A Needs Assessment of Family Planning Within a Ngöbe–Buglé Patient Population in Bocas Del Toro, Panama

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Accessibility
Collaborators and Roles

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Competing Interests

The authors declare that they have no competing interests.
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Table of Contents

Title Page.................................................................1
Collaborators & Competing Interests...............................................2
Acknowledgements...............................................................3
Table of Contents............................................................4
Glossary..............................................................................5
Abstract..............................................................................6
Introduction............................................................................7
Background...........................................................................8-24
  The Health and Welfare of Indigenous Groups in Latin America and the Caribbean....9-12
  Indigenous Populations in Latin America and the Caribbean & Family Planning........12-14
  The Indigenous Decade........................................................14-15
  Economics and Health in Panama............................................15-16
  Family Planning in Panama..................................................16-18
  Family Planning Disparities in Panama....................................18-19
  Panama and its Indigenous Peoples........................................19-20
  Indigenous Disparities in Panama..........................................20-23
  The International Response to Indigenous Disparities in Panama......................23-24
  The Ngöbe–Buglé..............................................................24-26
  Floating Doctors..................................................................26-27
  Significance.......................................................................27-28
Methods...............................................................................28-29
  Patient Surveys (Quantitative Data)........................................29-32
  Key Informant Interviews (Qualitative Data)..................................32-34
Results..............................................................................34-40
  Quantitative Patient Surveys..................................................34-35
  Qualitative Key Informant Interviews.......................................35-40
Discussion...........................................................................40-43
Conclusions, and Suggestions for Future Work........................................43-45
Study Impact and Follow Up....................................................45-50
References.............................................................50-53
Table 1. Quantitative Patient Survey Data....................................53-56
Table 2. Key Informant Interviews: Demographics................................56
Table 3. Qualitative Patient Survey Data: Key Themes..........................56-58
Figure 1. Satellite Position Map of 9 Clinics Visited in this Study..................59
Figure 2. Quantitative and Qualitative Samples and Overlap........................59
Figure 3. Patient Surveys: Unmet Need for Family Planning .......................60
Appendix 1. Quantitative Patient Survey Instrument................................61-63
Glossary

APLA-FA- Asociación Panameña para el Planeamiento de la Familia (an International Planned Parenthood Federation member association)

CELADE- The Latin American and Caribbean Demographic Centre

CSS- Caja de Seguros Social (Social Security System)

DHS- Department of Health Statistics

MINSA- Ministerio de Salud de la Republica de Panama

OCP- oral contraceptive pill

PAHO- Pan-American Health Organization

UNPF- United Nations Peoples Fund

USAID- US Agency for International Development

WHO- World Health Organization
Abstract

BACKGROUND: The World Bank has characterized poverty among Panama’s largest indigenous population, the Ngöbe–Buglé, as “abysmal.” In addition, family size is significantly above and age of first conception significantly below the average for Panama. We conducted a Needs Assessment of Family Planning to better understand the preferences, barriers to access, and interplay with local culture and socioeconomic status within this population.

METHODS: We conducted a mixed methods study among the indigenous patient population of a local NGO, Floating Doctors. 70 patients were interviewed using a quantitative survey based upon the DHS Individual Questionnaire. Data was analyzed for two primary outcomes: preferences for family planning and unmet need. In addition, 41 key informant interviews were conducted, with data organized around barriers to access, cultural preferences, and issues of human rights.

RESULTS: Fifty three percent (33/62) of subjects met the DHS criteria for unmet need. Lack of money and access were identified as the most significant barriers to obtaining family planning. Key informant interviews suggested that young motherhood and large family size were significantly impacting issues of local health, education and socioeconomic status.

CONCLUSION: This study reveals a profound unmet need for family planning resources. It also highlights the impact of this need on local education, socioeconomics, and public health. Finally, the data suggests that these disparities may be increasing due in part to complex economic shifts. Family planning may mark a clear starting point by which to empower Ngöbe–Buglé families to reclaim health, cultural, and economic stability.


**Introduction**

“Sexual and reproductive health and rights are central to people’s lives and essential for their well-being. In practice, this means that women and couples must have the means to have a healthy sexual life, have the number of children they want when they want them, deliver their babies safely and ensure their newborns survive...Improving sexual and reproductive health and rights contributes to reducing poverty and achieving other development goals. Of the eight UN Millennium Development Goals (MDGs), three goals—to reduce child mortality, to improve maternal health and to combat AIDS—rely directly on sexual and reproductive health care.” In UNFPA 2014 report, *Adding it Up* (1)

The Ngöbe–Buglé constitute over half of the indigenous population in Panama, representing over 6% of the overall population.(2) In 1999, it came to the attention of the international community that, in spite of Panama’s overall economic prosperity, the Ngöbe–Buglé suffer from profound disparities of wealth, education and health. In 1992, the contrast between Panama’s national gains, and the persistent suffering of its indigenous led to its ranking as the third most unequal country in the world (alongside Brazil and South Africa).(3) Though the national GINI index and other indicators suggest a redistribution of wealth since 1992 (2015 GINI coefficient of 0.527), certain vulnerable minority populations continue to bare a disproportionate burden of morbidity and mortality, including the indigenous Ngöbe–Buglé.(4, 5)

In the 1990s, Panama saw numerous humanitarian initiatives to address these disparities, many of which have contributed to impressive gains with respect to overall health of the indigenous people. Among the most novel of these efforts is the work by the US based NGO, Floating Doctors, which uses boats (and other creative means) to deliver primary care and public health to select, hard-to-reach indigenous communities.

The Floating Doctors platform provides a unique vantage point from which to observe the health and wellbeing of the Ngöbe–Buglé. For example, they observed that family planning resources were greatly underutilized by local communities despite objective sequelae of overpopulation including increasing poverty and food scarcity. In order to better understand this phenomenon, we performed a Needs
Assessment of Family Planning within the patient population of Floating Doctors. Specifically, we queried the need, attitudes and preferences of local indigenous groups for family planning resources, including multiple salient methods of contraception. To do this, we performed a mixed methods study, which included quantitative patient surveys and qualitative key informant interviews.

We contend that this project is of great local and global significance. Locally, despite international attention to violations of indigenous human rights, very little is known with respect to the health of this community, and even less so with respect to the interaction between the unique Ngöbe–Buglé culture and contemporary public health. To our knowledge, this study marks the first attempt to query Ngöbe–Buglé needs, attitudes and preferences for family planning. On a larger scale, the story of the Ngöbe–Buglé is applicable to other indigenous groups in Latin America and the Caribbean that experience persistent disparities of wealth, education and health, as well as concurrent threats to cultural preservation.

Not only is Panama is among the most unequal countries in the world(3), at the same time it is one of the most progressive in Latin America with respect to political protections for its indigenous people. Therefore, it is a poignant case study through which to consider the most recalcitrant barriers to utilization of family planning among vulnerable populations in the developing world, as well as the potential role of modern solutions (including novel contraceptives) in an otherwise anachronistic population.

**Background**

“Indigenous peoples have historically been the poorest and most excluded social sectors in Latin America… These conditions of extreme poverty and material deprivation — what might be best described as a denial of the fundamental social citizenship rights of indigenous peoples — are widespread throughout Latin America and have recently come to the attention of international development agencies, such as the World Bank….”(6)
In order to better appreciate the differences and commonalities between the Ngöbe–Buglé and other vulnerable minority groups, we include a brief overview of the health and welfare of other indigenous groups in Latin America and the Caribbean.

Although numerous definitions of indigenousness exist, the definition used herein is loosely based on that put forward by the UN Permanent Forum on Indigenous Issues i.e. descendents of “original inhabitants” (which in Latin America and the Caribbean implies predating the European conquistadors), and practitioners of ancestral customs.(7) Overall, there are approximately 45-48 million indigenous people in Latina America and the Caribbean from 400 different indigenous groups. Of these, over 40 million are felt to have retained a significant cultural continuity with ancient pre-Columbian civilizations (including the Aztecs, Mayans and Incas).(8) Based on data aggregated by Montenegro et al. from the 1990- 2000, indigenous populations comprised anywhere from 0.6% of the national population in Brazil, to 71% of the national population in Bolivia.(7) Based on aggregated data from the end of the 20th century, indigenous people constitute 10.17% of the Latin American and Caribbean total population, with highest proportionate contributions from Bolivia, Guatemala, Peru and Ecuador, respectively. The single country with the greatest total number of indigenous people is Mexico, (13,41,6,000 which is equivalent to 13.99% of the national population). (7)

Unifying themes among Latin America’s indigenous peoples include not only disparities of wealth, health and education, but also isolation.(8) As with other vulnerable populations internationally, poverty pervades all other disparities. The disproportionate burden of indigenous poverty was brought to the international forefront by the 1992 World Bank report that indicated: “poverty among Latin America's indigenous
populations is pervasive and severe…indigenous populations suffer abysmal living conditions and severe health problems, and educational attainment is strongly correlated both with indigenous origins and with poverty…”(9)

Poverty is also intimately connected with disparities of education. Based on the 1992 Latin American and Caribbean Demographic Centre (CELADE) data, in the 1980’s illiteracy among indigenous reached as high as 79% in Guatemala, with Panama not far behind with 62% (versus 14% of the general population).(9) Though beyond the scope of this work, it is also noteworthy that for many indigenous people, the concept of poverty itself is complex. For example, despite being subjected to abject poverty, many indigenous people also “consider themselves rich in terms of cultural and spiritual traditions that may be absent in larger societies.”(10)

Another key theme among Latin America’s indigenous people is a disproportionate burden of morbidity and mortality. A study by the Pan American Health Organization (PAHO) in 1990 showed rates of infant mortality 2-5 times higher in indigenous communities than respective national averages in Peru, Brazil, Mexico, and Ecuador.(7) Other factors that seem to affect morbidity and mortality among indigenous people include skin color (e.g., in Brazil),(9) proximity to popular culture, and local environmental factors (e.g., availability of natural resources, isolating geography, among others).(9) Health disparities are further perpetuated by isolation, accessibility of medical services, poverty, discrimination, and migratory patterns that facilitate the spread of disease.(11) Finally, given the close relationship of indigenous groups with their respective environments, “indigenous health cannot be viewed as uniquely an issue of health systems, nor can people be viewed in isolation of their ecosystem and sociopolitical context.”(7) Therefore, destruction of indigenous environments no doubt has further contributed to declines in local health.

