ORIGINAL RESEARCH ARTICLE

Feasibility of the eight or more contacts of the WHO new antenatal care model in Cote d'Ivoire: an antenatal care providers' perspective

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Abstract

This paper examines the feasibility of the eight or more ANC contacts in Cote d'Ivoire through a qualitative study among twenty antenatal care providers through individual interviews. The eight or more ANC contacts were found useful as they will allow a better follow up of the pregnancy. Main barriers were: the lack of training on the 2016 WHO ANC model, the late initiation of ANC and the fear of increased workload. Drivers identified were: availability of supplies**,** adoption and dissemination of the new guidelines, assignment of antenatal care providers in underserved area, digitization of the mother and child health handbook, pregnant women and community engagement, intensification of communication for behavior change and a good relationship provider-pregnant woman-community. To ensure appropriate design and effective delivery of the eight or more ANC contacts, attention should be paid to barriers and facilitators identified. *(Afr J Reprod Health 2021; 25[5]: 150-160).*

Keywords: Feasibility, antenatal care, eight or more antenatal care contacts, 2016 WHO ANC model

Résumé

Cet article examine la faisabilité des huit contacts ou plus de soins prénatals en Côte d'Ivoire à travers une étude qualitative auprès de vingt prestataires de soins prénatals par le biais d'entretiens individuels. Les huit contacts prénatals ou plus ont été jugés utiles car ils permettront un meilleur suivi de la grossesse. Les principaux obstacles étaient : le manque de formation sur le modèle de soins prénatals de l'OMS 2016, le démarrage tardif des soins prénatals et la crainte d'une charge de travail accrue. Les facteurs identifiés étaient : la disponibilité des fournitures, l'adoption et la diffusion des nouvelles directives, l'affectation de prestataires de soins prénatals dans les zones mal desservies, la numérisation du manuel de santé maternelle et infantile, l'engagement des femmes enceintes et de la communauté, l'intensification de la communication pour un changement de comportement et une bonne relation prestataire-femme enceinte-communauté. Pour assurer une conception appropriée et une prestation efficace des huit contacts de SPN ou plus, une attention particulière doit être portée aux obstacles et aux facilitateurs identifiés. *(Afr J Reprod Health 2021; 25[5]: 150-160).*

Mots-clés: Faisabilité, soins prénatals, huit contacts ou plus pour les soins prénatals, modèle de soins prénatals de l'OMS de 2016

Introduction

According to the World Health Organization (WHO), in 2017, approximately 810 women died daily from preventable causes related to pregnancy and childbirth. Moreover, it was estimated that 295,000 women died during and following pregnancy and childbirth complications[1]. The vast majority of these deaths (94%) occurred in low-resource settings and Sub-Saharan Africa (SSA) alone accounted for two thirds (196,000) of those deaths[1].

Healthcare decisions to reduce maternal and perinatal mortality and morbidity have led to the implementation of key interventions such as antenatal care. Antenatal care (ANC) provided by skilled healthcare professionals is an entry point to health system and an opportunity to monitor and preserve the well-being of the pregnant women and that of their children[2]. Prior to 2016, WHO recommended a «focus antenatal care » (FANC) model of at least four ANC contacts for pregnant women in the case of uncomplicated pregnancies, with the first contact occurring in the first trimester[2,3] .However since 2016, WHO has recommended a new ANC model of attaining at least eight ANC contacts, on the basis of recent evidence that indicates improvements in health

outcomes and an increased likelihood when receiving effective maternal health interventions under the new ANC model compared to four focus ANC model[3,4]. In this new recommendation, pregnant women are intended to complete five contacts in the third trimester, one contact in the first trimester, and two contacts in the second trimester[3]. The 2016 WHO ANC model also aims to ensure a positive pregnancy by providing adequate knowledge to get the expected mothers prepared for birth or any complication, as well as lifesaving information for both mother and child[5].

The 2016 WHO ANC model has been adopted in some African countries, notably in Nigeria, Burkina Faso, Rwanda and Ghana[6-9]. However, most of the developing country where the use of ANC services remains poor have not shifted to the 2016 WHO ANC model yet; and have their guidelines for antenatal care still based on the FANC. Besides, these countries are still struggling to improve the coverage of ANC4+ because more than half of women who started ANC did not attain up to 4 ANC visits[10,11].

