
ENGAGING FAMILIES FOR HEALTHY PREGNANCIES

Family Planning for Women of Advanced Maternal Age and High Parity:
Global Evidence on Health Outcomes and Secondary Analysis of DHS Data
from Two Countries in West Africa



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TABLE OF CONTENTS

Introduction	1
A Review of the Evidence on Health Outcomes Related to Advanced Maternal Age and High Parity	2
Health Outcomes for Advanced Maternal Age	2
Health Outcomes for High Parity	5
Secondary Analysis Methodology	8
Results	9
Overall Sample of Women	9
Advanced Maternal Age	10
High Parity	12
Discussion	15
Conclusion	17
References	18

INTRODUCTION

Healthy timing and spacing of pregnancy (HTSP) is an intervention base that emphasizes preventing three types of high-risk pregnancies: those that are too closely spaced, those that occur too early in a mother's life and those that occur too late in a mother's life. High parity (HP) pregnancy, occurring when a woman has five or more births in her lifetime, is a fourth related high-risk category.

The World Health Organization (WHO) has made two specific recommendations focused on birth spacing to help prevent negative maternal, neonatal and child health (MNCH) outcomes following a 2005 technical consultation to review the evidence (WHO, 2006):

1. Allowing a 24-month interval between last birth and next pregnancy, and
2. Allowing at least a six-month birth-to-pregnancy (BTP) interval after a miscarriage or abortion.

Regarding the timing of pregnancies, girls under 18 are more likely to face complications or death during pregnancy and childbirth than women in their twenties and older (UNICEF, nd; WHO, 2014). At age 35, a woman reaches advanced maternal age (AMA) and becomes more biologically prone to adverse pregnancy and MNCH outcomes. As a woman's reproductive years progress, parity becomes a concern. A woman is considered HP and at higher risk of complications when she has had five or more births, including stillbirths.

While much HTSP work to date has focused on delaying early pregnancies and safely spacing BTP intervals, less attention has been paid to AMA and HP mothers. Based on the limited data available for AMA and HP women, secondary analysis of Demographic Health Survey (DHS) data from two countries in West Africa (Benin and Niger) was performed in an effort to identify potential predictors related to both AMA and HP. Findings from this study can help inform relevant programmatic work and points to the need for further work in these areas in low- and middle-income settings around the world.

A REVIEW OF THE EVIDENCE ON HEALTH OUTCOMES RELATED TO ADVANCED MATERNAL AGE AND HIGH PARITY

HEALTH OUTCOMES FOR ADVANCED MATERNAL AGE

It is well documented that over the last 30 years, an increasing number of women in high-income countries have been delaying pregnancy until age 35 or older, often due to attaining career, educational or financial goals before starting a family. Compared to their earlier counterparts, contemporary AMA women in these countries are more likely to be healthy, make healthier choices, be well educated, and be of low parity and higher socioeconomic status (Carolan and Frankowska, 2011).

Some recent studies have also acknowledged the presence and rise of AMA in low- and middle-income countries (LMICs) as well. In Tanzania, for example, Muganyizi and Balandya (2013) observed a progressive increase in deliveries by women 35 to 50 years old, from 103 per 1,000 deliveries in 2005 to 145 per 1,000 deliveries in 2011. While cultural and gender norms and expectations for fertility and childbearing are important determinants of AMA and HP pregnancies in all nations, those in LMICs often leave the woman with less reproductive decision-making power than in high-income nations. For example, in a community in Guinea, while planning and spacing pregnancies is accepted, it is not as condoned for a woman to end childbearing unless she has experienced a difficult delivery or pregnancy (Escandón et al, 2006).

