices are the challenges faced by the majority of girls/women of developing countries [10]. These practices are also mainly influenced by the ethnicity and the place of residence of adolescent girls. Indeed, good menstrual hygiene practices are better observed among those who do not belong to the community's majority ethnic group and who do not live with their parents. This means that Kotafon adolescent girls, still under the family roof, remain under the influence of traditional practices and perpetuate the myths and beliefs related to menstruation passed on by their mothers or close relatives.

Adolescent girls in low- and middle-income countries are little informed and prepared for menarche management. Information is primarily obtained from mothers and other female family members who are not necessarily well informed and trained to fill gaps in girls' knowledge [11].

Some are unaware of the existence of commercial sanitary towels, while others cite economic constraints (financial means) for the acquisition of these modern means of protection. The same findings were made by several authors where cloth is the main protection used in their study regions [12-15].

5. Limitation of the study

The methodological approach used probably reach a representative target of the community, thus taking into account adolescent girls from all socio-professional categories, as most existing studies on menstrual hygiene were often oriented towards school-going adolescents. However, a study using a qualitative approach with the mothers and fathers of the adolescent girls, teachers and health workers is needed to better understand their behaviour.

6. Conclusion

The menstrual hygiene management and the occurrence of early pregnancies remain a public health issue and deserve reflection. The implementation of high-impact community-based reproductive health intervention programmes towards specific social groups targeting mothers, fathers and other key persons remains the ideal solution to reduce the health and social consequences of these two community health problems.

Author's Contribution

BA and BGD designed the protocol. BGD collected the data. BA and BGD do the data analysis. BA wrote the first draft of the manuscript. BGD and SGRP reviewed the manuscript and gave their approval.

Competing Interests

The authors declare that they have no competing interests.

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