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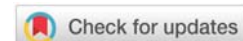
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Research Article

Study of cardiovascular eligibility for hormonal contraception in women in Porto–Novo

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Abstract

Introduction: The aim of this study was to determine the cardiovascular eligibility rate for hormonal contraception among women in Porto-Novo, with reference to the criteria defined by the World Health Organization (WHO).

Materials and methods: A descriptive cross-sectional study was conducted in 2016 over a period of 4 months at the headquarters of the Beninese Association for the Family Promotion (ABPF) in Porto-Novo, Benin. It exhaustively included all women who came to renew their hormonal contraception. The verification procedure useful for the renewal of the contraceptive used included the search for cardiovascular risk factors (high blood pressure, hyperglycemia, obesity, smoking). Based on the eligibility criteria defined by WHO for each type of contraceptive and on the presence or absence of the risk factors sought, each woman surveyed was declared eligible or ineligible for continuation of the contraceptive in progress.

Results: Three hundred and seventy-five women were included in this work. The average age was 35.3±8.2 years. A pure progestin hormone was used in 97.9% (N= 367) of cases and a combined estrogen-progestin hormone was used in 2.1% (N= 8) of cases. High blood pressure, high fasting blood glucose, obesity and smoking in the previous 12 months were found in 24% (N= 90), 1.5% (N= 6), 23.2% (N= 87) and 0.3% (N= 1) of the participants, respectively. Ninety percent of the women surveyed (N= 336) were eligible for current contraceptive use, which prevented detrimental renewal for 10% (N= 39) of them.

Conclusion: This study showed that one in 10 women used detrimental hormonal contraception. A strong collaboration between the actors in the chain, i.e. the woman herself, the family planning agent and the general practitioner or specialist is an important objective that would ensure the effectiveness of family planning strategies while combating preventable cardiovascular disease.

Abbreviations

WHO: World Health Organization; ABPF: Beninese Association for Family Promotion; BP: Blood Pressure; BMI: Body Mass Index; ESH/ESC: European Society of Cardiology/ European Society of Hypertension; HBP: High Blood Pressure

Introduction

Contraception is a method of family planning that prevents unwanted pregnancies and reduces maternal mortality. In 2019, a contraceptive method was used by 62% of women worldwide, 37% in Africa and 15% in Benin where a rate of



12% was reported in 2012 [1,2]. Among women not using contraception, the health impact of these methods in terms of side effects accounted for 23% of the reasons given in Nigeria and 38% in Uganda [1]. Hormonal contraceptive methods, because of their mechanisms of action, are not without risk on the health, particularly to cardiovascular function and lipid metabolism [3]. Under estrogen-progestin treatment, there has been no significant increase in the risk of diabetes [4], but significant arterial hypertension appears in 0.6 to 2.8% of users [5] and altered carbohydrate metabolism is implicated in weight gain [6].

The interaction between hormonal contraception and cardiovascular risk has led World Health Organization (WHO) to publish eligibility criteria for contraception use [7]. These criteria have made high cardiovascular risk and venous thromboembolic disease in example, situations in which the risk of hormonal contraception exceeds the expected benefit.

Are women on hormonal contraception in Benin who present these cardiovascular risk situations identified with proposals for methods adapted to their context? It is to answer this question in the city of Porto-Novo that this research work was initiated.

Materials and methods

A descriptive cross-sectional study was conducted during 4 months from 1 April to 31 July 2016, at the headquarters of the Beninese Association for the Family Promotion (ABPF) in Porto-Novo (Benin). It exhaustively included all women who came to renew their hormonal contraception. The verification procedure for the renewal of contraceptives in use included the search for cardiovascular risk factors. Socio-demographic characteristics, cardiovascular history, smoking status, Blood Pressure (BP) level, anthropometric parameters (weight, height, body mass index, waist circumference), fasting blood glucose, type of contraceptive used, and route of administration were included. Based on the eligibility criteria defined by the WHO for each type of contraceptive [7] and the presence or absence of the risk factors sought, each woman surveyed was declared eligible or ineligible for continuation of the contraceptive in progress. This assessment prevented a detrimental renewal to ineligible women.