Research has documented many AMA-related maternal and child health risks, including:

- Pregnancy-induced hypertensive disorders
- Gestational diabetes
- Delivery interventions such as Caesarian sections
- Maternal mortality
- Intra-uterine fetal death
- Low or elevated birth weight
- Pre- or very pre-term delivery
- Stillbirth
- Fetal distress
- Birth and chromosomal abnormalities

Most of the research on AMA health outcomes is limited to high-income nations, however some limited data is available from LMICs, where access to maternal and neonatal health services can be inconsistent and of varying quality. One study, conducted in India (Laxmy et al, 2013), noted pregnant women of AMA had significantly higher risks of gestational hypertension, pre-eclampsia and gestational diabetes than women aged 20 to 25 years old. Intrauterine growth restriction was present for 28 percent of studied AMA mothers, and only in 3.3 percent of their younger counterparts. Fetal distress, caesarian sections

and stillbirths were also significantly more common among the AMA mothers. A review of 37 studies across Europe, North America, Asia, Latin America and Africa (Huang, 2008) showed more than 80 percent of the included articles demonstrated statistically significant increases in risk of stillbirths for AMA women.

More research on health outcomes of AMA pregnancies is available from high-income countries. An evidence review of nine studies from the United States, United Kingdom, Australia and Canada reported a significant relationship between AMA and adverse perinatal outcomes and stillbirth rates (Carolan and Frankowska, 2011). The authors also noted that while rates of some adverse MNCH outcomes were observed from maternal age of 35, they did not seem to gain momentum until age 40 or more. Research conducted in a hospital in Israel focused on pregnancy outcomes in women after age 50, and found women 50 and older gave birth significantly earlier and to significantly more low birth weight infants, and delivered exclusively by caesarian section compared to their counterparts aged 45 to 49 (Simchem et al, 2006).

In the United Kingdom, Kenny and colleagues (2013), when examining AMA pregnancies (defined in this study as starting at age 30), found the relative risk (RR) of babies large-for-gestational-age (LGA), very LGA and extremely LGA significantly increased with a mother's advancing age. The RR of pre-term and very preterm deliveries and caesarian sections also rose, along with the RRs of macrosomia (where a baby's birth weight is greater than 4.5 kg). Stillbirths also increased with the mother's rising age and were greatest for women 40 years old or older. Very LGA, very small-for-gestational-age (SGA) and preterm births were found to be more likely among older women who were also more "socially deprived" and who were of lower socio-economic status.

An Italian study (Astolfi and Zonta, 1999) also noted the association between preterm deliveries and AMA. The authors observed nearly twice the frequency of preterm births among AMA mothers compared to mothers under age 35. This trend in preterm births was particularly pronounced among AMA mothers birthing their first child. Similarly, a 15-year study examining perinatal outcomes of women aged 40 and older in Sweden (Jacobsson et al, 2004) demonstrated increased prevalence of preterm births, SGA, LGA and severe preeclampsia with increasing maternal age, with the highest occurrences among women 45 years or older. Risk of developing gestational diabetes, pregnancy-induced hypertension and placenta previa also rose with advancing maternal age, as did labor interventions such as caesarian and induced deliveries. The study also showed increased incidence of perinatal death, intrauterine death and neonatal death among women over 40 compared to younger mothers. Rates of perinatal mortality were 1.4 percent and 1.0 percent in women aged 45 years and older and in women 40 to 44 years, respectively, compared to only 0.5 percent in women between the ages of 20 and 29.

In an evidence review around maternal hemorrhage, Walfish and colleagues (2009) also cite AMA as a known risk factor for placenta previa, as well as placental abruption, and obstetric traumas such as pelvic vasculature damage and hematoma formation. There are also associations of increased likelihood of chromosomal abnormalities with AMA (WHO, 2014; Babinszki et al, 1999).

HEALTH OUTCOMES FOR HIGH PARITY

Higher total fertility rates (TFRs)¹ and parity remain common in many LMICs, especially in sub-Saharan Africa (see Table 1). A TFR of 5 or higher can mean rapid population growth, arrested economic growth and a strain on household, community and national resources, in addition to adverse health outcomes for women and children.

Table 1: Total Fertility Rates (TFR) for Nations with a Parity of 5 or Higher (CIA World Factbook, 2014)
All figures represent 2014 estimates.