Evidence from developing countries has also revealed three main challenges of ANC services: inadequate ANC services, late booking and non-compliance with the recommended number of visits[12].

Regarding the 2016 WHO ANC model, a study on the timing and the number of antenatal care contacts in low and middle income countries (analysis in the countdown to 2030 priority countries) using Demographic and Health Survey (DHS) has revealed that 11.3% of the pregnant women achieved ANC8+ with Latin America and Caribbean having the highest proportion[13]. In three studies using DHS data and conducted in SSA countries have highlighted the factors that may influence positively the uptake of the eight or more ANC contact among pregnant women such as high education level, use of media, location in urban area and the early initiation of ANC1[8,14-16]. In these studies, the prevalence of the eight or more ANC contact was less than 45% with a prevalence of 8% in Benin. Besides, women who did not achieve 8 contacts were generally poor, single women, with low education, living in rural areas, larger households, having short birth intervals, higher parity, and not giving birth in a health facility nor with a skilled attendant[13].

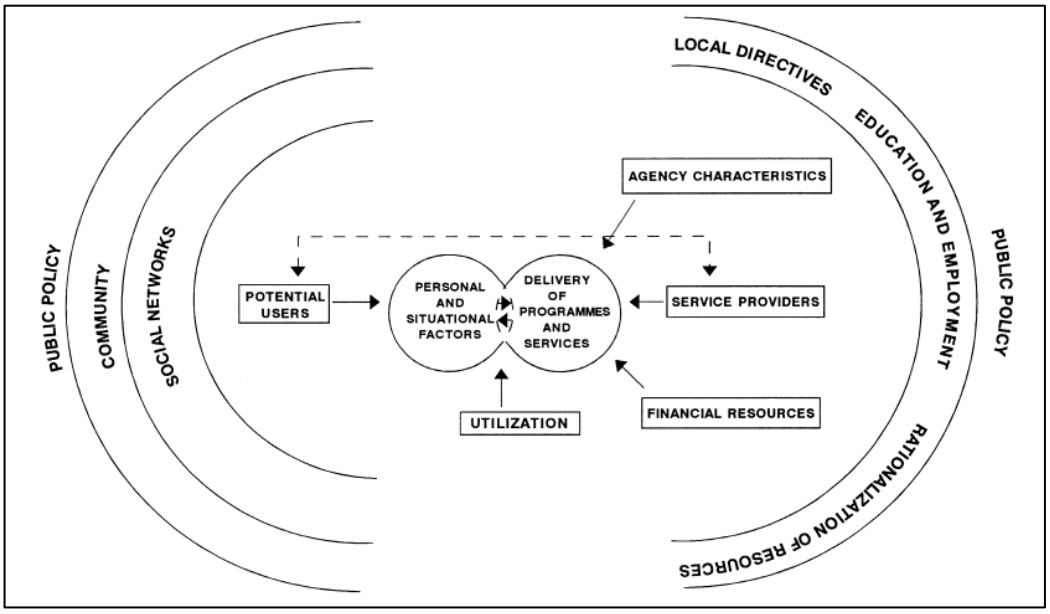
At the time of our study, the Ministry of Health in Cote d'Ivoire was undergoing a review of the antenatal care directives in order to adopt the 2016 WHO ANC model. However, the situation in Côte d'Ivoire concerning the use of antenatal care services is not different from the others SSA countries. Indeed, according to the 2011-2012 DHS, the percentage of women who benefited from at least one ANC performed by a health professional was 91%, but only 45% were able to go up to the four ANCs recommended by WHO at the time of the survey[17]. Besides, factors associated with the use of antenatal care services in the country were women's and partner's education, household wealth index, media exposure, women's autonomy in health-related decision making and parity. Moreover, utilization of at least 4 ANC was also positively associated with the presence of a skilled attendant at birth[18]. This raises concerns regarding the feasibility of the 2016 WHO ANC Model in the country. In a context where developing countries are led to adopt the 2016 WHO ANC model, it is important to evaluate the feasibility of eight or more ANC contacts.

