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COMMENTARY

Results of an international survey on the current organization of care for pregnant women with cancer

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Abstract

The global incidence of cancer is increasing, including its incidence in women of reproductive age. Still, physicians encounter this situation rarely, which could lead to substandard care. This research sought to explore opportunities to improve future care for pregnant women with cancer, by describing the outcomes of a survey distributed to physicians all over the world focusing on clinical experience with pregnant women with cancer, the organization of care and current gaps in knowledge. We included 249 responses from physicians working across 36 countries. Responses demonstrate a wide variation in the organization of care – generally lacking centralization, and the physicians' acknowledgement of insufficient knowledge on the management of pregnant women with cancer. There is a need for improvement through national centralization and/or establishing advisory boards for cancer in pregnancy. Seeing the paucity of cancer in pregnancy experience, the importance of global multidisciplinary collaboration is emphasized.

Abbreviations: ABCIP, Advisory Board on Cancer, Infertility and Pregnancy; INCIP, International Network on Cancer, Infertility and Pregnancy.

KEYWORDS
cancer in pregnancy, organization of care

1 | INTRODUCTION

The incidence of cancer in women of reproductive age is increasing, with age-standardized incidence rates rising from 180 to approximately 200 per 100 000 women between the age of 20–49 over the past 20 years.[1,2] As maternal age at delivery continues to increase, the incidence of cancer during pregnancy continues to rise.[3,4] The expected number of pregnancies worldwide is around 213 million each year.[5] It is estimated that approximately one in 2000 pregnancies is complicated by cancer, resulting in around 106 500 pregnant women being confronted with a cancer diagnosis each year globally.[6,7] In Europe this would add up to approximately 2000 pregnant women and with an estimate of more than 10 000 oncologists in Europe, each specialist will only see less than one pregnant woman with cancer in a 5-year period.[8] This emphasizes the low exposure of physicians to this specific patient population. Taking into account that there are approximately 70 000 obstetricians and gynecologists in Europe, their exposure to pregnant patients with cancer will be even lower.[9] The variety of cancers that can appear during pregnancy at different gestational ages confers a multidisciplinary challenge, further decreasing the possibility of a treating physician becoming experienced in the management of those diverse clinical situations.

For the above-mentioned reasons, there is a noticeable heterogeneity in both oncologic and obstetrical management for pregnant women worldwide.[10] To minimize the level of substandard care for this group of women, it is important to share expertise and centralize care as much as possible. This increase in expertise and centralization of care may offer the benefit of less delay of oncologic treatment and may prevent unnecessary preterm deliveries. Over the last decade, several initiatives have been launched to achieve this goal.[11–13] The International Network on Cancer, Infertility and Pregnancy (INCIP) has investigated this group of patients extensively over the past decades, to improve knowledge and, by that, care for these women. To apply this knowledge to clinical care, multidisciplinary advisory boards have been launched over the last years, including the Dutch mail-based advisory board "Adviesgroep Kanker en Zwangerschap",[12] the French mail-based national advisory board "Cancer Associé à La Grossesse", the Serbian "Tumor Board for Cancer and Human Reproduction" and the international "Advisory Board on Cancer, Infertility and Pregnancy" (ABCIP).[11] These initiatives are not implemented everywhere yet and they are mainly known to the experts in the field and their colleagues. Next to that, it is unknown to the authors to what extent national guidelines exist on the management of cancer during pregnancy. To evaluate the experience with cancer in pregnancy and to obtain insight in the local organization of care and gaps in knowledge in this commentary, the results of a survey sent to colleagues around the world were gathered, to serve as a basis for the development of future global initiatives to improve the organization of care and identify gaps in knowledge.

Key message

Centralized care of cancer in pregnancy is missing in most countries, and expert consultation is commonly requested. Advisory boards are necessary to advise on the therapeutic approach to cancer in pregnancy, reducing knowledge gaps worldwide.