The issue of indigenous isolation is also complex and contentious. In some cases, there is a cultural
preference to inhabit traditional lands and to specifically live apart from nonindigenous culture, whereas in other cases, isolation is externally imposed by poverty and political marginalization. In either case, isolation may be associated with poorer health outcomes.(7) That being said, for some indigenous communities isolation may be associated with an increased quality of life, particularly in communities that employ alternative metrics of wealth and prosperity (including differing views with respect to the notion of personal property).(6, 9, 12) Examples of groups that have self-advocated for sustained isolation include: the Nukak in Colombia, the Ayoreo in Paraguay, the Hauorani in Ecuador, the Nahua in Peru, and some Mbya Guarani communities of the Yaboti Reserve in Argentina.(7) Extreme examples may include some as yet “un-contacted” groups, particularly in the Brazilian Amazonia. Adding to the complexity, it is possible that there are ways in which cultural isolation may be somewhat protective, particularly with respect to nutrition and exercise.(7, 13-15) For example, a study from 1997 of the Kuna (another indigenous Panamanian group that lives in close proximity to the Ngöbe–Buglé) found that “partly acculturated Kuna had lower blood pressure than fully acculturated counterparts because of their maintenance of traditional customs.”(7, 13, 14) Furthermore, it is possible that cultural isolation may provide isolation from certain diseases, a hypothesis that has immeasurable historical evidence. On the other hand, true isolation poses an inherent challenge for comparative statistics, as the actual rate of pre-contact infectious and non-communicable diseases is nearly impossible to accurately assess.

Finally, an ominous emerging theme is the vulnerability of the indigenous people to the greatest pandemic of our era: HIV/AIDS. Early cases have been recorded in various indigenous communities in Latin America, including the Ngöbe–Buglé.(7) Given the poor access to health education and preventative health resources, the potential for the uncontrolled spread of HIV/AIDS is profound, necessitating a greater urgency for effective indigenous sexual health campaigns.
Fertility among indigenous women is often significantly higher than among their non-indigenous female counterparts. (9) The reasons for this difference are not fully understood. However cultural preference, poverty, awareness, access, and overall educational attainment have all been implicated in contributing to these disparities. (9) Family planning is generally considered a mechanism by which to improve overall health, and reduce poverty. “Family-planning promotion is unique among medical interventions in the breadth of its potential benefits: reduction of poverty, and maternal and child mortality; empowerment of women by lightening the burden of excessive childbearing; and enhancement of environmental sustainability by stabilizing the population of the planet.” (16)

The utility of family planning as a poverty reduction strategy is well established. (6, 12, 17, 18) “Rapid growth in a population (usually defined as an annual increase of 2% or more, equivalent to a doubling of population size every 36 years) can only exacerbate the issue of poverty, especially in countries where underemployment is already high or where food security is a major concern.” (16) In study of 45 developing countries, the same authors reported that “the proportion of people living in poverty would have fallen by a third if the crude birth rate had decreased by five per 1000 population in the 1980s.” (16) Fertility decline also had numerous long-term benefits, including increasing the relative proportion of the population of within the productive age range of 15-65 (versus in a less productive age range below 14 years of age, or over 65). (16)

On the intimate connection between family planning and health and human rights, a landmark paper by Trussell et al. published in 1984 indicated that if in developing countries, “childbearing were confined to the "prime" reproductive ages of 20-34, then infant and child mortality rates would fall by about 5 percent.
Limiting childbearing to ages 20-39 may also reduce the maternal mortality ratio by 11 percent.”(18) The same authors also suggest that “universal adoption of an ‘ideal’ spacing pattern in which all births subsequent to the first are spaced at least two years apart may reduce infant mortality by about 10 percent and child mortality by about 21 percent.”(18) Since publication in 1984, countless articles have supported these findings. For example, in 1992 Miller et al. analyzed data from Bangladesh and the Philippines and found that “children who are born within 15 months of a preceding birth are 60 to 80% more likely than other children to die in the first two years of life, once the confounding effects of prematurity are removed.”(19)

With the profound benefits of family planning in mind, over the past several centuries, much has been learned with respect to efficacious implementation of family planning in indigenous Latin America’s indigenous. Projects in Bolivia and Guatemala (two countries with the highest proportion of indigenous citizens, at 71% and 66% respectively)(7) found that factors that increase the efficacy of family planning interventions include: employment of community workers (in addition to traditional health practitioners), concurrent maternal and child campaigns, and including of bilingual and bicultural staff.(8) Data from USAID suggests that in Guatemala (a country with the second highest proportion of indigenous citizens), significant gains in family planning utilization were achieved by training 9,500 family planning “advisors, ” to provide “thoughtful counseling, clear information, effective product supply, and accessible delivery points has enhanced access among rural and urban couples.”(20) Subsequent to these efforts, contraceptive use in Guatemala increased from 23.2% in 1987 to 43.3% in 2002. Similarly, fertility rates fell from 5.1 children per woman in 1999, to 4.4 in 2002.(20) Today, fertility rates are approximately 3.16 in 2015.(21) Whereas these efforts were initially launched with strong support from USAID and ALPA-FA, the ministry of health now provides more than half of all contraceptives distributed, which suggests both national buy-in, as well as program sustainability.(20) This relative success may also speak to the potential role of
humanitarian organizations in supporting these efforts. Similar experience in Mexico, Haiti, Colombia, Peru, Ecuador, and Guatemala are described by Barroso et al.(22) Vitzthum et al. found that having multiple different methods of contraception readily available in order to facilitate quick transitions to alternate contraceptives based on patient preference (as well as anticipated and unanticipated side effects). This is particularly important given that studies have found that the physiologic response to exogenous hormones is variable between populations. For example, there are clinically significant differences between the physiologic responses to oral contraceptives (OCPs) among Bolivian women versus American women (e.g., lower hormonal profiles of Bolivian women, causing increased side effects associated with standard formulation OCP).(23) This also reinforces the need for careful, population-specific piloting of various methods of contraception.

The Indigenous Decade

Disparities in indigenous health in Latin America gained greater attention in the early 1990’s in part due to landmark work by the World Bank.(3) This paralleled international political momentum to increase protection of the 300 million indigenous people worldwide, a sentiment which is perhaps best captured by the UN General Assembly’s proclamation that 1995-2004 was “the indigenous decade.”(24) Indeed, during this period significant local, national and international strides were made with respect to protecting the health and human rights of various indigenous populations. In 1994, there were a number of indigenous uprisings (and 1994 is often considered “the year of the indigenous people”).(12) Local governments largely responded by: 1) passing legislation to support indigenous rights, 2) redirecting a greater share of resources towards education, health, poverty-reduction programs, and 3) transferring a greater share of public expenditure to state and local control.(12) It should also be noted that Panama has been lauded as at the forefront of ensuring these protections, as discussed below in the section Economics and Health in Panama.
below.(2) Unfortunately, since the momentum of the 1990’s there has been waning international enthusiasm for this cause, with decreased data collection, and few new partnerships or interventions initiated.(12) Furthermore, without appropriate monitoring of certain unequal countries, such as Panama, may be particularly at risk of falling behind with respect to health and human rights, as aggregated data mask the true disparity experienced by minority groups such as the Ngöbe–Buglé. It is our hope that this and other studies may help inspire such attention.

Economics and Health in Panama

Panama has among the fastest growing economies in Latin America; in 2013 the GNP was estimated to be $11,000 per capita.(25) This accelerated growth began with the nationalization of the Panama Canal in 1999, which now drives 75% of GDP and two thirds of employment in the country.(3) Though beyond the scope of this work, this financial dependence may also suggest relative economic vulnerability. For example, the impending Nicaraguan Canal project, led by the Hong Kong Nicaraguan Canal Development Investment Company and scheduled for completion in 2020, may have significant economic consequences for Panama.