Data were collected during a structured interview in face-to-face interviewer-surveyed mode. A measurement of anthropometric parameters and fasting blood glucose testing were carried out.

The Blood Pressure (BP) was taken using a semi-automatic OMRON blood pressure monitor, tested and validated. Fasting blood glucose was measured on a venous blood sample. A high BP was defined by a BP \geq 140/90 mm Hg or for cases where hypotensive medication was in use. The distribution of BP figures was based on the European Society of Cardiology (ESH/ESC) classification [8].

Hyperglycemia was defined by fasting plasma venous glucose \geq 1.26 g/l or for cases in which drug therapy for

diabetes was under way [9]. Glucose intolerance was defined as fasting plasma glucose levels between 1.10 and 1.25 g/l. The waist circumference, representing the abdominal rim, was measured at a point equidistant between the lower edge of the last rib and the iliac crest. The measurement was noted at the end of an exhalation. Abdominal obesity was defined by waist circumference $>$ 88 cm [8]. Obesity and overweight were defined from the calculation of Body Mass Index (BMI) using the formula weight (kg)/height² (m²). Women with a BMI between 25 and 29.9 kg/m² were considered overweight while those with a BMI \geq 30kg/m² were considered obese.

The tool for determining whether each woman surveyed was eligible for contraceptive in use was published by WHO [7]. This tool defines the contraceptive hormones that can be or not used in the presence of communicable or non-communicable medical conditions (venous thromboembolic disease, atherothrombosis, number of atheromatous risk factors present, level of BP for example). If a respondent's status was ineligible for current contraceptive use, continuation was avoided.

Data entry and analysis were done on Epi-Info 3.1 software. Quantitative variables were expressed as mean \pm standard deviation and qualitative variables as proportions. The variables were analyzed according to their level of completeness. Administrative authorizations were obtained from the managers of ABPF Porto-Novo. The women's written consent was obtained before inclusion in the survey. If a woman was not eligible to the contraceptive hormone in use, arrangements were made, with her consent, to switch her to a less risky contraceptive method. Women's data were collected and processed in complete confidentiality.

Results

Socio-demographic characteristics

Three hundred and seventy-five women were included in this work. The average age was 35.3 \pm 8.2 years with extremes of 18 and 55 years. The main occupations identified were women traders in 63.2% of cases (N= 237), followed by craftswomen with 16.8% (N= 63), government officials with 11.5% (N= 43), pupils and students with 4.8% (N= 18) and finally housewives with 2.9% (N= 11). As regards marital status, 88.3% (N= 331) were married women, 8% (N= 30) were single, 2.7% (N= 10) were divorced and 1% were widowed (N= 4).

Cardiovascular risk factors

Tobacco consumption in the 12 previous months was identified in one woman (0.3%) and abdominal obesity was found in 178 women (47.5%). The prevalence of central obesity, hyperglycemia, glucose intolerance and high blood pressure were 23.2% (N= 80), 1.5% (N= 6), 3.1% (N= 11) and 24% (N= 90) respectively (Table 1).

Contraceptives in use

The contraceptive hormone was administered orally in pill



form in 5.3% (N= 20), by transdermal device in 25.3% (N= 95) and by intramuscular injection in 69.3% of cases (N= 260). A pure progestin hormone was used in 97.9% (N= 367) and a combined estrogen-progestin hormone was used in 2.1% (N= 8) of cases. Figure 1 shows the distribution of subjects according to the duration time of contraceptive hormone use. Most of women had a duration of use of 12 months or more.

Determining eligibility

Referring to the WHO Hormonal Contraceptive Eligibility Criteria, 89.6% of the women in the sample (N= 336) were eligible to continuation of their current contraceptive hormone.