Rank	Country	Children Born per Woman
1	Niger	6.89
2	Mali	6.16
3	Burundi	6.14
4	Somalia	6.08
5	Uganda	5.97
6	Burkina Faso	5.93
7	Zambia	5.76
8	Malawi	5.66
9	Afghanistan	5.43
10	Angola	5.43
11	South Sudan	5.43
12	Mozambique	5.27
13	Nigeria	5.25
14	Ethiopia	5.23
15	Timor-Leste	5.11
16	Benin	5.04

While the literature at times presents conflicting results on severity and risk factors, many studies show that HP (also called grand multiparity) is an indicator for many adverse maternal and fetal outcomes. The most commonly found in the literature reviewed include:

- Maternal hypertension
- Placental complications
- Diabetes
- Fetal malpresentation
- Anemia
- Caesarian delivery
- Postpartum hemorrhage
- Macrosomia (large birth weight of infant)
- Preterm delivery

¹ TFRs represent the average number of children born to the average woman, should she live to the end of her childbearing years and bear children according to a given fertility rate at each age.

Similarly to the literature on AMA, data from LMICs regarding the health outcomes of HP is limited. In Tanzania, a study compared low multiparous women to grand multiparous women and found a higher risk of maternal and neonatal complications in grand multiparas, even in age-adjusted results (Mgaya et al, 2013). Of this study's population, grand multiparas demonstrated twice the likelihood of malpresentation (mostly breach birth) and threefold the prevalence of meconium-stained amniotic fluid and placenta previa. Babies born to multiparas also had lower Apgar scores than those born to low multiparous women. Similar research in Nigeria (Geidam et al, 2011) also found increased rates of malpresentation, as well as anemia, precipitate labor, abruption placentae and stillbirth among women who had had five or more births. The study's authors noted grand-multiparous mothers were more likely to be uneducated, compared to their multiparous counterparts.

Research from developed countries shows similar increasing adverse outcomes associated with HP pregnancies. For example, research examining 20 years of birth data from a medical center in a high parity region of Israel comparing multiparity (here defined as two to five births), grand multiparity (six to nine births) and great grand multiparity (10 births and above), and noted "a significant linear increase in the rates of adverse maternal and neonatal outcomes" through the groups (Schechter et al, 2010). Increased prevalence was found for: placenta previa, placental abruption, malpresentation, non-reassuring fetal heart rate patterns, shoulder dystocia, caesarian delivery, meconium stained amniotic fluid, post-partum hemorrhage, maternal anemia, congenital malformations and low Apgar scores. Results also showed that grand multiparity and great grand multiparity were significant risk factors for obstructed labor (labor dystocia) and for perinatal mortality.

A study in Abu Dhabi also looked at multipara, grand multipara and great grand multipara women between 18 to 35 years old, showed an increased risk of diabetes mellitus, incidence of anemia and preterm delivery with increased parity (Vaswani and Sabharwal, 2013). The relative risk of macrosomia (here defined as a baby weighing more than 4 kg) more than doubled for grand multipara women and more than tripled among great grand multipara women compared to mutipara women. Some risk factors, however, increased between multiparity and grand multiparity, but then decreased as women progressed into the great grand multiparous group. These factors included incidence of intrauterine growth restriction, placenta previa, prolonged pregnancy, need for induced labor and increased risk of caesarian section. The authors hypothesized this phenomenon to be "self-selection," meaning women who experience obstetric complications with their first few pregnancies decide to end childbearing. Hence, those in the higher parity groups may be represent the healthier counterparts of these women, who continue childbearing into great grand multiparity without as many complications.

In the United States, Aliyu and colleagues (2005), examined 12 years of medical information from over 22 million women who had at least one previous live birth and found high parity to be a risk factor for many negative fetal outcomes. Specifically, the study, which controlled for maternal

age, found the rates of diabetes, hypertension, placenta previa and placental abruption rose as the mother's parity increased. This study divided women into four parity categories, including moderate (one to four previous live births), high (five to nine births), very high (10-14 births), and extremely high (15 or more births) parity. Adjusted odds ratios for low birth weight (LBW), very LBW, preterm and very preterm delivery were higher among women of the higher three parity categories compared to women in the moderate parity group.