To the best of our knowledge, there is no study addressing the feasibility of the 2016 WHO ANC model in Cote d'Ivoire.This paper presents findings from the qualitative study we conducted to assess the feasibility of the eight or more ANC contacts in Côte d'Ivoire. Our objectives were to explore antenatal care providers' perceived usefulness of the eight or more ANC contacts, and to identify potential barriers and facilitators to their feasibility.

Conceptual framework

We used the Sword's social-ecological model explaining and examining utilization behaviour of prenatal care services to guide the data collection and analysis in our study[19]. This conceptual framework allows a multidimensional interpretation as well as the identification of barriers and facilitators of health services utilization. This model conceptualizes utilization behaviour as the result of a dynamic interaction between two components: the personal and situational characteristics of the potential user and the characteristics of the health service system (Figure1).

The first component concerns potential users whose decision to use or not the health service is determined by the interaction between their personal characteristics (perception of needs,



Reproduced from Sword W: A socio-ecological approach to understanding barriers to prenatal care for women of low income. J Adv Nurs 1999, 29: 1170–1177

Figure 1: A socio-ecological model of determinants of health services utilization

perceived usefulness of the health service, etc.) and the socio-cultural environment (characteristics of social networks, community factors, etc) in which they evolve. The second component related to health services focuses on external factors that modify its characteristics. These factors include the characteristics of service providers (skills, knowledge and attitudes), the characteristics of the health services (availability of services, availability of supplies) and financial resources. Mid-level influences incorporate local directives and spending priorities that determine allocation of resources as well as professional education and work experiences which, ultimately, are circumscribed by broader policies[19].

Method

Study setting

This study was conducted in March 2019 in Côte d'Ivoire in the health region of Agnéby-Tiassa-Mé in five health facilities from different levels of the health pyramid: Centre Hospitalier Régional Agboville (CHR Agboville), Hôpital Géneral Akoupé (HG Akoupé), Centre de Santé Rural Assangbadji (CSR Assangbadji), Centre de Santé Urbain Bacon (CSU Bacon) and Centre de Santé Urbain Bécouefin (CSU Bécouefin). A part from the regional hospital that was purposively selected; the other health facilities were randomly sampled.

Study design

Regarding the research design framework, our design is based on the Eldridge *et al* framework, which defines three types of feasibility studies[20]: randomised pilot studies, non-randomised pilot, and feasibility studies that are not pilot studies. In the third type, the researcher try to answer the question of whether an element of the future trial can be done but do not implement the intervention to be evaluated or others process to be undertaken in a future trial, although it may approach the development of the intervention through a qualitative approach. The design of our study falls into the third category since we aimed to understand perceptions and factors that may the eight or more ANC contacts feasibility using a qualitative approach with individual interview.

Participant recruitment and sampling

Participants' sampling was purposive. In order to include all categories of antenatal care providers in the study, we considered the range of categories of health facilities and the amount of staff. Thus, the number of respondents was set at three (03) for

Perceived usefulness

Do you think the eight or more ANC contacts will meet the needs of beneficiaries?

Barriers

What difficulties do you think you might encounter in implementing the eight or more ANC contacts? (Probe availabilities of supplies, human resources, pregnant women attitudes, etc.)

Facilitators

What factors do you think could facilitate the feasibility of the eight or more ANC contacts? (Probe availabilities of supplies, human resources, etc.)

Text box 1: Sampled interview questions from interview guide

primary health facilities, five (05) for general hospitals and six (06) for regional hospital. The sample was composed of twenty (20) ANC providers to be interviewed. Then, in each health facility, we established the list of the staff. From this list, we used a purposive sampling to select the ANC providers. The choice took into account the different categories (gynecologist, midwife, nurse) and gender. Our goal was to represent different strata of ANC providers, who can provide meaningful and rich data.

Data collection

Qualitative data were collected through individual interview at the health facility by two trained data collectors with a master's degree in sociology. The interview guide was designed by the research team around the following topics: perceived usefulness, barriers to and facilitators of the eight or more ANC contacts feasibility. The elaboration of the interview guide was guided by the conceptual framework of Sword[19] and composed of 9 questions (Text box 1):

Before data collection, the data collectors received one-day training on general survey procedures and the content of the interview guide. The interview guide was initially piloted on a small sample of five ANC providers to ensure that questions were relevant and easily understood by the participants. Minor changes were made after the pilot-test.