With respect to health care, there are two primary public entities: the Ministry of Health, called Ministerio de Salud (MINSA) and the Social Security System, called Caja de Seguros Social (CSS). MINSA provides the largest and most financially accessible network of health facilities across the country, with over 830 facilities (as of 2013). Although most services are not free, they are heavily subsidized. MINSA also oversees the national health system, and formulates applicable health policy.(26) CSS, on the other hand, provides a system of insurance accessible to citizens who pay taxes, as well as their dependents; it is funded
by contributions from employees and employers, and operates 80 facilities nationally. Thanks to the relatively low rate of unemployment in Panama (<5%), a high percentage of Panamanians are able to access CSS services: “in 2013 an estimated 3.47 million people (of a population of roughly 3.9 million) were covered by the CSS; of that total 1.6m were contributors, while the remaining 1.8m were dependents.”(26) However, due to issues of quality and accessibility, MINSA and CSS still provide inadequate coverage for a large proportion of Panamanians. Some of this additional need is met by a small number of private hospitals, particularly in Panama City, however these institutions are significantly more expensive, and therefore out of reach to many citizens requiring care. Thus a significant unmet need persists, particularly in rural areas. The four public hospitals that dominate the private health care market are: Hospital Nacional (HN), Centro Medico Paitilla, Hospital Punta Pacífica (HPP), and Clínica Hospital San Fernando (CHSF).(26)

To help address this need, Panama continues to increase its investment in public health infrastructure. Since the new millennium, the annual per capita government spending on healthcare has more than doubled from $397.5 in 2002 to $864.9 in 2012.(27) National data, as well as data aggregated by region, indicate that this investment has successfully resulted in an upward trend in key health indicators, including life span and infant mortality.(28) However, as will be discussed below, this aggregated data obscures the current state of health of many of Panama’s vulnerable peoples, including those living rural areas, with lower SES, and most notably, from indigenous backgrounds.

Family Planning in Panama

Over the past several decades, there have been significant national and international efforts to increase Panama’s access to family planning resources, and in particular modern methods of contraception. This has
resulted in important gains with respect to overall utilization of family planning services, as well as critical health endpoints such as maternal and infant mortality. National legislation has significantly contributed to this upward trajectory. In 1941, permanent methods of birth control were conditionally legalized, and these methods (vasectomy and tubal ligation) continue to be highly sought-after.(29, 30) Throughout the 1960s, the Panamanian government continued to increase the availability of family planning services. In 1965 and 1967, the *Asociación Panameña para el Planeamiento de la Familia* (APLA-FA), (an International Planned Parenthood Federation member association) and USAID joined these efforts.(30) In 1970 (the early stages of this more robust intervention), it was estimated that only 38% of married women were using a modern method of contraception, and only 54% felt that their need for contraception was met.(30) As a result of outreach programs, educational campaigns and increased access, by 1988 the proportion of married women using a modern method of birth control increased to 53%. (30) By 2015, 75% of women felt that their needs for family planning were being met.(30)

Not surprisingly, this increased access to family planning has contributed to a dramatic decrease in national fertility, from 6 children per household in 1965 to 2.5 in 2015.(31) There has also been an 8% observed decrease in pregnancy-related deaths between 1990 and 2015.(30) To further augment these efforts, in the 1980s non-physicians (including nurses, urban and rural community health workers) were trained to provide contraceptives, including IUDs.(30) This increased access resulted in a significant upward trend in utilization of long-term contraceptive use; by the 1980’s permanent sterilization methods comprised 50% of overall contraceptive utilization, and OCPs and IUDs 31%,(30) a rate which is similar to that seen in other Latin American countries with robust family planning campaigns. For comparison, in Guatemala sterilization is also the most popular method of family planning, and in 2002 was utilized by 17% of married or cohabitating women of reproductive age.(32)
Since the initial partnerships with international organizations such as USAID and APLA-FA in the 1960’s, family planning has become more formally integrated into the Panamanian Maternal and Child Health Program, thereby securing a sustainable place in the national budget. Today, with support from the United Nations Population Fund, the World Health Organization (WHO), APLA-FA and others, Panama officially provides certain key family planning services (including condoms, some intrauterine devices and tubal ligation under certain circumstances), free to citizens.(30)

*Family Planning Disparities in Panama*

In spite of these efforts, an unmet need for family planning persists. For example, between 1995 and 2000, 19.8% of Panamanian women aged 15 to 19 were mothers.(33-37) Furthermore, there has been a relative plateau in overall utilization of family planning, with cultural norms implicated as persistent barriers to access for some families.(30) With respect to pregnancy termination, in 1982 abortions were legalized under certain circumstances: if pursued in order to save the life of the woman, to preserve physical health, or in cases of rape or incest.(25, 37) Abortions are still not permitted for reasons of mental health, fetal impairment, economic or social considerations, or by request, and must be approved by a special commission.(37) There are also significant regulations on sterilization. Prior to 2010, women were only allowed to pursue sterilization if they were over the age of 33, had birthed five children, and were of “low socioeconomic status,” which was not specifically defined.(36) Today, women may pursue sterilization only if they are over the age of 23, have birthed at least two children, and have both a written petition and a medical recommendation. In men, there are no such requirements, and there are ongoing concerns due to the discriminatory nature of these regulations.(36) The numerous persistent barriers to access including “low socioeconomic status” are concerning, with strong discriminatory and eugenic undertones. Furthermore, due to numerous barriers, multiple means of contraception remain unavailable to certain vulnerable groups.
within Panama, including many indigenous families. These disparities of health care and family planning are even more pronounced among Panama’s indigenous populations.

Panama and its Indigenous Peoples

In 2010, it was estimated that Panama contained at least 417,559 indigenous people (just over 12% of the total population), though many feel this is an underestimate given the challenges inherent in sampling indigenous peoples including defining indigenousness, and counting isolated communities with limited infrastructure.(2) Even so, this is a significant increase from previous estimates of approximately 6% of the population in the early 2000s.(7) Reasons for this increase may be more advanced sampling strategies, or perhaps true accelerated population growth due to levels of fertility that exceed the national average. In any event, Panama has a higher proportion of indigenous inhabitants than 2/3 of Latin American countries.(7) Population estimates of the largest indigenous groups in Panama are as follows: Ngöbe, 260,058; Kuna, 80,526; Emberá, 31,284; Buglé, 24,912; Wounaan, 7,279; Teribe/Naso, 4,046; Bokota, 1,959; and Bribri, 1,068.(2)

In some circles, Panama has been heralded as a world leader in political protection of its indigenous citizens. The Report of the Special Rapporteur on the Rights of Indigenous Peoples states: “Panamanian laws governing indigenous affairs are undoubtedly among the most advanced in the world in terms of the protection and promotion of the human rights of indigenous peoples.”(2) Indeed significant legislation is in place to help protect the property, cultural identity, traditional knowledge, natural resources, and self-governance of the indigenous.(2)
Among the “foremost achievements in terms of the protection of indigenous rights in the world,” the Panamanian government established the five comarcas (indigenous territories, or reservations)(2) including the Ngöbe–Buglé comarca which was formally established in 1997. The 5 comarcas together span 16,634 km², or 22.2% of the country’s area.(2) The 2010 census suggests that 196,059 of the 417,559 indigenous persons live in one of the five comarcas.

Significant gains have been made since the inception of this Ngöbe–Buglé comarca 20 years ago, including increased indigenous political participation. “Under the Constitution of 2004, comarca inhabitants can elect parliamentary representatives, mayors, councillors and representatives of administrative districts. Currently, 7 of the 71 representatives in the National Assembly are indigenous persons (3 Ngöbe and 4 Kuna).”(2) This means that, at the national level, the Ngöbe–Buglé community is proportionally represented and the Kuna people are in fact slightly overrepresented.(2) With some exceptions, elections of local officials have also been proportionate to the population. In addition to this national representation, a certain amount of political autonomy has been granted to the comarcas.(2) Additionally, among the “comarca laws” is “the right to health, including access to health-care services,” though in practice, there is a persistent shortage of high quality medical care in this region, as discussed below (2). The comarca laws also require incorporation of “traditional healing methods,” which has resulted in the creation of Carta Organica Administrativa de la Comarca in August 1999, which governs traditional medicine in the Ngöbe–Buglé region.(38) For a more complete discussion of relevant legislation, see “Report of the Special Rapporteur on the Rights of Indigenous Peoples: The Status of Indigenous Peoples’ Rights in Panama.”(2)

Indigenous Disparities in Panama

Despite these political protections, unfortunately Panama’s indigenous population still has much in common
with other indigenous groups in Latin America and the Caribbean with respect to poverty, disparities in health, education, and isolation. In 1999, the World Bank reported that over 95% of the Panamanian indigenous people were living below the poverty line, compared to 37% of the national population. The 2012 census reflected only minimal traction with respect to poverty in the comarcas, with 89.8% of individuals in poverty versus 21.4% outside the comarcas, and 68.5% in extreme poverty versus 0.4% outside of the comarcas. (39) Furthermore, it was estimated that “the average indigenous household [was] not able to afford half of the daily caloric needs for healthy living.” (3, 4) The overall prosperity of Panama makes these trends more disconcerting. “In contrast to the trend for the general population, levels of poverty among indigenous peoples have not fallen in recent years.” (2)