Voicing a somewhat dissenting opinion, authors of a 10-year retrospective study (Babinszki et al, 1999) concluded that "under satisfactory socioeconomic and health care conditions, high and extremely high parity should not be considered dangerous." The study compared obstetric complications and perinatal outcomes among great grand multiparous, grand multiparous and multiparous women at Mount Sinai Medical Center, in New York. Where other research shows increased rates of caesarian and non-progression of labor among grand and great grand multiparas, Babinszki and colleagues found higher instrumental and operative deliveries and non-progression among women having had fewer than five births compared to their higher-parity counterparts. While further results did show higher proportions of prior spontaneous abortions among great-grand and grand multiparas, these rates were generally considered low (3.8 percent and 4.5 percent respectively). Regarding postpartum complications, however, the authors did observe that the occurrence of hemorrhage increased significantly between multiparous and grand multiparous women. Incidence of neonatal oxygen assistance, pneumothorax, infections and extended hospital stays were also more common for great grand multiparas, but in varying significance.

SECONDARY ANALYSIS METHODOLOGY

Data were obtained from USAID-funded MEASURE DHS. These surveys are based on nationally representative samples and use standard procedures for collecting and processing data. Two DHS surveys were chosen due to data availability and programmatic relevance—Benin DHS 2006 and Niger DHS 2012. Both surveys used national level representative samples of population of reproductive age (15 to 49). Men and women of reproductive age were eligible to participate in the survey, which was administered by trained, gender-matched interviewers.

Female data sets from both countries were used for this secondary data analysis. For the analysis of HP only, women aged 25 and older were included to explore demographic characteristics and other attributes of those having more than four births. For the analysis of AMA only, women older than age 34 were included in the analysis, in order to explore factors related to having a birth after age 34. For analysis purposes, three age groups were created; women younger than 25, women aged 25 to 34 and women older than age 34. This breakdown allowed exploring variables specific to HP. Both AMA and HP were analyzed for significant differences and other relevant information regarding demographics and programmatically relevant indicators (such as media use). For this secondary analysis, statistical significance is determined by a p-value less than 0.05.

RESULTS

The following results are divided into three groups—overall sample of women, AMA women and high parity women (those older than age 24).

OVERALL SAMPLE OF WOMEN

Finding 1: Most women, regardless of age group, use the radio and have heard family planning messages on the radio.

Table 2 shows that radio is the form of media most used among women of all ages in both Benin and Niger, though exposure among women in Niger is lower. Television is the second most used and newspaper is the third. Exposure to family planning messages through these different channels also follows the same pattern.

<i>Percent of women who have used media, by channel and age group</i>				<i>Percent of women who have been exposed to a family planning (FP) message through media, by channel and age group</i>			
Benin	<25 years old (n=6139)	25-34 years old (n=6409)	35 years old (n=6428)	Benin	<25 years old (n=6139)	25-34 years old (n=6409)	35 years old (n=6428)
<i>Newspaper*</i>	16.0%	7.8%	6.2%	<i>Newspaper*</i>	5.7%	2.8%	2.2%
<i>Radio*</i>	82.5%	83.2%	81.1%	<i>Radio*</i>	43.6%	47.5%	46.4%
<i>Television*</i>	45.3%	35.0%	32.1%	<i>Television*</i>	24.6%	18.4%	16.5%
Niger	<25 years old (n=3864)	25-34 years old (n=4120)	35 years old (n=4112)	Niger	<25 years old (n=3864)	25-34 years old (n=4120)	35 years old (n=4112)
<i>Newspaper*</i>	6.7%	3.4%	3.4%	<i>Newspaper</i>	1.4%	1.0%	1.2%
<i>Radio*</i>	63.4%	65.3%	66.7%	<i>Radio*</i>	33.6%	42.0%	44.5%
<i>Television*</i>	31.3%	24.9%	23.7%	<i>Television</i>	13.0%	11.7%	11.4%

*P-value <0.05 when compared by age group.

Rows do not add to 100% because women could be exposed to more than one channel.

Finding 2: A higher percentage of women in Niger, than in Benin, want to have another child.

The desire to have another child shows a significant relationship with age in both countries. In Benin, the results show a clear decline with age (see Table 3). In Niger, the decline is only notable among women who are older than 34 years of age. Most notably, however, is the difference between women older than 34 in each country who desires more children. In this age group 67.2 percent in Niger want another child versus 31.3 percent in Benin.

