



ORIGINAL ARTICLE

Knowledge, Attitudes and Practices of Obstetric Care Providers Regarding Pre-Eclampsia in the Yaoundé IV District

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Abstract

Background: Pre-eclampsia is a pregnancy-related condition which complicates 7 to 9% of all pregnancies and is a major risk factor, exposing both mother and foetus to multiple complications, some of which may be life-threatening. It is the third leading cause of maternal mortality in Africa. In Cameroon, the prevention and management of pre-eclampsia remains sub-optimal, particularly in peripheral health facilities, which are very busy.

Objective: To study the knowledge of obstetric care providers in Yaoundé IV about pre-eclampsia and report on the influence of this knowledge on their attitudes and practices.

Material and method: This was a CAP-type analytical study conducted from 4 November 2019 to 30 June 2020 in the Yaoundé IV district. 354 providers were recruited. We included all providers who were present on the survey days and who had given their consent for the study; the data collected from the survey form were entered using CSPro 7.0 software and imported into Statistical Package for the Social Sciences for statistical analysis.

Results: The majority of providers were between 20 and 40-years-old (84.1%) with an average age of 33.7 ± 8.4. The majority of providers interviewed were qualified nurses (44.2%), most of whom were married. The dominant gender was female (64.8%). The level of knowledge, attitudes and practices was assessed by profession using the Essi rating grid. General practitioners had the highest level of knowledge

(74.3%). Midwifery nurses and midwives were rated as having an average level of knowledge, while nurses and care assistants were rated as having insufficient and poor levels of knowledge respectively (39.4% and 23.2%). Nurses, who constituted the most represented population, had an insufficient level of knowledge, a level of attitudes judged to be approximate (61.4%) and an inadequate level of practice (52.3%). It appeared that the level of knowledge influenced providers' attitudes and particularly their practices.

Conclusion: Nurses (who make up the most represented population of obstetric care providers) have insufficient knowledge of pre-eclampsia; their attitudes and practices remain unsatisfactory.

Keywords

Pre-eclampsia, Providers, Obstetric care, Knowledge, Attitudes, Practices, Yaoundé IV

Introduction

Pre-eclampsia is a pregnancy-related condition manifested by arterial hypertension (AH) appearing after the 20th week of amenorrhoea, associated with proteinuria in excess of 300 mg/24h and disappearing before the 6th week post-partum [1]. It remains the most common cause of hypertension in pregnancy worldwide, with a prevalence of 2 to 6% [2]. Its

incidence in developed countries is low, averaging 0.5 to 2%, whereas in Africa it affects one pregnancy in 2000, with 30% of maternal deaths and 20% of foetal and neonatal deaths [3]. It is relatively common throughout the world, but its prevalence is on average twice as high in Africa as in developed countries [3]. Previously known as toxæmia gravidarum, it complicates 7 to 9% of all pregnancies and is a major risk factor during pregnancy, exposing both mother and foetus to multiple complications, some of which may be life-threatening [4]. The seriousness of this pathology is linked to its maternal complications (HELLP syndrome, eclampsia, haemostasis disorders, renal failure, acute pulmonary oedema, papilledema, serous retinal detachment, retroplacental haematoma, capsular rupture of the liver) and its perinatal complications (hypotrophy, induced prematurity, death *in utero*, emergency extractions with perinatal asphyxia) [5]. In Cameroon, the prevention and management of pre-eclampsia remains sub-optimal, particularly in peripheral health facilities, which are very busy. In fact, very few studies in our context focus on the theoretical knowledge and practices of the various healthcare providers in charge of pre-eclamptic women. Shedding light on this aspect would make it possible to evaluate and even improve the prevention and management of preeclampsia in peripheral health facilities and, in a way, to reduce the maternal-foetal mortality rate attributed to this pathology.

Objective

To study the knowledge of obstetric care providers in Yaoundé IV about pre-eclampsia and report on the influence of this knowledge on their attitudes and practices.