2 | SURVEY

The three focus points of our survey were clinical experience with pregnant women with cancer (on a personal and hospital level), the organization of care at the different levels and current gaps in knowledge. Full survey can be found in the Appendix S1. The survey was distributed through various networks of the INCIP and ABCIP members and several professional societies around the world, and by contacting authors of articles related to cancer in pregnancy. A total of 246 responses from participants in 36 countries were obtained, with most responses coming from European and American countries, probably because most of the networks used do not yet reach physicians from African and Asian countries. The described findings and interpretations can therefore not be generalized to those parts of the world. The geographic distribution and percentage per discipline of the participants are shown in Figures 1 and 2. The majority of physicians worked in an academic center ($n = 181$; 73%). Furthermore, 66 (27%) respondents are active members of the INCIP organization.

3 | CLINICAL EXPERIENCE WITH PREGNANT WOMEN WITH CANCER

The experience with cancer in pregnant patients differed widely between the physicians answering our survey, as can be seen in Figure 3. On a hospital level, 58% of the physicians responded that in their center less than 10 patients with cancer during pregnancy are treated each year ($n = 144$), in 21% ($n = 51$) 10–20 patients are treated, and in 6% ($n = 15$) more than 20 patients per year. More than half of the respondents mentioned the lack of centralized care in their country and 71% of the physicians refer their pregnant women with cancer by default to a multidisciplinary team in cancer centers.