During data collection, participants were invited by the data collectors to an individual face to face interview at the health facility. Prior to interview all participants were asked to provide written consent after a further opportunity to have their questions answered. We also emphasized in the participant information sheet that their choice to participate would not impact on their job and they could withdraw from the study at any time. All participants agreed to have their interview audio-recorded with a dictaphone and field notes were taken. Participant's responses were probed by the data collectors to clarify information when appropriate. Probing continued until the data collectors felt they have reached saturation and a full understanding of the participant's view. Interviews lasted between 35 and 45 minutes. Demographic characteristics data were also collected using a short questionnaire.

The principle of saturation was not directly use to end the data collection among ANC providers taking into account the variation sampling use in the study, the fact that we could interview the twenty ANC providers and the richness of the data collected. However, two additional participants were recruited to ensure data saturation was achieved and no more interview were needed. These two additional interviews allowed us to confirm data saturation but were not included in the results.

Data analysis

The interviews were transcribed and then typed into the Microsoft word software. A framework analysis was carried using a deductive approach and NVivo 12 software to assist with coding.

Results

Participants' characteristics

The sample was composed of two (02) gynecologists, thirteen (13) midwives and five (05) nurses. The majority of the ANC providers were female (85%), aged between 29 to 56 years old with

Table 1: Participants 'characteristics

	Total number	Age (mean)	Years' experience (mean)	Sex % male	%female
Gynecologists	2	45.5+2.1	14±1.4	100	─
Midwives	13	38.8±8.2	9.9±8.1	─	100
Nurses	5	36.6±6.6	10.2±7.4	20	80
Total participants	20	39±7.3	10.4±7.4	15	85

Table 2: Barriers and Facilitators of the eight or more ANC contacts feasibility ANC providers

Topic area	Themes and subthemes
Barriers	**Heath system characteristics**
	Lack of training in the 2016 WHO new ANC model
	Antenatal care service characteristics
	Fear of increased workload for ANC providers
	Pregnant woman/community behavior
	Late initiation of ANC1
Facilitators	**Heath system characteristics**
	Adoption and dissemination of the new guidelines
	Assignment of antenatal care providers in underserved areas
	Digitization of the mother and child health booklet
	Antenatal care service characteristics
	Availability of supplies
	Good relationship with the pregnant women/community
	Pregnant woman/community behavior
	Pregnant women's and Community Engagement
	Intensification of communication for behavior change through a community approach

an average age of 39±7.3 years old. In addition, they had between 3 and 30 years' experience in the field of antenatal car with an average of 10.4±7.4 years' experience. Participants' characteristics are summarized in Table 1.

For the next results, antenatal care provider will be abbreviated "ANCP".

Perceived usefulness of eight or more ANC contacts

For the majority of the respondents, a minimum of eight ANC contacts is very useful as it will allow them to monitor all the movements, reactions, growing and development of the baby on the basis of more contacts. The pregnant women will have a better follow-up and a healthy process.

One respondent explained it in these terms:

*"I think it is important for the wellbeing of the pregnant women and her baby to have more contacts with us. The fact for them to have eight contacts can help them to have a better follow-up… "*ANCP19, 39 years old

Only two respondents interviewed did not agree with the usefulness and added value of eight or more ANC contacts. For them the four contacts are sufficient; and in case of diseases or complications the pregnant women can have other contacts with the antenatal care provider, as this quote indicates:

*"As far as I'm concerned, I think that four contacts are more than enough - Sometimes women are sick during pregnancy or have complications, these women can come to the facility to receive care. Usually this is the way it happens, women who have more than four contacts are those who are sick or have complications…. "*ANCP5, 27 years old

Barriers to and facilitators of eight or more ANC contacts

Three themes emerged as barriers and facilitators with their related subthemes: health system characteristics, antenatal care service characteristics and pregnant women/community behaviour. In this results section, we described identified barriers and facilitators to eight or more ANC contacts feasibility illustrated in Table 2.