Table 1: Distribution of glycemia, blood pressure, body mass index and tobacco consumption among 375 women using a contraceptive hormone, cross-sectional descriptive survey at the Beninese Association for Family Promotion, Porto-Novo, 2016.

		Effectif	Percentage	Cumulate Percentage
Glycemia	Normal glycemia	358	95.4	95.4
	Glucose intolerance	11	3.1	98.5
	Hyperglycemia	6	1.5	100
Blood pressure	Optimal	88	23.5	23.5
	Normal	110	29.3	52.8
	High Normal	87	23.2	76.0
	HBP grade 1	49	13.1	89.1
	HBP grade 2	30	8.0	97.1
	HBP grade 3	11	2.9	100.0
BMI	Leanness and normal BMI	177	47.2	47.2
	Overweight	111	29.6	76.8
	Obesity	87	23.2	100.0
Tobacco consumption	Yes	1	0.3	0,3
	No	374	99.7	100
	Total	375	100.0	

BMI: body mass index.

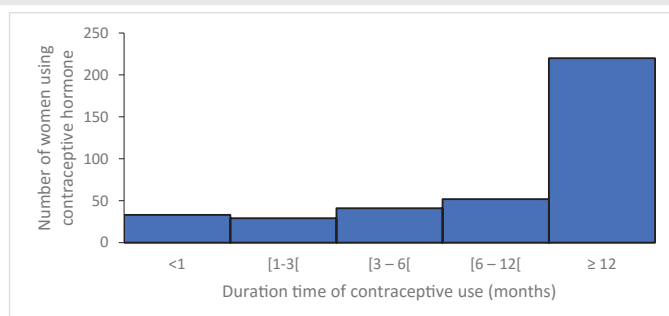


Figure 1: Distribution of duration time in use of hormonal contraception for 375 women, cross-sectional descriptive survey at the Beninese Association for Family Promotion, Porto-Novo, 2016.

Discussion

The reduction of unwanted pregnancies and maternal mortality contributes to the reduction of early global mortality, and national, regional and international policies implemented in order to carry out this fight effectively should be encouraged. On the other hand, cardiovascular diseases are the leading cause of death worldwide and $\frac{3}{4}$ of these deaths occur in low-income countries [10]. Complications of injectable and subcutaneous hormonal contraception, through weight gain, form the nest of the metabolic syndrome and increase the risk of atheromatous diseases [11]. The eligibility criteria for hormonal contraceptive use used in this study provide an opportunity to effectively achieve the goals of family planning without significantly increasing cardiovascular mortality. Other criteria have been published at the national level, particularly in the United States of America [12]. Research devoted to the study of cardiovascular eligibility for contraceptive use are very scarce to allow comparison of Beninese data with those found in other countries.

The decision of cardiovascular eligibility to contraceptive use requires a basic medical monitoring protocol to detect early any major medical changes that would contraindicate this hormone. Organizing the monitoring of women using hormonal contraception is similar to the monitoring of patients with a chronic condition. According to the World Health Organization, the ideal care plan for this condition is achieved when health care providers interact with informed patients who would easily take a more active role in the management of their health [13]. The Beninese health system is characterized by a significant lack of all care providers (nurses, generalist and specialist practitioners) and a lack of social security protection. The women included in this study were predominantly traders and craftswomen with a low socioeconomic level. In such local conditions, the nurse acting as a family planning agent should benefit from training programs on cardiovascular risk and its ways of prevention to be closer to both women and doctors in order to serve as a bridge between them.

Conclusion

At the end of this work devoted to the study of cardiovascular eligibility for hormonal contraception in Porto-Novo, it emerges that injectable contraceptives are the most widely used and that 89.6% of the women surveyed were eligible to continuation of their current contraceptive method. An ideal monitoring regime for these women requires close and strong collaboration between the actors in the chain, i.e. the woman herself, the family planning agent and the general practitioner or specialist, especially as the local health system is characterized by a lack of qualified personnel in the management of cardiovascular risk in populations.

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