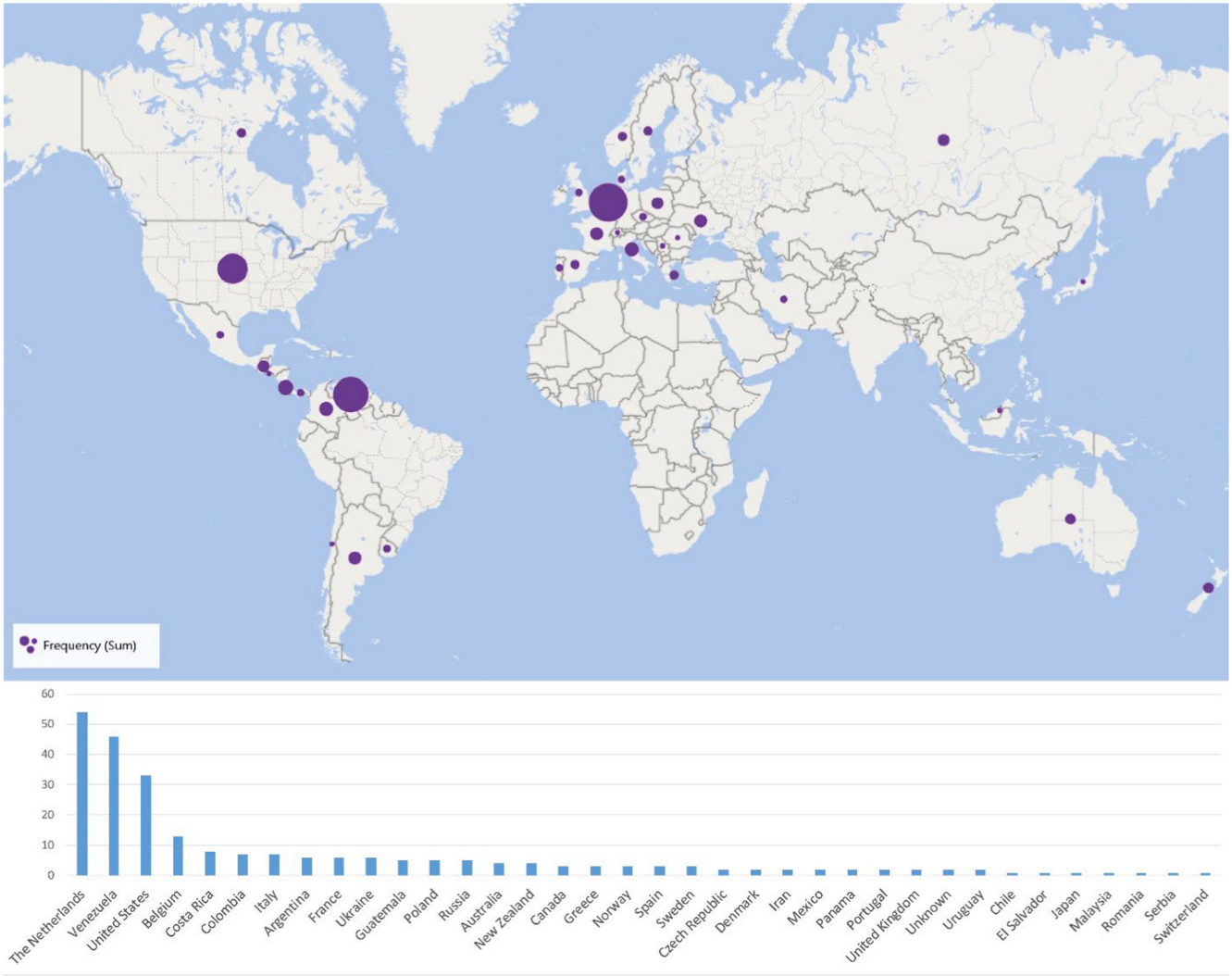

FIGURE 1 Frequency and location of respondents per country. The map shows an overview of amount of respondents per country, with the size of the dot corresponding to the amount of respondents, as shown in the bar chart below.

This shows that individual experience with pregnant women with cancer is very low, even in physicians collaborating in international networks such as the INCIP; thus, cancer during pregnancy should be regarded as a rare disease. Rare diseases are, based on official WHO criteria, defined as diseases with an incidence of 1 per 2000 people.[14] Although cancer during pregnancy cannot be officially defined as a rare disease because it consists of a variety of cancer diagnoses, the incidence is similarly low and patients in this unique situation encounter the same problems as patients and physicians confronted with rare diseases.[15] Guidelines defining requirements for specialized care in order to pursue optimal care for patients with rare cancer are increasingly being developed by European Reference Networks.[16] One of the requirements mentioned in these guidelines is a minimum number of patients with a specific malignancy per center (for less common malignancies, a minimum of 10 per year).[17] According to this survey outcomes, the majority of physicians mentioned that in their hospitals less than 10 pregnant women with cancer are treated each year. To provide sufficient specialized care to this specific group of patients, referrals to a specialized regional or national hospital or communication with experts on this topic is necessary to improve patient outcomes.

4 | ORGANIZATION OF CARE

4.1 | MDTs and specific advisory boards

Of all physicians answering our survey, 61% ($n=153$) responded that their pregnant patients with cancer are being discussed in multidisciplinary oncological teams (MDTs) in their hospital. Regional MDTs discussing these patients were mentioned by 21% ($n=53$) of the physicians, and 23% ($n=58$) mentioned MDTs on a national level. A specific national multidisciplinary advisory board discussing cancer in pregnancy, with oncological as well as obstetrical and neonatal disciplines, operating in their country was mentioned by 35% of physicians ($n=87$) from 12 countries.

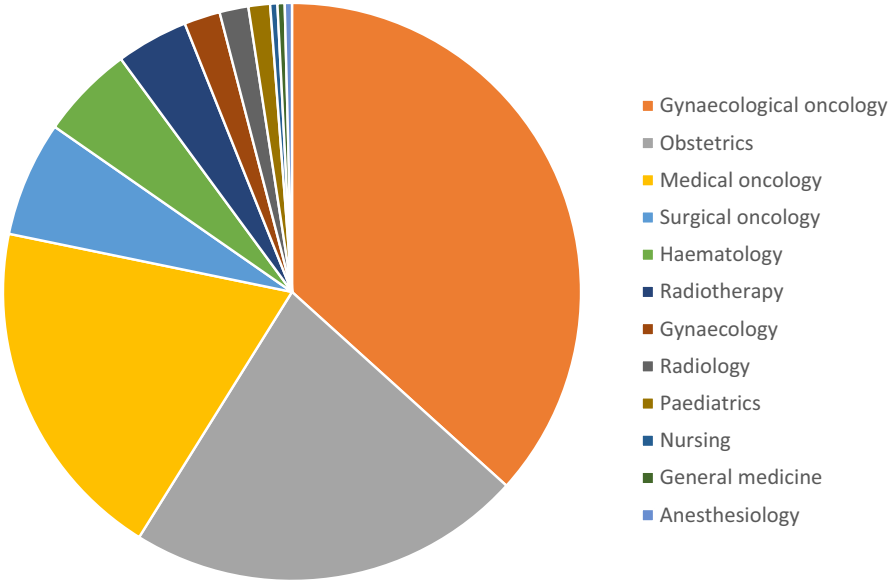

FIGURE 2 Distribution of respondents per discipline.