Barriers

Theme 1: Health system characteristics

Subtheme: Lack of training in the 2016 WHO ANC model

The lack of training on the 2016 WHO ANC model was cited as the main barrier. According to the respondents, if the new ANC model is adopted in Côte d'Ivoire, a lack of training and refresher training could impede the implementation of the eight or more ANC contacts as brought up by this respondent:
"We will need to be trained on the new ANC model if it is adopted in Côte d'Ivoire. A lack of training can lead to poor quality of care and new ANC model implementation. If we are not trained it will be difficult for us to make the pregnant women achieve the eight or more ANC contacts "ANCP3, 56 years old

Theme 2: Antenatal care service characteristics

Subtheme: Fear of increased workload for ANC providers

For the vast majority of respondents, one of the constraints of the eight or more ANC contacts would be the increased workload. These respondents said they are already overwhelmed by the flow of patients and workload, as this participant pointed out:
" Hummm....really.....it might not be easy we've got a lot to do with the four ANC contacts and we're talking about eight or more contacts, it's like doubling the workload "ANCP9, 31 years old.

Theme 3: Pregnant woman/community behavior

Subtheme: Late initiation of ANC1

For the majority of the respondents, the late initiation of ANC1 could be, as it is with the current model, a hindrance to the completion of the eight or more ANC contacts.
"*It's going to be tough, huh! The women don't come early for ANC1 to get their health booklet ....we are struggling to make the pregnant women achieve the four ANC visits and you're talking about eight or more [laughs]!"* ANCP10, 31 years old

Facilitators

Theme 1: Healthcare system characteristics

Subtheme 1: Adoption and dissemination of the new guidelines

According to some respondents, if these new recommendations are adopted, they will need to be widely disseminated so that everyone is at the same level of information. For them, ANCs are mostly done because pregnant women follow the guidelines in the health booklet.
*"Currently, the health booklet contains four or more antenatal care visits but some pregnant women in the health facility go up to 7, so if the eight or more contacts are adopted and the booklet is updated, women will have the new calendar and we will be able to bring them to the eight or more contacts, see more"*ANCP17, 47 years old

Subtheme 2: Assignment of ANC providers in underserved areas

For some respondents, the increase from 4 to 8 ANCs will require support staff. In some health facilities, the midwife is the only one to manage this flow of women who come for ANC. In these conditions, reaching the eight or more ANC contacts as recommended would be impossible, as described below:
*"If we have to do it...we will need additional staff. I am alone, I deal with the all the ANC client and it is not easy at all!!!! Right now I'm between the delivery room and the antenatal care. If we are two or three, we can combine our efforts, otherwise it will be difficult to do the eight or more ANC contacts".*ANCP19, 30 years old

Subtheme 3: Digitization of the mother and child health booklet

For some respondents, the digitization of the mother and child's health booklet with appointment reminders via mobile phones would make it possible to perform the eight or more ANC contacts.
"For this to work, we should do the same thing we did with the vaccination... An electronic health booklet … women could receive sms to remind them of their appointment. However this would not help to make them to initiate ANC1 earlier, but at least, it will be useful for those who respect the calendar of ANC contacts "ANCP 5, 29 years old.

Theme 2: Antenatal care service characteristics

Subtheme 1: Availability of supplies

According to the respondents, the availability of equipment, consumables and medicines would improve the quality of services, which would lead pregnant women to make greater use of antenatal care. This statement is illustrated below:
"*The Ministry of Health said that care is free for pregnant women but often when they come we ask them to pay for gloves because we are out of stock. How do you want them to come back if there are no supplies and they have to pay for them? If supplies are available there will be no problem to perform the eight or more ANC contacts* "ANCP7, 45 years old.

Subtheme 2: Good relationship with the pregnant women/community

From their experiences, some respondents stated that good collaboration with the community based on trust could facilitate the implementation of the eight or more ANC contacts, as explained by one of them.
"I don't have problem with women here, the majority of them achieve the four or more ANC contacts because. I manage to establish a good collaboration with pregnant women and the community. If the community trusts the midwife who …in their turn they will raise awareness of their relatives ... ".ANCP3, 56 years old.