Similarly, despite an impressive national framework to meet the educational needs in the comarca, profound educational deficits persist. (2) The average academic attainment for the Kuna Yala, Emberá-Wounaan and Ngöbe–Buglé comarcas respectively are: 4.34 years, 4.32 years and 3.54 years (versus the national average of 8.39 years). Similarly, rates of illiteracy in the Kuna Yala, Ngöbe–Buglé and Emberá-Wounaan comarcas are: 28.3%, 30.8% and 22.9% respectively. (2) Furthermore, some communities have navigated the extreme lack of educational resources by dividing the school day in half, with half of all children taught in the morning, and the other half in the afternoon. This of course results in an overall 50% reduction in education for all children. Thus persistent challenges include shortage of schools, teachers and academic resources, as well as language and cultural barriers. (2, 4)

Given these disparities of wealth and education, it is not surprising that increased morbidity and mortality also persist in the comarcas. In the 1999 (2 years after creation of the Ngöbe–Buglé comarca) the World Bank reported that life expectancy among indigenous people was 11 years less than the average non-indigenous Panamanian (63 years versus 74 years). (3) Furthermore, 50% of children were found to be
significantly malnourished (versus 16% nationally)(2, 3); it is unclear how this rate has changed since creation of the comarcas.

Health data from the 2011 census are even more ominous. Infant mortality for the Kuna Yala and Ngöbe–Buglé comarcas were estimated at 19.5 and 20.8 per 1,000 live birth respectively, (versus 13.2 deaths per 1,000 live births nationally).(2) Similarly, maternal mortality for the Kuna Yala and Ngöbe–Buglé comarcas were 542.3 and 300.5 per 100,000, respectively (versus 80.5 deaths per 100,000 live births nationally).(2, 39) Prevalence of certain infectious diseases also appears to be higher among the indigenous than the national average. “The incidence of tuberculosis has been identified as an issue of particular concern, with the Kuna Yala and Ngöbe–Buglé comarcas having the highest rates nationally: 163.3 cases per 100,000 inhabitants and 85.3 cases per 100,000 inhabitants, respectively (compared to the national average of 41.2.).”(2)

Reasons for these disparities are myriad, and likely include lack of infrastructure for health care delivery, as well as both physical and cultural barriers to access. With respect to infrastructure, in 2010 it was estimated that only 28%, 41% and 77% of the nation’s Ngöbe–Buglé, Emberá and Kuna Yala had access to clean water, versus 93.3% nationally.(39) Furthermore, 94%, 59% and 42% of the nations Kuna Yala, Ngöbe–Buglé and Emberá respectively lacked access to sanitations services, versus 5.5% nationally.(39) Similarly, as of 2012, the comarcas were accumulatively served by merely: 1 hospital (Unidos por el Cambio), 9 health centers and 85 health posts (which are often staffed by 1-2 employees with little or no health training, and limited supplies), 22 Doctors (and 18 nurses). This equates to approximately 8,000 indigenous per physician (versus 625 people per physician nationally).(5, 28) Lack of health care facilities and staff likely drives the lower proportion of indigenous institutional deliveries (53% versus 92.8% in 2009). Another issue is decreased access to family planning. “In 2009, unmet need for family planning among indigenous
women from the Ngöbe–Buglé was estimated at double the national average” (80% versus 37.9%). In spite of recent forward-thinking policy measures, including a 40% pay increase for health professionals working in indigenous areas, the Panamanian government has not been successful in addressing this shortage across the 5 comarcas. Finally, relatively low health literacy may also contribute to these persistence health care disparities. (25)

Another concern is that, despite formal political protections, the State “frequently fails to coordinate or consult with [indigenous] authorities regarding legislative, political and administrative decisions that affect them, both within and outside the boundaries of the comarcas.” (2) One important area of contention is construction of various hydroelectric dams in indigenous territories, which have profound effects on the local environment, and therefore local indigenous economy and culture.

Finally, with respect to family planning, the 2015 United Nations Population Fund Country Programme Document for Panama suggests that profound disparities persist. (25) In 2009, the unmet need for family planning among Ngöbe–Buglé women was 80%, which is double the national average (37.9%). (25) This likely contributes to the higher rates of fertility among the Ngöbe–Buglé, which is also almost double that of the national average (4.46 children per household versus 2.46 nationally). Further study to identify additional drivers of this disparity is warranted. (25)

The International Response to Indigenous Disparities in Panama

After several publications brought the Panamanian indigenous crisis to the forefront (including a 2010 report to the United Nations Committee on the Elimination of Racial Discrimination, "Panama is in Breach of its Obligations to Indigenous Peoples under the Convention on the Elimination of All Forms of Racial Discrimination," ) (35, 40-51), several national and international efforts have been made to address these
disparities. In 1991, the World Bank sponsored a program to provide rice-and-bean lunches every school day, funded by a social emergency fund. The State subsequently supplemented this effort with the Snack Program and Long School Days Program. It is unclear to what extent child malnutrition has improved as a result of these efforts. One complication may be that the average Ngöbe-Buglé child only stays in school for three years; at any given time only 11.2% of eligible children were enrolled in primary school in the comarca. This poor rate of attendance limits the reach of school-based nutrition programs.

The Ngöbe–Buglé

The Ngöbe-Buglé (alternate spelling: Ngäbe-Buglé) constitute the predominant indigenous population in Panama. They are often collectively referred to as the Guaymí. As the name implies, this group is made up of two populations, the Ngöbe and the Buglé. The two groups are distinct in many regards, including language; traditionally the Ngöbe speak Ngäbere, while the smaller group, the Buglé, speak Buglére. The two languages are related to each other (members of the Chibchan language family), however are entirely distinct from Spanish. Although the majority of Ngöbe–Buglé also speak Spanish, there remains a significant number of people who only speak their respective indigenous language.

Another source of heterogeneity among the Ngöbe-Buglé is religion. Although the most common religion in the comarca is Christianity, the denominations and practices vary. In addition, several less common religions are also observed by various communities, including Mama Tata, in which followers worship a Che Guevara-like figure, colloquially referred to as the “Motorcycle Jesus.”
Although commerce varies greatly among indigenous communities, the Ngöbe–Buglé are generally agriculturally-based, with major cash crops including cacao, coffee, beans and corn.(56) With the Panamanian rainy season lasting roughly from mid-March to mid-December, the local communities are often seasonally driven with respect to harvest, trade, commerce, education and even accessibility of medical care. In his dissertation, *Feeding the Mouth of the Bull*, Dr. Muller provides a detailed description of the Guaymí as foragers, and outlines how this intricate relationship with their environment makes the local communities both more vulnerable to environmental changes, and stands as a significant barrier to the communities to engage in more profitable enterprises.(57, 58)

In 1997, the Ngöbe–Buglé were given ownership of the 6,968 km\(^2\) Ngöbe–Buglé *comarca*, which spans the provinces of Bocas del Toro, Chiriquí and Veraguas (all on the Eastern coast). This was the 5\(^{th}\) and final of the *comarcas* granted to Panama’s indigenous people. Approximately half of the Ngöbe–Buglé population resides within the Ngöbe–Buglé *comarca*, with a significant number of people alternatively residing in the neighboring province of Bocas del Toro. Bocas del Toro is curiously comprised of both geographically accessible and highly inaccessible regions, including dense jungle and remote Caribbean islands. This topographic heterogeneity is also a significant driver of the diversity between the various Ngöbe–Buglé communities. For example, some jungle communities at high altitudes are reliant on local agriculture and cash crops, versus communities established on small remote islands that are entirely reliant on fishing.

Curiously, Bocas del Toro, (and specifically the capital city Bocas Town on the island of Colon) is the second largest tourist destination in the country. This creates a stark dichotomy by which communities less than 1 mile away from 5 star hotels often are without basic infrastructure, including access to clean water, electricity, sanitation and health care resources. Also, in spite of the strong influence of tourism, the region as a whole has among the lowest health metrics in Panama, including within the *comarca*. For example, in
2005 Bocas del Toro had the highest rates of infant mortality and child mortality in Panama (37.1 and 5.6 per 1,000 live births respectively, as compared to 15.4 and 1.3 nationally).(5) Furthermore, these disparities make it even more difficult to accurately ascertain the true health status of local indigenous people from aggregated regional census data.