Table 3. Percent of women who want another child or are undecided by age group and country			
	<25 years old (n=6118)	25-34 years old (n=6411)	>34 years old (n=5181)
Benin*	95.7%	80.7%	31.3%
	<25 years old (n=3867)	25-34 years old (n=4115)	>34 years old (n=3146)
Niger*	99.6%	97.1%	67.2%

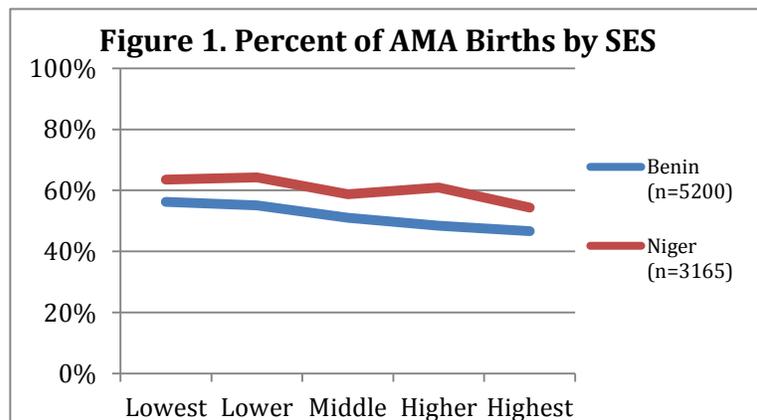
*P-value<0.05 when comparing desire to have another child by age group.

ADVANCED MATERNAL AGE

For the analysis of AMA, as explained before, only women older than age 34 (Benin n=5200; Niger n=3165) were included. Among this sample, more than half reported having a child at an advanced age (51.3 percent in Benin and 61 percent in Niger).

Finding 3: AMA births are high in both countries and there are differences by education, urban/rural residence and socioeconomic status.

In Benin, a significantly higher percentage of women without education have a child at an advanced age (53.4 percent) than those with some education (44.7 percent). The same is true for

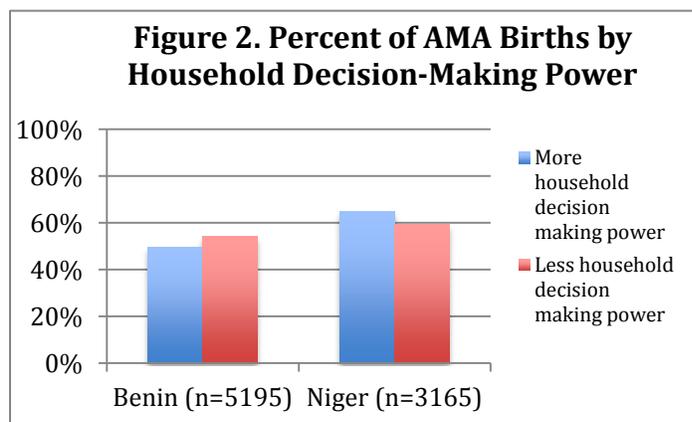


*P-value<0.05 when comparing AMA births to SES.

Niger (62 percent with some education, 54.5 percent of those with no education).

Also, a significantly higher percentage of rural respondents in Benin have had a child at an advanced age (53.2 percent) than urban respondents (48.4 percent). The same is true for Niger (62.1 percent of rural, 56.1 percent of urban). Although less pronounced, the results show a decline in AMA births by SES in both countries (see figure 1). Overall, regardless of educational attainment, socioeconomic status (SES), or urban/rural residence, a high percentage of women have had an AMA birth.

Finding 4: Household decision-making correlates with AMA births differently in Benin and Niger.