Theme 3: Pregnant women/community behavior

Subtheme 1: Pregnant women's and Community Engagement

For some respondents, one of the most important factors which can facilitate the eight or more ANC contacts is the commitment of women and the community, particularly through the respect of appointments that are given by the ANC providers. One respondent stated that:
"*With a real willingness of the pregnant women and the community the eight or more ANC contacts will be feasible.... It is our duty to take care for them, to support them, but they also have to be committed and follow our instructions* ..."ANCP16, 45 years old.

Subtheme 2: Intensification of communication for behavior change through a community approach

For the majority of the respondents interviewed, intensified behavior change communication is essential for facilitate the eight or more antenatal contacts. This behavior change communication could be done through mass media, mass or proximity campaigns with the involvement of community health workers, community and religious leaders, community radios, peer educators who would be women who respect the ANC schedule.
"We can rely on women who respect the ANC schedule and attend health facility to raise awareness among women in the community who do not come for their visits. It will be also interesting to perform mass awareness in the villages and where there is no access..." ANCP11, 46 years old.

Discussion

Based on evidence, WHO has recommended since 2016 a new antenatal care model with a minimum of eight ANC contacts to reduce perinatal mortality and improve women's experience of care. This is the first study to assess perceived usefulness of the eight or more ANC contacts as well as barriers and facilitators to feasibility. This paper presents findings from ANC providers' interview carried out across the health region of Agnéby-Tiassa-Mé in the South East of Cote d'Ivoire.

Our findings predict a general good acceptance of the eight or more ANC contacts among healthcare providers through the assessment of the perceived usefulness. For the majority of ANC providers, the eight or more contacts will be useful insofar as this will allow the pregnant women to benefit from better care and follow-up. Our findings are consistent with those of a feasibility study carried out in Morocco where 75% of the health professionals interviewed agreed that the eight or more ANC contacts will permit to identify high risk-pregnancies[21]. However, like in this study conducted in Morocco, in our findings a minority of respondents did not perceived the utility of the eight or more ANC contacts[21]. Ensuring ANC providers are clear about a new recommendation is crucial. Indeed, how ANC providers perceive a health recommendation can affect this

recommendation buy-in. Implementation strategies which aim at changing ANC providers' perceived usefulness of the eight or more ANC contacts should be designed in order to enhance acceptance and increase the appropriate provision of the recommendation**.**

As regards barriers the lack of training on the 2016 WHO ANC model, the fear of increased workload for ANC providers and the late initiation of ANC1were identified as factors that could impede the feasibility of the eight or more ANC contacts. Concerning the lack of training, qualitative evidence showed that healthcare providers sometimes feel they do not have the appropriate training to deliver the service in the informative, supportive and caring manner that women want[22]. Additionally; the lack of staff experiences in evidence based practices (EBPs) has been identified in several studies as a barrier to the use of EBPs[23-25]. If ANC providers are not well trained on the WHO new ANC model and lacked competences, they will not perform routine care correctly and this can have an impact on the quality of care. Healthcare providers training and refresher training programs should be planned when implementing the 2016 WHO ANC model. A study conducted in Kenya has highlighted improvements in some ANC services in the area where HCWs were trained[26].

ANC providers also raised concerns about a possible increase in workload if the new model is adopted and implemented. Healthcare providers often perceived new recommendation or evidence-based practices as an additional work. Evidence from other studies have also identified heavy workload as a barrier to the use of EBPs include heavy workload[23-25]. As increased workload brings about low motivation and work-related stress, task shifting recommended in the 2016 WHO ANC model is a solution[3] by delegating tasks requiring high skills to health workers with lower qualification[27,28].

As for the late initiation of antenatal care is a major barrier for achieving the recommended ANC as it has been demonstrated in many studies[8,13-16]. In the study conducted in Benin, women who had late booking (after 1st trimester) had 97% reduction in ≥ 8 ANC contacts compared with women who initiated ANC contacts within the first trimester. To overcome this hindrance, strategies that address the factors affecting the early initiation of ANC should be one of the priorities when implementing the eight or more ANC contacts.