Materials and Methods

Type of study and location

We conducted a qualitative CAP (Knowledge, Attitude and Practice) study in the city of Yaoundé, in the Yaoundé IV district, from 4 November 2019 to 30 June 2020.

Participants, sample and variables

Our study included all obstetric care providers who were present on the survey days and who had given their consent for the study. Data were collected using a structured questionnaire combining both open and closed questions.

The independent variables were

Age, sex, occupation, religion, marital status and level of education. The dependent variables were: **knowledge:** definition of the condition, general knowledge of the pathophysiology of preeclampsia, knowledge of risk factors, diagnosis of preeclampsia, knowledge of risks and complications in the mother,

knowledge of risks and complications in the foetus, knowledge of means of prevention in pregnant women with risk factors, knowledge of means of management of preeclampsia.)

Attitudes

Difference in monitoring pregnancy in pregnant women with risk factors, attitude towards any parturient with high blood pressure, difference in monitoring pregnancy in pregnant women with high blood pressure.

Practice

Prevention of pre-eclampsia in pregnant women with risk factors, management of pre-eclampsia.

Data analysis

The data collected from the survey form were entered using CPro 7.0 software and imported into Statistical Package for the Social Sciences (SPSS) for statistical analysis. The results were written up and represented graphically in Microsoft Word and Microsoft Office Excel 2013.

Results

Description of socio-demographic and professional characteristics

In this study, over 80% of care staff were aged between 20 and 40 (84.1%), 14.6% were aged between 40 and 60 and only 1% were over 60. The average age was 33.7 ± 8.4 , with a minimum of 19 and a maximum of 65.

Of the providers we interviewed, 64.8% were women and 124 were men (35.2%). Most of the providers we met were nurses (44.2%), followed by orderlies (30.6%). We did not meet any gynaecologists. The most common qualification was state-registered nurse (37.2%), and most of the people interviewed were married (Table 1).

Determining what we know about pre-eclampsia

We observed that nearly 120 providers (41%) had a precise and accurate definition of pre-eclampsia, i.e. the combination of hypertension equal to or greater than 140/90 mmHg and/or proteinuria greater than 300 mg/24h occurring after the 20th week of pregnancy and disappearing before the 6th week post-partum. 26% of them stated that pre-eclampsia was the combination of hypertension and proteinuria greater than 300 mg/24h.

With regard to the pathophysiology of pre-eclampsia, 11.3% of the providers were aware that all the propositions made were correct, 5% thought that it only results from a placental vascularisation defect, 4.2% thought that it is linked to a placental disorder, and 4% answered respectively that its initial key element is placental insufficiency and that there is a trophoblastic invasion defect. It should also be noted that over 70% of nursing staff did not answer this question.

Table 1: Socio-demographic profile of service providers.

Variables	Numbers (N = 354)	Frequency (%)
Age group		
Under 20s	1	0.3
20 to 40 years	253	84.1
40 to 60-years-old	44	14.6
Over 60s	3	1
Total	302	100
Gender		
Men	124	35.2
Woman	229	64.8
Total	354	100
Profession		
General practitioner	34	9.6
Gynaecologist	0	0.0
Nurse midwife	26	7.3
Midwife	30	8.3
Nurse	156	44.2
Nursing assistant	108	30.6
Total	354	100
Level of study		
Baccalauréat	47	13.3
IDE	132	37.2
LSI	34	9.6
Master	15	4.3
Doctorate	70	19.6
Other	56	15.9
Total	354	100
Marital status		
Single	206	58.1
Married	138	38.9
Divorced	4	1.3
Widower	6	1.7
Total	354	100

Table 2: Providers' level of knowledge.

Variables	%	Level of knowledge
Profession		
General practitioner	74.3%	Good
Nurse midwife	57.2%	Medium
Midwife	59.7%	Medium
Nurse	39.4%	Insufficient
Nursing assistant	23.2%	Bad

The question relating to the risk factors for pre-eclampsia was a multiple-choice question, allowing participants to tick the various factors responsible for pre-eclampsia. Obesity was a factor recognised by most of the participants, and accounted for 201% of the answers given (66.8%). 43.9% chose advanced maternal age and a history of pre-eclampsia in the patient's mother/sister. Maternal diabetes accounted for 38.9%

of responses, primiparity for 30.9%. Only 7.9% were aware that an autoimmune disease could be a risk factor for preeclampsia.

