



Focus on

## Women in interventional cardiology: The French experience

*Femmes en cardiologie interventionnelle : l'expérience française*

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### Abstract

**Objectives.** – Exploring the discrepancy in sex-ratio among interventional cardiologists by analysing the population of the female interventionalist.

**Background.** – Despite an increase number of women who graduate from medical school in France during the last generation today, women represent only 24% of all cardiologists and 3% are interventional cardiologists. To face this international gender-based issue of interventional cardiology, committees were established in US (WIN) and recently within the EAPCI: the Women EAPCI chaired by Drs Mehilli and Mauri. In France, the Intervention'Elles committee emerged in order to participate in this concern.

**Methods.** – As a first initiative, the Intervention'Elles group launched an e-survey to obtain information on the population of French female interventional cardiologists, focused on demography, work patterns, maternity and radiation exposure.

**Results.** – Mean age is 40 years old ( $\pm 7,4$ ), 68% are working in large volume center, 28% have also structural interventional activity. Only 40% have left arm coverage. Despite 80% of French female interventional cardiologists wear personal dosimeters only 45% of them have a dosimetry feedback. Interestingly, even if 54% of women have children (mean:  $1.9 \pm 1$ ) 28% of them report that childbearing had interfered with their career plan.

**Conclusion.** – This questionnaire identifies for the first time the women population in interventional cardiology in France and highlights some of the issues encountered in more detail. This first descriptive step would help to develop strategies for attaining gender equality in interventional cardiology.

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**Keywords:** Gender; Coronary angiography; Radiation/Dosimetry; Percutaneous coronary intervention; Epidemiology

### Résumé

**Objectifs.** – Explorer la différence de sex-ratio chez les cardiologues interventionnels en analysant la population de cardiologues interventionnels femmes.

**Contexte.** – En dépit d'un nombre accru de femmes dans les écoles de médecine en France au sein des dernières générations, aujourd'hui, les femmes ne représentent que 24 % des cardiologues et 3 % des cardiologues interventionnels. Cette situation est internationale, afin de mieux l'appréhender et faire évoluer celle-ci, des comités ont été créés aux États-Unis (WIN) et, récemment, au sein de l'EAPCI : l'EAPCI WOMEN présidé par les Drs Mehilli et Mauri. En France, le comité Intervention'Elles a émergé afin de progresser sur cette question.

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**Méthodes.** – Comme première initiative, le groupe Intervention'Elles a lancé une enquête en ligne pour obtenir des informations sur la population de femmes cardiologues interventionnelles françaises, concernant la démographie, les modalités d'exercice, la l'exposition aux rayonnements et la gestion de la maternité.

**Résultats.** – L'âge moyen est de 40 ans ( $\pm 7,4$ ), 68 % travaillent dans un centre de grand volume, 28 % ont également une activité interventionnelle structurelle. Seulement 40 % porte une protection du bras gauche. Alors que 80 % des femmes cardiologues interventionnelles françaises portent des dosimètres personnels, seules 45 % déclarent avoir un retour de dosimétrie. Fait intéressant, même si 54 % des femmes ont des enfants (moyenne :  $1,9 \pm 1$ ), 28 % déclarent que la maternité a porté atteinte à leur plan de carrière.

**Conclusion.** – Ce questionnaire identifie pour la première fois la population des femmes en cardiologie interventionnelle en France et souligne certains des problèmes rencontrés. Cette première étape descriptive permet d'amorcer une réflexion sur l'élaboration de stratégies pour améliorer l'égalité des sexes en cardiologie interventionnelle.

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**Mots clés :** Genre ; Coronarographie ; Radiation/dosimétrie ; Angioplastie ; Épidémiologie

## 1. Introduction

Despite an increase number of women who graduate from medical school in France during the last generation (from 30% in 1990 to 41% in 2013 [1]), very few women choose to become cardiologists. Today in France [1], women represent 42% of general practitioners, 66% of paediatricians, 68% of dermatologists, 26% of surgeons and only 23.9% of all cardiologists (6887 in 2015).

Moreover, only 3% ( $n=49/1563$ ) are interventional cardiologists [1]. This trend is consistent in many countries, e.g. 6% in the US [2].

Many reasons for this discrepancy could be evoked: unavailability and active discouragement of flexible training programs, lots of active on-calls and out-of-hours work, concerns about radiation exposure, and probably lack of female mentors in the field and even a part of gender discrimination [3].

To face this gender-based issue of interventional cardiology, Women in Cardiology committee was established in 1993 in US and in 2010 the Women in Innovation WIN [4] for interventional cardiology. One of the WIN mission is to strengthen professional opportunities for female interventional cardiologists.

In Europe also, past European association of Percutaneous Cardiovascular Interventions (EAPCI) presidents Carlo di Mario and Jean Fajadet were concerned by the lack of women in interventional cardiology [5,6]. Thus, they promoted the creation of a women committee among the interventional community: Women EAPCI chaired by Drs Mehilli and Mauri. In 2014, an European survey was then conducted among the European Society of Cardiology (ESC) community to determine reasons that hamper women from a career in interventional cardiology [3]. In France, the Intervention'Elles committee emerged in order to participate in this concern. This working group is made up of interventional cardiologists, mainly but not exclusively women, its clinical research projects are conducted under the auspices of French society of cardiology (SFC).

## 2. Materials and methods

As a first initiative, to obtain information on the population of French female interventional cardiologists, the

Intervention'Elles survey was e-mailed to the 49 females interventional cardiologists identified by the interventional cardiology group (*Groupe athérome coronaire et cardiologie interventionnelle* [GACI]) from the SFC between May and October 2014. As a first step, we focused the survey on demography, conditions of training, work patterns, maternity and radiation exposure. The survey included multiple choice questions (MCQs), for which the results are aggregated below, as well as open questions. It was not mandatory to reply to the entire questionnaire. The results of this short survey are presented here.

## 3. Results

### 3.1. Demography and type of activity

Forty-nine questionnaires were sent in May with a reminder in October 2014, a total of 26 women answered the survey.

Mean age of French female interventional cardiologists is 40 years old (30 to 58 years old).

Most of them have public hospital careers (92%), and 68% work in large volume center ( $> 700$  PCI per year). Only two (8%) have a PhD.

Sixty-two percent of interventional cardiologists learned the subspecialty during their residency, 27% during the post-residency and 11% dedicated a specific fellowship.

Interventional activities varies with 28% who have also structural interventional activity with transcatheter aortic valve implantation, 44% aortic and mitral balloon valvuloplasty, 25% PFO/ASD and left atrial appendage closure, and 12% perform vascular procedures.

Concerning off-hours workload, the responders declare to have more than 6.5 days ( $\pm 2.70$ ) per month active on-call (5 women have up to more than 10 days/month).

### 3.2. Radiation exposure and maternity

Though optimal X-ray protection should take into consideration anatomical differences, in fact, recent reports have also hinted to an excess risk of left-sided breast cancer in female cardiologists [7]. Only 40% of the female interviewed have more complete chest coverage with left arm coverage. Properly

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