**Floating Doctors**

In response to the significant health care disparities of the Ngöbe–Buglé, in 2011 the US-based NGO, Floating Doctors, began offering free primary care to select indigenous communities in the Ngöbe-Buglé comarca and Bocas del Toro. The group was originally born from a small-scale humanitarian response to the Haiti Earthquake, in which a small number of providers brought supplies and services via a small, privately owned ship. After the initial phases of the Haiti disaster, this ship-based medical relief model opened interesting opportunities for serving hard-to-reach communities, and has since evolved into a primary care/public health enterprise that specializes in overcoming geographical barriers. The organization operates year-round, and serves approximately 30 communities.(59) It is difficult to estimate what proportion of the overall Ngöbe–Buglé communities this constitutes, particularly as a defining feature of the Ngöbe–Buglé culture is to form family centered and pseudo autonomous mini communities. Nonetheless, given the over 3,000 annual clinical encounters within an overall population of 284,970 Ngöbe–Buglé (260,058 Ngöbe and 24,912 Buglé), it is possible that this constitutes roughly 10% of the Ngöbe–Buglé communities in general, and 20% of the communities in the region of Bocas del Toro. Clinics vary in duration from one day to one week, depending on the necessary travel time and needs of the community. Clinical resources are garnered from both the private and public sectors, including contributions from the *Ministero de Salud de la Republica de Panama* (MINSA). In addition, the local communities support the mobile clinics by providing such services as set-up, cooking and cleaning; other community assistance is
purchased by Floating Doctors. The group currently reports over 3000 annual patient encounters in and around the island archipelago of Bocas del Toro.(59, 60)

There is a wide diversity between clinical sites. Mirroring the inherent heterogeneity of Ngöbe-Buglé communities, some are located on remote islands, while others are deep within the cloud forests. Floating Doctors does not serve indigenous people in the capital city Bocas Town, due to regulations by MINSA put in place to avoid overlapping services, and to increase the impact of this finite humanitarian resource. Communities not only vary with respect to culture and religion, but also importantly in proximity to nonindigenous infrastructure, including modern hospitals. The clinical sites have largely been selected based on a combination of: community request, need, and logistic considerations of the organization. Common services rendered at respective clinics include: physical exams, treatment of minor and moderate illnesses, health maintenance, community public health intervention, patient and group education, triage of high risk illnesses, and when necessary, transport to nearby hospitals. Based on the availability of volunteers, the organization also offers certain specialty services on a rotating basis, including dental care. Furthermore, at any given time, practitioners have a range of specialties. For example, during this study, the following specialty skillsets were represented: emergency medicine, infectious disease, pulmonology, OB/GYN, and Physical Medicine and Rehabilitation. The clinics are also supported by auxiliary staff, including medical and premedical students from various national and international institutions.

Unique features of the organization include: long-term commitment to the community, on-going clinical data collection, focus on community and patient education, use of novel therapies and tools including ultrasound, and significant local engagement to promote sustainability and community buy-in. Other NGO’s working in the Bocas del Toro region include the Red Cross Panama (primarily in the capital city of bocas town) and the Peace Corps (in the comarcas).
Significance

Despite efforts by the Panamanian government and certain humanitarian organizations such as Floating Doctors, the UN, USAID, APLA-FA, Minority Rights to name a few, profound disparities persist for the indigenous Ngöbe–Buglé. Among these is a tremendous lack of data with respect to the evolving health and human rights needs of the community (apart from the relatively narrow scope of clinical data collected by Floating Doctors with respect to their patient population). The Ngöbe–Buglé are a poignant reminder that, without meticulous monitoring of specific subpopulations, aggregated metrics most relevant to human rights do not reflect the actual situation of those most in need; protection of the Ngöbe–Buglé and other indigenous population in Latin America must start with accurate reporting. As a mixed study, we hoped to provide both objective and subjective data with respect to these hard-to-reach people, in order to empower and reinvigorate efforts to support indigenous health and human rights.

After increased data collection, family planning may prove central to improving the overall health and human rights of the Ngöbe-Buglé. Therefore, understanding community preferences, attitudes and needs is critical to future humanitarian interventions. Through this data, we aim to elucidate the interaction between need and culture, in order to provide a road map to design an efficacious and culturally sensitive family planning campaign for this vulnerable population. Moreover, our hope is that these findings are generalizable to others among the 40 million indigenous people in Latin America, and at the same time made reachable via the intrepid and longitudinal model of Floating Doctors. In summary, we aim to understand the need and barriers to access, so that we may ultimately help guide more innovative, culturally sensitive, and pragmatic solutions to overcome these innumerable barriers to utilization of family planning. In this was, we aim to serve the Ngöbe–Buglé specifically, as well as to help further the family planning agenda for indigenous people in Latin America in general.
**Methodology**

We employed a mixed methods approach which included quantitative surveys of Ngöbe–Buglé Floating Doctors patients, as well as key informant interviews. Data was collected in the regions of Bocas de Toro and the Ngöbe-Buglé comarca in Spanish by two non-native Spanish speakers (ML and AJ) (See Figure 1). Participation in either component of this research (quantitative versus qualitative) did not preclude participation in the other (See Figure 2). In all cases, data collection instruments were approved, and free and informed oral consent was obtained in accordance with the Harvard Medical School IRB and the *Ministero de Salud de la Republica de Panama* (MINSA). No additional compensation was given for participation, and participation had no bearing on participants’ past or future access to Floating Doctors services.

**Patient Surveys (Quantitative Data)**

**Sample Population**

A clinical sample of Ngöbe–Buglé Floating Doctors patients was used as this offered a high density of almost exclusively Ngöbe–Buglé people, including those most likely to benefit from a future Floating Doctors family planning program. 30% (9/30) of all Floating Doctors sites were visited, based on the pre-arranged clinical schedule.

Each community was organized around key infrastructure, including a school or similar structure that was used as the temporary clinical space. Additionally, because the Floating Doctors sustainable clinical model requires significant local involvement, a large proportion of each Ngöbe–Buglé community was directly or indirectly involved with the clinic in order to perform tasks such as: fishing and cooking for health care
workers, constructing temporary clinical structures, recruiting patients, accompanying vulnerable patients to the clinic, among other tasks. Thus the clinic centralized a large proportion of each respective community. All sites had been previously visited by Floating Doctors, and had actively solicited return of the clinic, and included communities from both mountain (accessible by vehicle or foot) and costal (accessible by boat) areas.

Specific patient survey inclusion criteria were: Ngöbe-Buglé (Ngöbe-Buglé who travel to the clinic from outer communities were not excluded), Spanish or English speaking, over the age of 18, and able to complete the survey. Participants were invited irrespective of sex, fecundity and fertility. All members of a single household that met inclusion criteria were eligible to participate, and responses were treated separately. Sample size was limited by Floating Doctor’s duration of time at each clinical site, and specific sites were selected by their predetermined clinical schedule. Surveys were collected June 16 - Aug 16, 2014.

Patient Survey Instrument

The data collection instrument used was a short survey. Questions were adapted from sections 3 and 7 of the Demographics and Health Statistics (DHS) Spanish Individual Questionnaire, which has been validated extensively throughout Latin America, including many multiple resource poor settings. Surveys included questions such as: “How many children do you have?” “How many children would you like to have?” “Which methods of family planning have you heard of before?” “Would you like to become pregnant?” “Are you currently using a form of contraception?” “If not, why not?” (See Appendix 1 for the complete Patient Survey Instrument). The abbreviated survey of demographic and health information was approved by the Harvard Medical School IRB and MINSA. Small modifications of the language were made to increase applicability and clarity for the target population. Changes were based on qualitative feedback generated by an informal focus group comprised of both men and women over 18 years of age at the first
pilot clinical site. Changes were minor and included word choice and small revisions of content. (For example, the original instrument assesses the efficacy of newspapers and magazines as sources of family planning information. These media were unavailable to our study communities, and were thus omitted from the survey).

Data Collection
Efforts were made to interview each participant in private and separate from other household members. Surveys were conducted primarily one-on one-with one or two non-native Spanish speakers (ML and AJ). One male and one female interviewer were present at all sites, and available in instances in which interviewees expressed a preference for interviewer gender.

Quantitative data could not be collected from the 9th clinical site, as community members were unanimously unwilling to consent to study participation.

Data Analysis
There were two primary outcomes of interest: i) preference for family planning and ii) unmet need. Preference was queried by asking participants: if all other barriers were removed (including cost and availability), which method of contraception would they choose to use. For the purposes of analysis, the DHS definition of unmet need was used: 1) sexually active; 2) for women, premenopausal (and over 18 years of age) and no previous sterilization procedure; 3) not wanting to have more children; and 4) not currently using a modern method of contraception. Secondary outcomes included factors contributing to unmet need, and were organized into: 1) geographic, 2) economic, 3) educational, and 4) cultural factors.
Quantitative data were analyzed using R 3.1.1 statistical software. The Fisher Exact test was used for small subgroup analysis of categorical responses from female versus male respondents, and mountainous versus coastal regions. The Wilcoxon Signed-rank test was used to compare continuous, non-normally distributed variables, such as preferred number of children.

Key Informant Interviews (Qualitative Data)

Sample Population

Key informants were identified using a snowball method.(61, 62) Those individuals with known leadership roles in the community, the Floating Doctors clinic, or other facets of local health care, were invited to participate. Participants were then asked to help identify other individuals with applicable insight into the local community. Using this strategy, key informant interviews were solicited from Floating Doctors leadership, local officials, Red Cross workers, and local Peace Corps workers. Other key informants identified were local matriarchs and patriarchs, religious leaders, and heads of influential local families at each of the clinical sites. Parallel to the quantitative data collection, inclusion criteria were defined as: able to speak Spanish or English, over 18 years of age, and able to complete the survey. Participants were not excluded based on sex, fecundity or fertility, as in the patient surveys.