Besides the barriers, we could also identified facilitators of the eight or more ANC contacts feasibility**.** In our study findings, ANC providers stated that the adoption and the dissemination of the 2016 WHO new ANC model may be a driver to its feasibility. Indeed; directives have the benefit to provide clear guidance to healthcare providers and regulate their work. Directives also aim to improve the quality of care and to promote patient safety by presenting the current evidence base and translating it into clinical practice. If the directive on the WHO new ANC model is adopted, it will be disseminated, mandatory and the ANC providers will comply. However, the publication and dissemination of guidelines do not, on its own, automatically result in their use[22].

Moreover, according to the ANC providers, another driver to the eight and more ANC contacts is the assignment of ANC providers in underserved and remote areas. Indeed, if the 2016 new ANC model is adopted, piloted and scaled up, it will mean that we will have to take into account the availability in human resources in terms of quantity and competences to enhance the provision and uptake of ANC in these areas. Policy-makers should consider educational, regulatory, financial and personal and professional support interventions to recruit and retain qualified health workers in rural and remote areas[3]. A study conducted in Cote d'Ivoire on the retention of healthcare providers in underserved area has revealed that the main factors for accepting job posting in underserved were the availability of a scholarship after 5 years of employment, the availability of safe drinking water, electricity, phone network, and internet connexion, and the availability of regular transportation. Various combinations of these attributes with a financial bonus of 20% of the current salary would increase the proportion of health workers willing to work in underserved areas[29].

The use of the digital technology especially the digitization of the mother and child health handbook was also cited as a facilitator. Indeed, one way to improve the provision and the uptake of ANC is to integrate novel technologies in maternal practices[30]. It is in this sense that WHO has developed the WHO digital ANC module in order to support the implementation of evidence-based

practices and provide information for monitoring and surveillance[31]. This WHO digital ANC module is also expected to facilitate the adoption of ANC recommendation. However, this type of intervention even effective needs that health staff should have thorough knowledge of the application and users should have a mobile phone with access to the internet[32].

In addition to this, the availability of supplies was also cited as a factor that could facilitate the eight or more ANC. These findings is similar the results of other qualitative research conducted in low and middle income country settings where providers feel that a lack of resources may limit implementation of recommended interventions[33].

The way ANC providers interact with pregnant women and the community can influence the uptake of ANC. A good relationship with pregnant women as well as the community can be a driver to the eight or more ANC contacts feasibility. By changing the way they interact with patient towards the improvement of the quality of communication, they can help to increase antenatal attendance[34-37].

Additionally, the sensitization of the community and the pregnant woman through behavior communication change as well as their engagement are major drivers for eight of more ANC contacts.

These findings are similar to those obtained in a study conducted in Rwanda, health facility professionals interviewed also brought up the need to engage community health workers in the provision of information to the women, their male partners, and the rest of the community[38]. In another study carried out in Pakistan, the training of local health volunteers in the community in communities by knowledge–counselling intervention significantly improved early ANC initiation[39].

The study has also few limitations that are worth rising. As we do not conducted a pilot study to implement the new ANC model, the extent to which we are able to confirm the role of these perceived usefulness, barriers and drivers within this study is limited and we cannot make strong conclusions about the extent to which the presented barriers and drivers could influence the feasibility of the eight ANC or more ANC contacts. However, this study can help to provide insights for the implementation of the 2016 WHO ANC model and inform the design of further feasibility studies of a randomized trial that are needed to gather stronger evidence on this issue.

Ethical consideration

A written informed consent was obtained from all participants in the study. Participation was voluntary and the participants were informed about their right to withdraw from the study at any time. They were also informed that their decision to participate or not will not affect their relationship with their administrative staff. Data were collected, managed, analyzed and stored in a way to ensure confidentiality of study participants. The study protocol was approved by the Institutional Review Board of Institut National de Santé Publique de Côte d'Ivoire.

Conclusion

This study addresses a relevant issue related to the feasibility of the eight or more ANC contacts recommended in the 2016 WHO new ANC model. Our findings suggests that most ANC providers have a good perception of the eight or more ANC contacts and would be willing to provide the new recommendation. However, for this to happen there is a need to take into account the barriers and facilitators identified in this study when planning eight or more ANC contacts promotion and implementation strategies. Community engagement, healthcare system strengthening should be major domains to enhance. By engaging ANC providers in this study, we involved them in influencing health policy-makers and managers in making decisions about the implementation of this new recommendation.

Competing interests

The authors declare no competing interest.

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