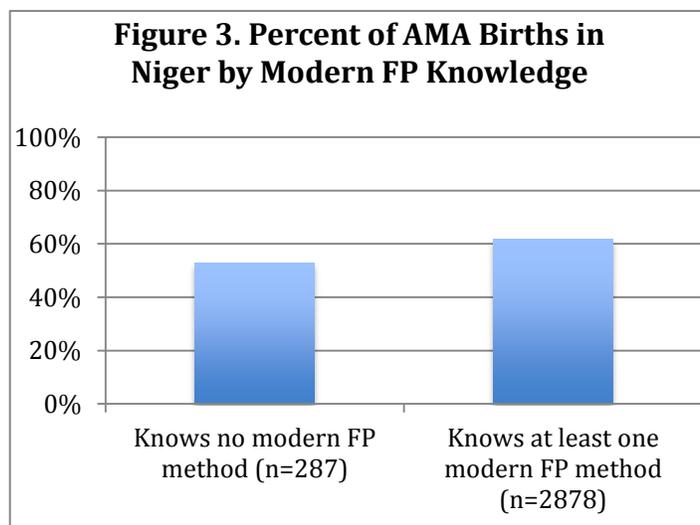
*P-value<0.05 when comparing AMA births by household decision making power SES.

Household decision-making power was measured by aggregating the four to five household-decision making questions in each DHS. The resulting data were then dichotomized to either being above the median (“more household decision-making power”) or being below the median (“less household decision-making power”). In Niger, a significantly higher percentage of women who have more household decision-making power have had an AMA birth (64.9 percent) than those who have less household

decision-making power (59.3 percent). In Benin, the opposite was true; a significantly higher percentage of women who have less household decision-making power have had an AMA birth (54.3 percent), than those who have more household decision-making power (49.5 percent; see Figure 2).

Finding 5: In Niger, women with knowledge of at least one modern method are more likely to give birth at an advance maternal age.

A significantly higher percentage of respondents in Niger who know at least one modern family planning method



*P-value<0.05 when comparing AMA births by knowledge of any modern

(61.8 percent) have had an AMA birth than those who do not know any modern methods (53 percent; see Figure 3). No such significant relationship is found in Benin.

Finding 6: In Benin, women who watch TV, as well as women who are exposed to family planning messages on the TV, are less likely to have given birth at an advanced maternal age.

After controlling for education, urban/rural and socioeconomic status, respondents in Benin who have never watched TV are significantly more likely to have had an AMA birth than those who have watched TV (OR=1.31). Among women who have ever watched TV, those never exposed to family planning messages are significantly more likely to have had an AMA birth than those exposed (OR=1.39). No such significant relationships are found in Niger.

Finding 7: In Niger, women who hear family planning messages on the radio are more likely to have given birth at an advanced maternal age.

After controlling for education, urban/rural and socioeconomic status, women who heard any family planning messages on the radio were significantly more likely to have had an AMA birth than those who did not hear such messages (OR=1.25). No such significant relationship are found in Benin.

HIGH PARITY

For this analysis, younger (25 to 34 years old) and older (after age 34) women, were included. The results show high percentages of HP among both younger and older women in both Benin (25.9 percent and 71.8 percent, respectively) and Niger (44.7 percent and 82.1 percent, respectively). HP, as mentioned before is defined as giving birth to five or more children.

Finding 8: High parity is common in both countries, particularly among women with lower education and SES and those living in rural areas.

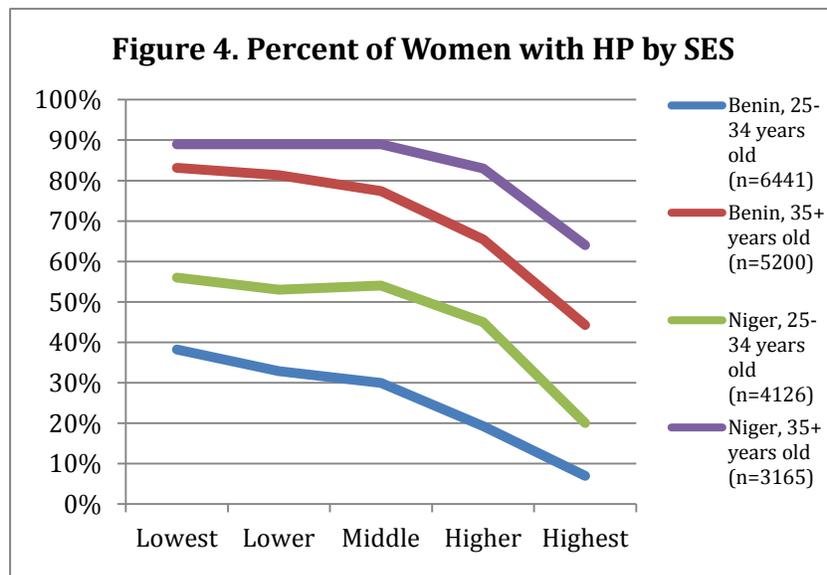
In both countries, a significantly higher percentage of younger respondents with no education have HP than those who have received any education. Similarly, a significantly higher percentage of older respondents without education have HP than those with some education. By residence, a significantly higher percentage of younger women living in rural areas have HP than those in urban areas. A similar pattern is observed among older women in both countries (see Table 4).