The informant interviews were collected from the 9th clinical site with their informed consent irrespective of the non-participation of the 9th clinical community site.

Key Informant Interview Guide

The informant interview guide included 20 open-ended questions derived from important indicators of unmet need identified by the DHS(63), with a particular emphasis on 1) degree of unmet need 2) male
attitudes towards family planning and 3) past and future impact of family planning on the local community. Questions were based upon validated indicators, though these specific questions were newly created for this purpose. To the best of our knowledge no such questions have been previously employed in the study of the Ngöbe–Buglé people of Bocas del Toro. The survey instrument was translated from English to Spanish by a native Spanish speaker, verified by a native speaker, and approved by the Harvard Medical School IRB and MINSA. As with the patient survey, the interview instrument was presented to an informal focus group comprised of both men and women over the age of 18 at the first clinical site, who suggested no further modifications. The surveys were offered in either Spanish or English, based on the preference of the participant.

Interview Procedure

Efforts were made to interview each participant in private, and separate from other family members. Interviews were conducted in the presence of 2 non-native Spanish speakers (ML and AJ). Interviews were primarily recorded and transcribed from audio files. These interviews were conducted in the interviewee’s language of preference (Spanish or English). Interviews in English were transcribed, and interviews in Spanish were transcribed and translated by ML, and reviewed by AJ for content. In approximately 25% (12/41) of encounters, either logistical constraints or participant preference prevented audio recording; in these cases, notes were taken by the 2 interviewers (ML and AJ) in the interviewee’s language of preferences. All efforts were made to capture direct quotes and content. As with recorded interviews, interviews in Spanish were transcribed to English by ML and reviewed by AJ for content. 3 participants with internet access were also allowed to complete surveys online as significant barriers prevented 1:1 survey participation. These interviews were received in English.

Data Analysis
All interviews were ultimately transcribed and/or translated into English for analysis. Interview data was analyzed for primary and secondary outcomes by two reviewers (ML and AJ). Qualitative data was organized into: 1) barriers to access, 2) cultural preferences, and 3) issues of human rights. Within each category, key themes emerged. Representative responses of each key theme were extracted. Any directly contrasting themes were also extracted and separately analyzed. Themes were considered for cohesion and consistency, and subgroup analysis was conducted of indigenous versus non-indigenous key informants.

**Results**

**Patient Surveys (Quantitative Data)**

A total of 70 Ngöbe–Buglé clinic attendees were surveyed. Of these, 49 were women and 21 men: 33 were from coastal regions and 37 from mountainous regions of Bocas del Toro. The average age was 30.3 (range 18-58).

1. Primary Outcomes:

   (1) 53% (33/62) of sexually active interviewees of childbearing age did not want more children and were not using any method of birth control, and thus met the DHS criteria for unmet need. The same proportion of women (24/45, 53%) and men (9/17, 53%) reported an unmet need. The remaining 8/70 desired pregnancy.

   (2) 68% (21/31) of respondents with an unmet need reported that they would like to use contraception in the future. 2 respondents with an unmet need did not want to use a form of modern contraception. (See Figure 3)

   (3) 35% (20/39) of those using contraception reported that they did not have access to their preferred method of contraception. (See Table 1) There was not a statistically significant difference in the number of
children desired by men and women (with women showing a slight preference for more children, see Table 2).

2. Health Literacy:
   (1) 67% (28/42) of women were unaware of the approximate days during their ovulatory cycle during which they could become pregnant; of the remaining 7 women, 2 had undergone permanent sterilization, and 5 were not queried due to clinical flow.
   (2) 90% (61/68) of respondents were aware of a modern method of birth control; 2 were not queried due to clinical flow. (See Table 1)

3. Cultural Barriers:
   (1) 100% of respondents reported that they approved of the use of contraception in their community. The average number of children desired by community members was 2.5, which is comparable to the national average (2.46 children), and nearly half what is currently observed in the comarca (4.46 children).(5)
   (2) None of the 70 respondents objected to an outside organization teaching family planning to community members. (See Table 1)
   (3) Of the 33 persons with an unmet need for family planning (sexually active, of childbearing age, not using contraception and did not want to become pregnant), only one subject stated that the reason for not using contraception was opposition from a partner. This preliminary data suggested few significant differences between attitudes and preferences of men versus women, nor coastal versus mountain communities.
Forty-one informants were interviewed. Of these, 22 were female and 19 male. All participants were over 18 years of age. Using a snowball method, 19 indigenous community leaders, 4 Floating Doctors leadership, 2 Red Cross workers, 3 local Peace Corps workers 7 local teachers, 2 health promoters, 1 curandero (local healer) and 2 parteras (midwives) were identified and interviewed. (See Table 2)

Representative quotes have been extracted from the data, and conflicting perspectives between community members and non-community members have been highlighted in Table 3.

The following key themes emerged:

1. Barriers to Access

The most significant barriers identified were access (incomplete and unreliable supply) and cost. In theory, the government funds 71.3% of the total demand for family planning, including intrauterine devices (IUDs), injectables and oral contraceptives. However, “there are still periods when supplies run out, particularly in hard to reach areas,” such as the comarca. Additionally, interviewees consistently indicated the cost of travel to the nearest, well-stocked health center as being a significant barrier to access. The issue of cost is particularly concerning; community members consistently reported being charged a fee at local health centers for condoms and oral contraception, despite national efforts to guarantee that these resources can be obtained for free at national health outposts. Additionally, we found that women were paying a range of prices for condoms (up to $1 each), injections ($3-8) and oral contraceptives ($2-8), at respective
community health centers. In our interviews, not a single interviewee indicated awareness that they were entitled to certain health services and family planning resources free of charge.

2. Cultural Preferences

Multiple forms of contraception and sex education were not only acceptable to 8/9 communities, but were avidly requested by patients.

None of the 41 respondents rejected the notion of an outsider providing sex education to children before the age of menarche. In fact, parents expressed relief at the idea of outsiders helping to share this information. Community members at all sites rejected the claim that family planning interferes with their culture or religion. Interestingly, the most adamant proponents of family planning were often grandparents, particularly those caring for large numbers of grandchildren. In contrast, non-indigenous respondents frequently viewed family planning as a potentially taboo topic, particularly when broached by foreigners.

A common theme among indigenous and nonindigenous interviewees was the Ngöbe–Buglé tradition of “learning together.” People generally suggested teaching family planning to large groups of people, irrespective of gender. This was suggested as a way to minimize stigma, and also to allow the opportunity to directly address specific community concerns. Interviewees specifically indicated the desire for information to be provided via charlas, or community talks, as well as videos; videos have recently become a popular means of disseminating health information, particularly since computers were first given by the Panamanian government to Ngöbe–Buglé children in 2008.

Community members consistently noted that men and women have similar priorities, and generally share the decision to use family planning. In contrast, non-community members also identified machismo, and
male preferences for larger family sizes, as significant barrier to the utilization of family planning. This was not echoed among indigenous key informants. Interestingly, several indigenous key informants reported that health workers “misunderstood” their reluctant to use condoms. There was a recurring concern that condoms were not efficacious because they “fell off during intercourse, maybe because they were the wrong size.” Nonindigenous key informants were not previously aware of this community concern.

3. Human Rights

Community key informants of both genders reported that young age of first conception, which often closely followed menarche, and large overall family size, were contributing to poverty and food insecurity. It was also noted that once a young woman became pregnant, she was often strongly discouraged from continuing or resuming her primary education.

Key informants cited several mechanisms by which indigenous communities have remained separate from the economic gains of greater Panama. For example, local key informants commonly noted that the market price of crucial cash crops such as cacao had significantly decreased due to increased international importation. Non-community members suggested that overpopulation, climate changes, and environmental destruction from development projects such as the Barro Blanco hydroelectric dam, have also decreased amount of high quality land available for farming. This in turn has contributed to local economic and nutritional instability. One indigenous key informant reported that the health disparities in the comarca are “a violation of human rights because [Panama] is not simply a resource poor country...there is actually enough money to make changes!”

Key informants also stated that in the past ten years, they have observed a significant increase in family size. One cause identified was the ongoing national childhood vaccination campaign; the decrease in infant
and child mortality, has also contributed to the increase in population, and resultant stress on local infrastructure. For example, one key informant explained that the population boom without a compensatory increase in number of teachers has forced the local schools to divide the school day, with younger children attending in the morning and older children attending in the afternoon. In other words, this has resulted in exactly half the education for all students as was previously offered.

The population increase was noted to have a deleterious effect on cultural preservation. “I feel like I am watching the Ngöbe–Buglé culture disappear before my eyes...there are just so many young people being born, they aren’t learning all the old traditions. It is just so damaging when such a high percentage of the population is so young,” reported one key informant. “If women had access to family planning and could delay pregnancy, they could go to the city and learn...Then they would have so much more economic power to advocate and defend their rights. That is how they would actually protect their culture, because the way it’s going, it’s being lost.” Non-indigenous respondent

An additional theme was inability to protect oneself from infection. Key informants identified at least one case of HIV in most communities, as well as concern for future spread. When queried for basic understanding of HIV, community respondents agreed that it could be acquired through sexual intercourse, was “in the blood,” and could be prevented by use of condoms. There was also a widely held belief among indigenous interviewees that the infection could be cured by use of local medicinal plants. Both indigenous and nonindigenous informants identified indigenous men, particularly those who work on other islands for supplemental income, as the greatest source of new infections within the respective communities.