With regard to the signs needed to make the diagnosis, the exact triad (peripheral oedema, blood pressure greater than or equal to 140/90 mmHg and/or proteinuria greater than 300 mg/24h) accounted for 56.5% of responses. Some of the respondents replied 62 times (20.6%) that an HTA \geq 140/90 mmHg from 20SA was sufficient to make the diagnosis, and 37 times that any oedema of the lower limbs after 20SA was sufficient to make the diagnosis.

With regard to the complications of pre-eclampsia in the mother, we also used multiple-choice questions. We found that many of the providers questioned considered convulsions to be an isolated complication of pre-eclampsia and did not include it among the manifestations of eclampsia. As a result, convulsions were 201% of the answers given (66.8%). Maternal death was the most frequently mentioned complication (78.7%), followed by eclampsia (75.1%). Only 15.6% for HELLP syndrome and 14.3% for OAP.

As for fetal complications, fetal death in utero accounted for a total of 226 responses, or 75.1%. Prematurity accounted for 65.8% of responses, and 35.9% of responses were wrongly attributed to neonatal asphyxia.

The question on preventive measures was an open-ended one. 42.1% of the answers given were for prenatal monitoring, followed by dietary hygiene measures, with 29.9% recurring. Rest accounted for 10.2% of responses; aspirin and antihypertensives for 4.4% and 4.8% respectively. 5.8% of participants felt that regular biological checks should be carried out to prevent the onset of pre-eclampsia, and a minority of 1% mentioned magnesium sulphate as a preventive measure.

In terms of management, anticonvulsants were the most frequently mentioned means of management with 88 recurrences (31.8%), followed by antihypertensives (27.2%). Childbirth accounted for 9.7% of responses, and 2.9% of responses were attributed to hospitalisation of the pregnant woman. 25 responses (9%) were wrongly attributed to hygienic and dietetic measures, 7.9% to maternal-foetal monitoring and 5.4% to rest.

This table shows that general practitioners have a good level of knowledge (74.3%) according to the Essi, et al. rating scale. The level of knowledge of midwife nurses and midwives is rated as average, at 57.2% and 59.7% respectively, while nurses and orderlies have levels rated as insufficient and poor respectively (39.4% and 23.2%) (Table 2).

Determining provider attitudes

When we look at the provider's attitude to monitoring the pregnancy of a patient at risk of pre-eclampsia, it

appears that over 60% think that it is imperative to make a difference in monitoring the pregnancy of patients. 21.6% felt that it was patient-dependent and 16.7% saw no difference in monitoring.

Regarding the attitude to a pregnant woman with high blood pressure figures, the most recurrent response was to refer her immediately to a central facility, without any prior care/physical examination/biological care (29.5%). However, 27.8% thought to check the patient's gestational age and the presence of other associated signs, and to carry out additional tests as a first step. 13.1% preferred counselling and sending the patient home on strict rest. Only 7.4% chose to admit the patient to hospital and a minority admitted that they did not know what to do and preferred to ask the patient to go and see a specialist on her own.

It appears that GPs have a level of attitude that is judged to be correct (78.7%). The attitude levels of service providers frequently encountered on the periphery (nurses and care assistants) were judged to be approximate and erroneous respectively (61.4% and 34.6%). It should be noted that midwives were also judged to have approximate attitudes according to the Essi rating scale (68.9%) (Table 3).

Determining the practices of service providers

With regard to prevention in patients with risk factors,

Table 3: Providers' level of attitudes.

Variables	%	Level of attitudes
Profession		
General practitioner	78.7%	Just
Nurse midwife	75%	Just
Midwife	68.9%	Approximate
Nurse	61.4%	Approximate
Nursing assistant	34.6%	Wrong

Table 4: Level of practice of providers.