Table 4. Percent of HP by education, urban/rural residence and age groups in each country

	Benin		Niger	
	25-34 years old (n=6441)	>34 years old (n=5200)	25-34 years old (n=4126)	>34 years old (n=3165)
Education*				
Any	11.6%	45.4%	26.7%	66.4%
None	31.5%	78.9%	53.1%	88.2%
Urban/rural*				
Urban	15.7%	58.3%	26.3%	68.8%
Rural	31.6%	78.9%	53.7%	88.8%

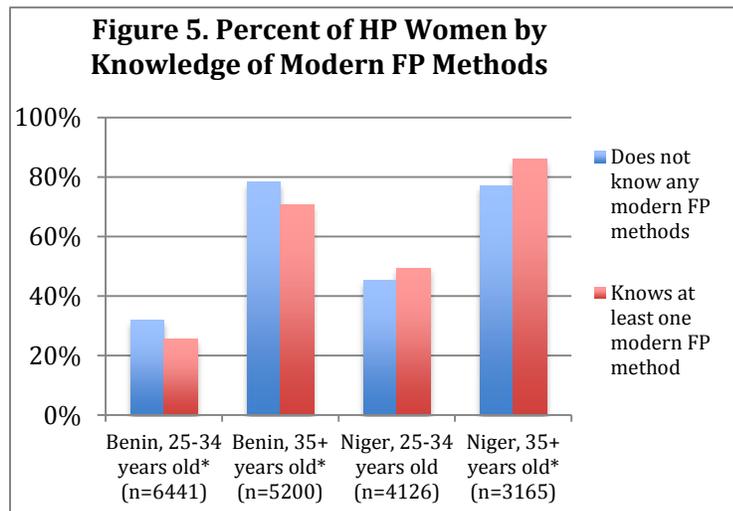
*P-value<0.05 when compared to AMA births among different age groups.

In both age groups and countries, a significantly higher percentage of women of lower socioeconomic status have HP than those of a higher socioeconomic status (See Figure 4).



*P-value<0.05 when comparing percent that have HP to SES.

Finding 9: Knowledge of modern methods correlates with HP differently in Benin and Niger.



*P-value<0.05

Among younger women in Niger, no significant relationship is found between HP and knowledge of any modern methods. However, a significantly higher percentage of older women who know any modern FP methods (86.0 percent) have HP than those who do not know any modern FP method (76.9 percent). In contrast, a significantly lower percentage of younger women in Benin who knew any modern FP method (23.4 percent) have HP than those who do not know any modern

FP method (31.8 percent). A significantly lower percentage of younger women in Benin who know any modern FP method (70.5 percent) have HP than those who do not know any modern FP method (78.4 percent; see Figure 5).

Finding 10: In Benin, women who read newspapers are less likely to have HP than those who never read newspapers. Likewise, fewer women in Benin who watch TV have HP than those who never watch TV.

After controlling for education, urban/rural residence and socioeconomic status in Benin, women who never read the newspaper are significantly more likely to have HP than those who do (OR=2.09). Additionally, women who never watched TV are more likely to have HP than those who watch TV (OR=1.33). No such significant relationships are found in Niger

Finding 11: Women who are exposed to FP messages on the radio are more likely to have HP than those who are not exposed to such messages.

After controlling for education, urban/rural residence and socioeconomic status in Niger, women who listen to the radio are significantly more likely to have HP than those who never listen to the radio (OR=1.35). No such significant relationship is found in Benin. In both Benin and Niger, women who hear FP messages on the radio are significantly more likely to have HP than those who do not hear such messages (Benin OR=1.21, Niger OR=1.48).