4. Significant Outliers
At the 9th clinical site, indigenous community members were unwilling to participate in the quantitative patient survey. This particular community was also unique among the sites for its profound geographic isolation, such that it could only be reached via a day’s hike that included multiple river crossings. As such, it was significantly isolated from other Ngöbe–Buglé communities.

Key informants at the 9th clinical site reported that a local woman had “become infertile” due to “a form of contraception” she received at a distant clinic. Based on this shared community concern, local leaders had explicitly forbidden women from discussing contraception with health care workers, which resulted in the community’s unwillingness to participate in patient surveys.

**Discussion**

In 2000 it was first uncovered that Panama’s indigenous Ngöbe–Buglé have among the highest rates of fertility, youngest ages of first conception in Central America.\(^{(3)}\) It was also posited that this likely was contributing to among the highest rates of infant mortality and child malnutrition in Central America.\(^{(3)}\)

Our findings were largely consistent with previous studies by the World Bank and the Panamanian census in reporting a profound unmet need for family planning. To our knowledge, this is the first study to specifically identify lack of money and access as the most significant barriers to obtaining family planning among the Ngöbe–Buglé. Qualitative data suggested that young motherhood and large family size have substantial and negative effects on local health status, education and socioeconomic attainment.

There were also several unexpected insights. First, we did not find significant cultural preferences for larger family size, nor male-dominant decision-making, as was presumed by many non-indigenous key
informants. Furthermore, dialogue uncovered possible causes of these misconceptions. For example, several community members reported that poor local efficacy of condoms due to inappropriate sizing had created widespread mistrust of this method, which was later misconstrued by local health workers as a general bias against contraception. Another interesting theme was the challenge of unreliable access to contraception; this suggests that increasing access to long-term hormonal contraception, including Nexplanon®, could potentially increase access in isolated areas. The highly variable cost of contraception at various national clinical sites suggests further vulnerability of the local indigenous communities; on a national level, condoms, some intrauterine devices, and tubal ligation are guaranteed free of charge, and other forms of contraception are meant to be available without prescription. (1) To our knowledge, there is no precedent for a variable cost of contraception at national health outposts, and this raises the concern that financial resources are being unjustly taken from local communities in the sale of certain contraceptives, thereby adding a significant additional barrier to access.

Of note, the last clinical site did not consent to quantitative patient surveys. We feel that this provides important cautionary insight into the ever-tentative relationship between indigenous populations and outside intervention. Furthermore, it speaks to the imperative for sex education to support any future family planning projects. Additionally, we contend that this community reluctance, which may have stemmed from one complication, is also a reminder of the importance of durable infrastructure to quickly identify and address issues of health and safety related to family planning, both for the health of individuals and the community. Finally, this suggests a need for community meetings or ongoing focus groups to better understand and address previous experiences, concerns and misconceptions as they arise.

This study highlights the ever-widening gap between Panama and its indigenous people. Panama has the fastest growing economy in Central America. At the same time, prior to repossession of the Canal in 1999,
Panama was ranked one of the most financially unequal countries in the world. A similarly widening gap may be seen with respect to health; while public health metrics are improving and fertility decreasing in greater Panama, for the Ngöbe–Buglé the average life span is still 9 years less than the national average, and fertility 4.46 children per household which is nearly double the national average (2.46 children per household). Perhaps the most common theme that emerged among all key informants was that early age of fecundity is a significant and persistent barrier to socioeconomic attainment by decreasing overall educational attainment, which in turn leads to limitations in quantity and quality of employment. Furthermore, the financial obligations associated with high fertility remain a significant barrier to participation in politics and government.

We also found that the Ngöbe–Buglé population was experiencing relatively uncontrolled population growth, without significant increases in infrastructure or resources. This has led to a 50% decrease in the length of the school day for many indigenous children, a fact which is even more concerning given the already poor attendance of indigenous children. This significant decrease in formal education threatens to further disenfranchise indigenous children from the economic gains of Panama, by limiting ability to participate in the work force and compete for higher paying jobs. Furthermore, increasing population without increasing food resources portends disaster, particularly given prior reports by the World Bank that one half of children in indigenous areas suffer from malnutrition (with limited follow-up data collection and monitoring).

Looking forward, many key informants worried that “the worst was yet to come.” With the rapidly increasing tourist economy in Bocas del Toro, there is potential for rapid introduction of STIs including HIV, particularly given the region’s poor access to contraception (and specifically barrier methods), health care, and sex education.
There were several important limitations to this study. First, this data represents a relatively small sample size. Data were collected from 9 clinical sites (representing roughly 30% of all Floating Doctors clinics) based on the Floating Doctors schedule. By design, this provided information with respect to a self-select group of indigenous communities that welcome foreign medical intervention. Thus, results may not be generalizable throughout the comarca. As a case in point, the 9th clinical site proved to be a significant outlier in terms of openness to family planning. Next, data collection was limited to 8 weeks from June 16-August 16, 2014, and thus only captured perspectives of those individuals present in the respective communities during the rainy season. Due in part to the naturally skewed distribution of Floating Doctors patients, significantly more women were surveyed than men. A further limitation was that Spanish interviews were administered by non-native speakers. Although there was a significant degree of internal validation, this is a potential source of language errors, as well as cultural partiality. To minimize this source of error, interviews were conducted and content reviewed by two Spanish-speakers whenever possible. The overall consistency of themes among the sites also suggests acceptable internal validity. Another limitation is that surveys were not offered in the indigenous language, Ngäbere. Although no patients were excluded based on language (e.g. could not speak Spanish), conducting surveys in the non-indigenous language suggests additional potential errors of language. Finally, for the 12 key informant interviews audio transcripts could not be obtained. In these cases, 2 sets of notes were obtained by two interviewers and compared for content. However, this increases the risk that data was lost, or misinterpreted. Further research is warranted to survey a broader portion of the comarca, and ideally by native speakers.
Conclusion

Taken together, the quantitative and qualitative data indicated a large unmet need for family planning in this marginalized population. The most significant barriers to access included access and money, rather than community rejection of services, as was supposed by nonindigenous key informants. Furthermore, the qualitative data suggested that lack of family planning has a direct and deleterious impact on local education, socioeconomic stability, and basic health of the local communities.

Next steps should focus on improving access to family planning by reducing geographic and financial barriers (including inappropriate fees), building safe and sustainable infrastructure, providing reproductive health education, and protecting existing infrastructure by ensuring reliable delivery of resources. Furthermore, the data elucidated that these disparities seem to be growing irrespective of, or at times even because of, recent economic gains of the surrounding nation. This suggests that the health metrics captured by the 2000 Panamanian Census, which suggested that indigenous communities suffer from among the highest rates of fertility, infant mortality and child malnutrition in Central America, may be continuing on a downward trajectory.

A poignant example of rapid national development, Panama may serve as an important case study for the human rights of indigenous groups within rapidly developing countries. As middle-income countries enter the next chapter of economic and social development, minority populations are at tremendous risk of falling into the widening chasm of health disparity. Without meticulous monitoring of subpopulations, nationally aggregated human rights metrics may not reflect the actual situation of those most in need.

We contend that true protection of the Ngöbe–Buglé and other indigenous populations is best achieved through community empowerment, beginning with increased access to health and family planning services.
These efforts may enable indigenous people to reach their rightful seat at the table of national policy, and thus most accurately represent their own authentic needs and perspectives with respect to all relevant social issues. Therefore, family planning may mark a clear starting point by which to empower Ngöbe–Buglé families to reclaim political and economic equality.

**Study Impact and Follow-up**

Following the Needs Assessment of Family Planning, we composed an Executive Summary for quality improvement and advocacy use by Floating Doctors (ML, oversight by KW). Since that time, our recommendations have been put into action as follows:

1. *A more comprehensive family planning campaign should be launched in the areas in and around Bocas del Toro.*

Floating Doctors has expressed a commitment to provide educational and clinical resources to the communities that it serves. As a result of this data and advocacy work by Floating Doctors, additional partnerships have been established in order to effectively meet and sustain this commitment. These include myriad Panamanian and American health care professionals, returning staff and clinical faculty of Floating Doctors, and most importantly, significant collaboration from the local government including MINSA.

2. *Given the heterogeneity of indigenous preferences (for example, the mistrust of family planning at the 9th clinical site), Needs Assessments should be conducted in each community prior to program inception in order to best address local preferences and concerns. Furthermore, additional data should be collected to*
specifically assess the community’s knowledge and interest with respect to the proposed novel contraceptive, *Nexplanon®* (long-term hormonal contraceptive implanted into the upper arm).