Variables	%	Level of practice
Profession		
General practitioner	82.4%	Adequate
Nurse midwife	73.1%	Adequate
Midwife	70.6%	Adequate
Nurse	52.3%	Inadequate
Nursing assistant	27%	Harmful

Table 5: Influence of knowledge on attitudes.

		Level of attitudes (%)				P-value
		Just	Approximate	Erroneous	Harmful	
Level of knowledge (%)	Good	91	9	0	0	0.79
	Medium	67	33	0	0	0.79
	Insufficient	0	74.7	25.3	0	0.09
	Bad	0	0	100	0	0.79

compliance with dietary and hygiene measures was the most common means of prevention (39.1%), followed by resting the patient (23.8%). Antihypertensive medication was used 86 times (17.6%). The use of low-dose aspirin and calcium supplementation were the least frequent responses, at 8.8% and 6.8% respectively. Only 2.5% of the providers questioned were aware that all of the above-mentioned suggestions constituted preventive measures.

With regard to practices for the management of pre-eclampsia, systematic referral recurred 151 times in the responses given (31.1%), demonstrating the absence of an initial management protocol in these facilities prior to any referral to a central facility. In 23.9% of their responses, participants admitted that they had no care to administer to a woman with high blood pressure and preferred to ask her to go elsewhere.

According to the results of our study, general practitioners, obstetric nurses and midwives have an adequate level of practice (82.4%, 73.1% and 70.6% respectively). Nurses have an inadequate level of practice, and orderlies have a level of 27%, which is therefore considered harmful (Table 4).

Influence of knowledge on attitudes

When we cross-reference the providers' level of knowledge with their level of attitude, we notice that all those with a poor level of knowledge will necessarily have a wrong attitude, and that 74.7% of the providers with an insufficient level of knowledge will have approximate attitudes, while the remaining 25.3% will have wrong attitudes. A good level of attitude would necessarily guarantee a correct attitude (Table 5).

Influence of knowledge on practices

We found that 87.1% of providers with a good level of knowledge had an adequate level of practice, but that 12.9% of them had inadequate practices despite their level of knowledge ($p = 0.021$). An average level of knowledge results in 70.4% of inadequate practices. However, 18.4% could have an adequate level of practice ($p = 0.021$). Similarly, an inadequate level of knowledge would lead to 100% inadequate practices. We also note that 92.4% of providers with poor knowledge of pre-eclampsia had harmful practices.

We note a statistically significant influence of the level of knowledge on the level of practices of the providers questioned (Table 6).

Table 6: Influence of knowledge on practices.

		Level of practice (%)			P-value
		Adequate	Inadequate	Harmful	
Level of knowledge (%)	Good	87.1	12.9	0	0.042*
	Medium	18.4	70.4	11.2	0.021*
	Insufficient	0	100	0	0.79
	Bad	0	7,6	92.4	0.35

Table 7: Overall level of service providers.

Level of knowledge	50.8%	Satisfactory
Level of attitudes	43.7%	Unsatisfactory
Level of practice	49.3%	Unsatisfactory

Overall level of obstetric care providers in yde iv

Still using the Essi, et al. scoring grids, we were able to assess the general knowledge, attitudes and practices of obstetric care providers with regard to preeclampsia and group them into 2 categories: Satisfactory and unsatisfactory.

In general, we can say that despite a level of knowledge among healthcare staff of 50.8%, which is considered satisfactory within the limit, their level of attitudes and practices remain unsatisfactory, as their percentages are below 50% (43.7% and 49.3% respectively).

It should be noted that more than 50% of the providers interviewed who provide care to pregnant women in the Ydé IV health areas are orderlies and nurses (Table 7).

Discussion

The aim of our study was to investigate the knowledge of obstetric care providers in Yaoundé IV about preeclampsia and to report the influence of this knowledge on their attitudes and practices. It was carried out on 354 providers in the health facilities of the Yaoundé IV district; it was a cross-sectional CAP-type study.