DISCUSSION

Based on the results described above, four major implications emerged regarding AMA and HP among women in Benin and Niger:

HP and AMA are prevalent issues in both countries: In both Benin and Niger, there are a substantial proportion of AMA women who have given birth after age 34. Additionally, a large percentage of women older than age 24 have HP in both Benin and Niger. The high prevalence of AMA births and HP demonstrates a clear need for programs that better address these issues.

Household decision-making power has a different effect on AMA births in Benin than in Niger: Women in Benin who have more household decision making power are less likely to have an AMA birth than women with less household decision making power. However, women in Niger who have more household decision making power are more likely to have an AMA birth than women with less household decision making power. This contrast could be explained by the relatively low percentage of AMA women in Benin who desire to have more children compared to over half of the AMA women in Niger who want to have more children. In Benin, AMA women with more decision-making power will likely stop having children because they do not desire any more children. However, in Niger, AMA women with more decision-making power will likely have more children because of their desire to have more children. This result suggests that programs in Niger should also seek to change fertility preferences, which are almost double that in Benin among AMA women. Additionally, further research should explore potential factors that affect an AMA woman's desire to have more children in Niger.

Radio and TV are good mediums for FP messaging: Radio has the widest reach of all the media channels. About 80 percent of women in Niger and about 60 percent of women in Benin listen to the radio. Therefore, the radio could be an effective way to deliver FP messages. Additionally, exposure to TV and FP messages on TV are strongly related to lower percentages of AMA births and HP in Benin. This suggests that TV can also be an effective medium for messages aiming to prevent AMA births and HP. Although exposure to the newspaper was significantly related to a lower prevalence of HP, the low percentage of exposure to newspaper indicates that it would not be an effective medium for reaching women.

FP messages might not be resonating with AMA and HP women: Women in Niger who are exposed to the radio and FP messages on the radio are more likely to have AMA births and HP. Additionally, women in Niger who know at least one modern FP method are more likely to have had an AMA birth or have HP. Although seemingly counterintuitive, these findings could be explained by lack of AMA or HP-related FP messages in Niger. For example, if a majority of FP

messaging in Niger focuses on proper spacing between births, but fails to address preventing AMA births and limiting family size, women in Niger could give birth well past age 34 as they aim to increase spacing between births but do not aim to reduce number of children. Because no information regarding the content of FP messages was provided in either DHS survey, no analysis could be done to assess the relationship between the content of FP messages and AMA as well as the relationship between the content of FP messages and HP. Further research needs to examine the content of FP messages in both countries (i.e., do these messages contain any information about AMA births or HP?) and their relationship to AMA and HP. Future programs should also consider creating tailored messages for AMA and HP women.

CONCLUSION

Despite some discrepancies in the research on the gravity of certain health outcomes, findings show that AMA and HP pregnancies do contribute to elevated risks for mother and child, including higher incidence of maternal hypertensive disorders, preterm delivery, diabetes, fetal birth weight irregularities, delivery complications and perinatal morbidity and mortality. In addition, the adverse health outcomes associated with AMA and HP pregnancies are compounded by low socio-economic status, low levels of education and reduced access to quality health care—a collection of factors descriptive of many LMIC contexts. This fact is a reminder that while research completed in a high-income country setting may be more available and accessible, findings from these contexts should not be automatically applied to a LMIC setting.

As women living in LMICs are arguably most at risk of AMA and HP complications for the reasons described above, it is important that programs be designed to better understand AMA and HP in LMICs. However, a recent desk review noted a dearth of targeted family planning interventions reaching AMA and HP women in LMICs (HC3, 2014). Research is needed to comprehend why AMA pregnancies occur, why women have five or more births, what are the attitudes around AMA and HP pregnancies, and what can be done to address these factors. In this process, it is also vital to remember that while AMA and HP pregnancies often occur in the same women, this is not always the case. Advanced maternal age and HP each have their own set of health risks and can affect two very different groups of women. The two categories should therefore be appreciated as related, but examined independently of one another with distinct intervention approaches as needed.

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