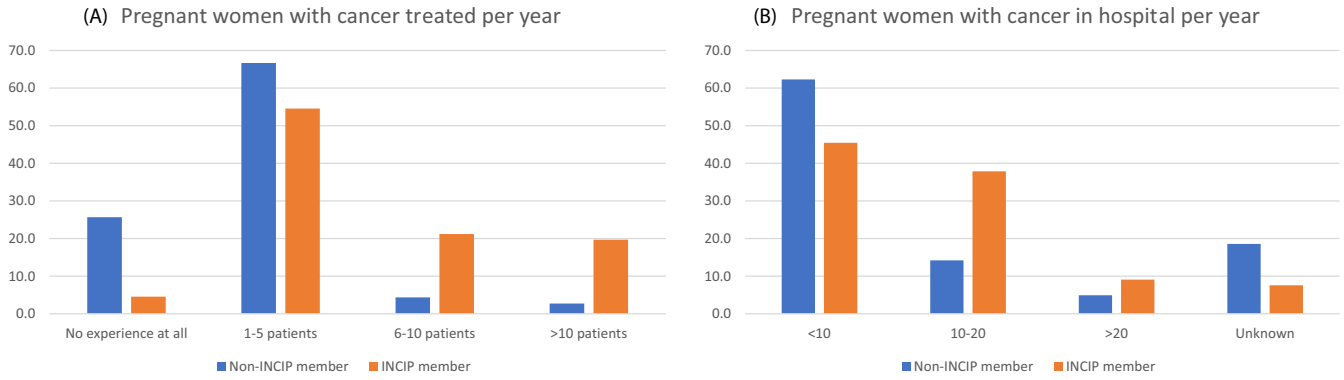

FIGURE 3 Bar plot showing the percentage of respondents per category. (A) Distribution of amount of CIP patients that are treated per year and (B) number of CIP patients that are treated in their hospital per year.

This survey showed promising results with regard to the accessibility of experts in the field of cancer in pregnancy on a national level, with the majority of physicians mentioned they always consult an expert in the case of a pregnant woman with cancer (59%; $n = 148$). But still, almost 10% of physicians mentioned they do not know the experts in their country and 64% of all physicians mentioned a further need for easily accessible consultation of experts in the field of cancer and pregnancy. Following the previously mentioned lack of specialized hospitals on a national level, easily accessible consultation of experts can potentially improve up-to-date knowledge of cancer in pregnancy and treatment plans on a hospital level. International advisory boards such as the ABCIP (www.ab-cip.org) may offer a solution.[11,12] Expanding the already existing national advisory boards working on the ABCIP platform to more countries, and including more physicians from different countries in the overarching international advisory board, will increase their visibility and help more physicians with questions regarding their pregnant women with cancer. Expanding the utilities of a platform such as the ABCIP by including guidelines, evidence-based knowledge and information on national and international initiatives regarding cancer in pregnancy might also improve the care for this group of women.

4.2 | Registration of pregnant women with cancer

Registration of pregnant women with cancer can help fill the gaps in knowledge. However, registration may vary widely. The outcomes of this survey show that 15% ($n = 38$) of all physicians mentioned they do not register their pregnant cancer patients anywhere, and 25% ($n = 63$) mentioned they only register them in a general national tumor registry. Local registration of pregnant women with cancer was noted by 17% ($n = 42$) of all physicians, regional registration by 11% ($n = 27$), national registration by 27% ($n = 68$) and international registration by 15% ($n = 37$); 17% ($n = 41$) of the respondents did not know whether there was any registration at all. Grouping responses per country showed that 13 of the 36 countries (36%) have a national registration of patients. A structured follow-up of the children born after in utero exposure to cancer treatment of the mother was mentioned by 31% ($n = 77$) of all physicians.

5 | CURRENT GAPS IN KNOWLEDGE

The survey involved one open-answer question where physicians could list what they considered the most important gaps in knowledge about cancer in pregnancy. This question was answered by 131 of the 246 respondents. The most important knowledge gaps are shown in Table 1.