Socio-demographic and occupational characteristics of claimants

Age ranged from 19 to 65 years, with an average of 33.7 ± 8.4 . The highest proportion of our population was aged between 20 and 40 (84.1%). This result differs from that of Helena Boene, et al. in Mozambique, who found a median age of between 43 and 67 [6]. This difference may be explained by the fact that the community workers in the study were mainly midwives [6], whereas the most common providers in our study were young nurses and orderlies. Women represented more than half of our sample (64.8%), i.e. 229 women for 124 male providers. The health workers most frequently encountered in our study were nurses, with 156 (44.2%). This result is similar to that of the study by Umesh Ramadurg, et al. carried out in India in 2016,

in which the majority of participants were nursing assistants [7]. This result could be justified by the fact that nurse training is increasingly in demand in medical settings. The majority of our respondents were single (58.1%); we did not find similar results. This could be explained by the fact that the average age in our study was young.

What we know about pre-eclampsia:

We found that 41% of respondents had an accurate definition of pre-eclampsia; this result differs from that of Soggiu-Duta, et al. who recorded a total of 87.5% correct answers for the definition of pre-eclampsia in their study of residents' and midwives' knowledge of pre-eclampsia and eclampsia conducted in southern Romania in 2019 [8]. This discrepancy in results can be explained by the fact that residents and midwives were in the majority, unlike our study which found more nurses and orderlies. With regard to the pathophysiology of pre-eclampsia, 11.3% had a true knowledge of it. It should also be noted that over 70% of nursing staff did not answer this question. We did not find any similar results.

When we studied providers' knowledge of the risk factors for pre-eclampsia, we found that advanced maternal age and a family/personal history of pre-eclampsia were among the most commonly known factors, with 43.9% frequency. This result is close to that of Fondjo, et al. in their study on knowledge of preeclampsia and its associated factors among pregnant women in 2019, where a family history of preeclampsia accounted for 37.6% [9]. This result may be explained by the fact that many providers fear a recurrence in patients who have already had preeclampsia. Obesity was the most frequently mentioned risk factor in our study, accounting for 66.8%. This result differs from that of Linda A. Fondjo, who found a family history of preeclampsia to be the dominant risk factor [9]. With regard to the clinical and laboratory signs used to make the diagnosis, the combination of peripheral oedema, hypertension greater than or equal to 140/90 mmHg and/or proteinuria greater than 300 mg/24h accounted for 56.5% of responses. This result differs from that of Boene, et al., who found 41% of responses for headache, unconsciousness and convulsions [6]. This could be explained by the fact that the community workers questioned in his study admitted that they had no knowledge of the biological signs of pre-eclampsia and only mastered the signs of severity [6].

In terms of maternal-foetal complications, eclampsia and maternal death were the complications most frequently mentioned by the providers, with frequencies of 75.1% and 78.7% respectively. Only 47 providers knew that Hellp Syndrome was a maternal complication, and most of the rest did not know what it was. In their study of pregnant women's knowledge of pre-eclampsia and associated factors, Fondjo, et al. found similar results, with maternal death being the most frequent complication [9]. Of the various complications affecting the foetus, foetal death *in utero* was the most frequently mentioned, with a frequency of 75.1%. Fondjo, et al. also reported a recurrence of UFM with a frequency of only 47.6% in their study [9]. These results could be explained by the fact that most health workers consider the prognosis of preeclampsia to be poor. In our research, 266 providers knew of ways to prevent the onset of pre-eclampsia, while 88 had no answer to this question. Hygienic dietary measures and antenatal care were the most frequently cited means of prevention, while aspirin and antihypertensive drugs accounted for 4.8% and 4.4% of responses respectively. These results differ from the WHO recommendations for the prevention and management of preeclampsia in 2014, which placed aspirin among the methods of choice in the prevention of preeclampsia and made no mention of antenatal monitoring as a means of preventing its onset [10]. This could be justified by the fact that many of the providers discussed were unaware of recent WHO recommendations. In the management of pre-eclampsia, the use of anticonvulsants was recurrent (88 corresponding responses), particularly magnesium sulphate. Contrary to the recommendations given by the WHO in 2014 [10], child birth as a treatment for preeclampsia accounted for only 9.7% of the responses given by providers. We found that many providers did not differentiate between mild, moderate or severe preeclampsia and felt that magnesium sulphate should be given straight away.