Half of the physicians responding to the survey mentioned gaps mostly regarding novel therapeutic options and knowledge of treatment of specific tumor types during pregnancy. This interest in novel therapeutic options during pregnancy is already being translated to an increase in research on novel treatment modalities during pregnancy, such as immunotherapy, targeted therapy and proton therapy.[18–20] With increasing literature on oncological treatment options during pregnancy, increasing numbers of patients are being treated during pregnancy, including with chemotherapy. Sixteen respondents specifically mentioned the differences in knowledge between expert centers and non-expert centers and the need for multidisciplinary consultation and medical training regarding this specific patient population. It is necessary to register these patients in (inter) national registries and report on the outcomes, especially the (long-term) outcomes of the children, to underscore further the safety of specific treatment regimens and discover the specific risks as well as precautions that need to be taken. Although educational resources to address the gaps that were identified were not specifically examined, it seems reasonable to conclude that discussions of pregnancy care should be widely incorporated into training program curricula, continuing medical education activities, and educational sessions at oncology and obstetric society meetings. This should include the dissemination of information on already available resources for physicians treating these patients.

Furthermore, respondents mentioned the missing focus on psychological and peer support needed with this impactful coincidence of cancer and pregnancy. Literature on the psychological aspects of a cancer diagnosis during pregnancy is increasing. Vandenbroucke et al. identified the risks of pregnant women with cancer and their partners for high levels of distress based on their coping profiles and concluded that specifically those women and partners that used internalizing coping strategies might benefit from additional psychosocial support.[21] A systematic review performed by Leung et al. concluded that women with gestational cancer experience psychological distress associated with concerns about their babies' health and Matsuo et al. showed that pregnant women with a malignancy were 49% more likely to have a diagnosis of anxiety or depressive disorder compared with pregnant women without a malignancy.[22,23] The outcomes of this survey might indicate that interest in this specific topic is increasing but the literature might not yet be known by physicians working with pregnant women with cancer.

TABLE 1 Current gaps in knowledge.

Novel therapy options such as targeted molecular agents and immunotherapy during pregnancy ($n=36$)
Coordination of care and international collaboration ($n=26$)
Guidelines and core outcome sets ($n=15$)
Long-term outcomes of children with in utero exposure to cancer (therapy) ($n=13$)
Risk from diagnostic imaging and radiation therapy during pregnancy ($n=10$)
Psychological and peer support ($n=9$)
Specific knowledge on gynecological malignancies during pregnancy ($n=5$)
Possible influences of pregnancy on cancer and treatment ($n=5$)

Our survey yielded insights into the significant variation in the organization of care for pregnant women with cancer worldwide. The main strength of the survey was the large number of respondents from a wide range of countries and disciplines around the world, contributing to obtaining an overall view from physicians who treat pregnant patients with cancer, as well as obtaining insight into the organization of care and current gaps in knowledge. It should be noted that since this survey was a register of current clinical practices of a rare situation, it was not officially validated. Therefore, the possibility of misinterpretation of questions by some of the respondents must be taken into account, although the large number of respondents probably minimized this effect. The use of merely categorical or dichotomous answers helped us to interpret the responses, but may have introduced some form of bias or limitation in the respondents' responses. The questionnaire was sent out mainly with help from members of the INCIP and ABCIP. This may have influenced the outcomes of the questionnaire, since many members are seen as experts on cancer during pregnancy by their network. The results of this questionnaire might be an overestimation of nationwide knowledge and current clinical practice on a regional level. On the other hand, only a minority of respondents were INCIP members and even with a possible overestimation of knowledge, the need for a more structured organization of care was acknowledged by many of them.

6 | CONCLUSION

Although evidence of appropriate approaches to diagnostic options, treatment and follow-up of pregnant women with cancer is increasing, the outcomes of the survey sent out by us show that there are still significant variations in the organization of care for women with cancer during pregnancy. More information and easier access to experts, for example through centralization of care where possible and online advisory boards such as the ABCIP, as well as increased national and international collaboration, should improve overall care for this rare patient group in the future.

AUTHOR CONTRIBUTIONS

JHH: Preparation, creation and/or presentation of the published work, specifically writing the initial draft. KVC, CL, AME, JH, AFerb, AFern, IV, LvZ, FA: Preparation, creation and/or presentation of the published work by those from the original research group,

specifically critical review, commentary or revision – including pre- or post-publication stages. JHH: drafting of the figures. FA, KVC, CL and JHH conceived the idea. All: Ideas; formulation or evolution of overarching research goals and aims.

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CONFLICT OF INTEREST STATEMENT

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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