Attitudes towards pre-eclampsia

With regard to the attitudes of providers towards patients at risk of pre-eclampsia, 61.7% felt that a difference should be made in monitoring pregnancies. The nurses' level of attitude was rated as approximate at 61.4% and was close to that of the midwives (68.9%). This result differs from that obtained by Heydari, et al. in their study on the knowledge, attitudes and practices of midwives and nurses on the Evidence Base in Iran in 2014, which found that midwives had attitudes judged to be average compared with nurses [11]. An attempt to explain this difference could be due to the fact that midwives have more experience in the field than nurses.

Pre-eclampsia prevention and management practices

Compliance with dietary hygiene measures was the most frequently mentioned means of prevention,

while low-dose aspirin accounted for only 8.8% of responses. This result differs from the 2014 WHO recommendations, which recommend the use of low-dose aspirin and do not recommend salt restriction and strict rest [10]. As for the notion of management in the field, the systematic reference recurred 151 times in the answers given, showing an absence of protocol for the initial management of pre-eclampsia in these structures before any referral to a central structure. We did not find similar results. Overall, the providers' level of practice was judged unsatisfactory (49.3%), a result similar to that found by Heydari, et al. in 2014 in Iran [11].

Influence of level of knowledge on provider attitudes and practices

Using Essi, et al.'s rating grid, we were able to determine the providers' level of knowledge. The most frequently encountered providers (nurses and orderlies) had knowledge levels of 39.4 and 23.2 respectively, which were judged insufficient and poor. This result corroborates those of J.O Sotunsa, et al. in their study in 2016 on the knowledge and practices of health workers in Ogun regarding pre-eclampsia in Nigeria, who judged the level of nurses to be insufficient [11]. Looking at the level of attitude, it appears that general practitioners are the only ones with a level of attitude judged to be fair (78.7%). The attitude levels of peripheral service providers (nurses and orderlies) were judged to be approximate and incorrect respectively (61.4% and 34.6%). It should be noted that midwives were also judged to have approximate attitudes according to the Essi rating scale (68.9%) [12]. When the level of practice is assessed, it appears that general practitioners, delivery nurses and midwives have an adequate level of practice (82.4%, 73.1% and 70.6% respectively). Nurses had an inadequate level of practice and orderlies had a level of 27%, judged to be harmful. We did not find any similar results.

By cross-referencing providers' level of knowledge with their level of attitude, we can see that all providers with a poor level of knowledge will necessarily have the wrong attitude, and that 74.7% of providers with an insufficient level of knowledge will have approximate attitudes, while the remaining 25.3% will have the wrong attitude. A good level of attitude would necessarily guarantee a correct attitude. When we studied the influence of knowledge on practices, we found that 87.1% of providers with a good level of knowledge had an adequate level of practice, but that 12.9% of them also had inadequate practices. An average level of knowledge would imply a large percentage of inadequate practices (70.4%), and an insufficient level of knowledge would lead to 100% inadequate practices. We also note that 92.4% of providers with poor knowledge of pre-eclampsia had harmful practices. The significant P-value ($p < 0.05$) allows us to establish a link between the level

of knowledge and the level of practice of the providers. We did not find any similar studies to support this part of our discussion.

Conclusion

Although the knowledge of obstetric care providers in Yaoundé IV was satisfactory to a certain extent, nurses (who made up the largest proportion of the population) had insufficient knowledge of pre-eclampsia, and their attitudes and practices remained unsatisfactory. These shortcomings could be remedied by updating staff on the new WHO recommendations for the prevention and management of pre-eclampsia and setting up workshops focusing on the role of nurses in the prevention and management of this condition.

Conflict of Interest

None.

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