In partnership with Floating Doctors, in the summer of 2016 a follow-up assessment was conducted by Carolina Vicens-Cardona (MD candidate University of Connecticut School of Medicine, native Spanish speaker) and Avery Novak (MD Candidate, University of Washington School of Medicine). The purpose of their study was to: 1) survey additional communities served by Floating Doctors, 2) specifically assess community misconceptions with respect to reproductive health to guide a future educational campaign, and 3) to gather specific quantitative and qualitative data with respect to the prospective use of *Nexplanon®*. Using a de novo instrument, they surveyed a convenience sample of 148 community members across 14 Ngöbe–Buglé communities serviced by Floating Doctors. Their study included women between the ages of 18 and 50 who had more than 2 children. Their data is as yet unpublished, however with permission of the authors, preliminary analysis of the data is congruent with the findings of this needs assessment: “Ngöbe–Buglé women desire to delay first birth, increase birth spacing, and reduce fertility rates. However, misconceptions about family planning and concerns about side effect are widespread and deter women from using family planning. Receiving accurate information about family planning from health care providers reduces distrust of family planning and increases use.”(65) Their findings with respect to *Nexplanon®* will be described in their forthcoming publication.

3. A parallel sex education campaign, which includes a discussion of STIs, alternative methods of contraception, and potential side effects should be launched. Learning materials should be offered in Spanish, and should be presented in both group and individual settings. Material may be introduced by Floating Doctors and reinforced by local community liaisons. Videos should be explored as a potential means of reinforcing information.
In the original Needs Assessment, we reported a community preference for “learning together” via educational talks open to both sexes and all ages. Since this recommendation, Floating Doctors has piloted several sex education modules (including applicable resources adapted from the WHO). Talks have focused on sexual health, STIs and contraceptives. Our hope is that forthcoming quantitative and qualitative data by Carolina Vicens-Cardona and Avery Novak will further guide design of targeted and culturally sensitive educational resources, including educational videos.

4. Multiple methods of contraception should be made available, reflecting the varied preferences of individuals and communities. Depo-Provera, oral contraceptives and condoms should be made available at all clinic sites. The rhythm method should be taught, in particular in order to engage community members that may reject modern methods of birth control due to religious or other local cultural preferences and biases. More information is needed to assess the acceptability, safety and efficacy of implantable hormonal methods such as Nexplanon®.

In order to increase the availability of multiple methods of contraception, donors were solicited via both Floating Doctors and myself (ML) using this Needs Assessment and the associated Executive Summary. Additional funding was received for condoms, oral contraceptives, and Depo-Provera through numerous public and private avenues. Furthermore, additional Floating Doctors resources have since been dedicated to this project. As a result of these accumulative investments, Floating Doctors has been able to offer condoms, oral contraceptives and Depo-Provera to all communities visited since 2014. To date, this includes a patient population of over 11,000 individuals (up from 3,000 at the inception of the original Needs Assessment).
Where there is precedence for use of condoms, oral contraceptives and Depo-Provera in the comarca, Nexplanon® is a novel contraceptive in these communities. As discussed above, information with respect to the baseline knowledge and acceptability of Nexplanon® was gathered by Carolina Vicens-Cardona and Avery Novak; their data is forthcoming. Based on their preliminary findings and this Needs Assessment, Floating Doctors is preparing to pilot the use of Nexplanon® in one community that meets certain minimum safety criteria in order to demonstrate efficacy, acceptability and safety. In preparation for this pilot study, this report was used as a tool to solicit additional funding and supplies from both American and Panamanian philanthropic donors. As a result of a concerted effort by numerous individuals including Floating Doctors, their clinical partners, and myself, 150 units were secured through UNFPA, in partnership with MINSA. Other associated supplies that were subsequently secured and delivered to Floating Doctors include: betadine, syringes with needles, 1% lidocaine, band aids, packets of topical antibiotics, 4x4 gauze for pressure dressing, and self-adherent wraps. US licensed OB/GYNs with specific certification and training in insertion of Nexplanon® have also committed to the project.

5. *Floating Doctors is an effective potential health care platform by which to reach these isolated communities. The organization has demonstrated: 1) the ability to overcome significant barriers to access 2) a long-term commitment to the health of local communities and 3) acceptable on-going quality and safety monitoring and 3) is well received by the communities it serves. Expansion of the Floating Doctors health care platform, including monthly site visits, is recommended in order to ensure best care to all patients. Each community must have a way to contact a care provider, especially in communities where more invasive modern methods are offered, such as IUDs and Nexplanon®. Furthermore, there must be an evolving mechanism by which to educate volunteers with respect to the needs, culture and preferences of the local communities.*
Since this Needs Assessment, Floating Doctors has increased their platform, and thus the quantity and quality of services that can be safely and effectively delivered. The number of annual patient encounters has increased from 3,000 at the time of the original study, to now over 11,000 per year. The organization has also built a new volunteer headquarters, expanded the number of communities reached, expanded their investment in research and public health, and increased their total number of man hours in the respective clinics. In addition, Floating Doctors is currently piloting the use of continuously staffed remote outposts in several communities in order to aid with continuous safety monitoring. This growth clearly contributes to the organization’s ability to safely and effectively deliver family planning services. All the while, new educational video resources have been created and updated to educate new volunteers with respect to the needs and preferences of the local communities.

6. *Additional monitoring with respect to patient safety, continued access to contraceptive and clinical services, and prevention of STIs, is critical. Engagement from all relevant stakeholders, including female and male community members, elected and self-identified community leaders, local Peace Corps workers, Red Cross workers, local healthcare workers and relevant governmental officials, should be sought.*

Floating Doctors continues to collect patient data for quality improvement and patient safety. Furthermore, Floating Doctors plans to conduct a follow-up study this spring (2017) to specifically assess the impact of increased access to contraceptives on the local communities. Finally, the planned Nexplanon® pilot study includes significant ongoing quality and safety monitoring.
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Table 1. Quantitative Patient Survey Data

Demographics

<table>
<thead>
<tr>
<th>Region</th>
<th>Women</th>
<th>Men</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal</td>
<td>47%</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>30.9 (range 18-58)</td>
</tr>
<tr>
<td>Mountain</td>
<td>53%</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>29.7 (range 19-55)</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>21</td>
<td>30.3 (range 18-58, STDV 11.5)</td>
</tr>
</tbody>
</table>

Access to Family Planning

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Child-bearing age and sexually active</td>
<td>62</td>
</tr>
<tr>
<td>Do not want more children</td>
<td>74% (45/62)</td>
</tr>
<tr>
<td>Unmet Need*: Not using Any Method of Birth Control</td>
<td>53% (33/62)</td>
</tr>
<tr>
<td>Female 53% (24/45)*</td>
<td></td>
</tr>
<tr>
<td>Male 53% (9/17)</td>
<td></td>
</tr>
<tr>
<td>What is the most significant barrier to using contraception?</td>
<td></td>
</tr>
<tr>
<td>Opposition from partner</td>
<td>1% (1)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lack of familiarity/knowledge | 8% (5)
Lack of access | 27% (19)
Lack of money | 24% (17)

*DHS definition of unmet need. Using the Fisher exact test, there was not statistically significant difference when unmet need was compared across gender (p=.93) or region (p=.89)

Health Literacy

<table>
<thead>
<tr>
<th>Awareness of any method</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of any method</td>
<td>93% (65/70)</td>
</tr>
<tr>
<td>Awareness of any modern method</td>
<td>90% (61/68)</td>
</tr>
<tr>
<td>Have ever used a modern method</td>
<td>66% (46/70)</td>
</tr>
<tr>
<td>Do you know what days of your cycle you can become pregnant?</td>
<td>33% (14/42*)</td>
</tr>
<tr>
<td>Do you know about any side effects associated with birth control?</td>
<td>4% (3/68)</td>
</tr>
<tr>
<td>At your last health consult at the Health Center, did a provider discuss family planning?</td>
<td>34% (23/68)</td>
</tr>
</tbody>
</table>

*Cultural Preference

<table>
<thead>
<tr>
<th>Do you believe that the decision to use family planning is the woman’s decision, the man’s decision, or a joint decision between both partners?</th>
<th>Both partners</th>
<th>Woman</th>
<th>Man</th>
</tr>
</thead>
<tbody>
<tr>
<td>81% (51)</td>
<td>17% (11)</td>
<td>2% (1)</td>
<td></td>
</tr>
</tbody>
</table>

*Using the Fisher Exact Test, women were more likely to state that use of family planning
is the woman’s decision (p=.02).

<table>
<thead>
<tr>
<th>For you, what do you believe is the ideal number of children to have?</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5* (range 1-11)</td>
<td></td>
</tr>
</tbody>
</table>

| How many would you prefer to be girls?                          | 1.6 (range 0-5.5) |
| How many would you prefer to be boys?                          | 1.1 (range 0-5.5) |

| How many children do you have?                                  | 2 (range 0-11)** |

*When ranges were given, the average was recorded (ie “2-3”=2.5)

** As the average age of respondents was 29.5, this number likely reflects less than half of the total number of children of postmenopausal families. This estimate is consistent with the 2010 census data, which reported 4.46 children per indigenous household.

*** Using the Wilcoxon-signed rank test, no significant preference for girls versus boy was found (p=.27).

---

Preference for family planning Among Persons with an Unmet Need

<table>
<thead>
<tr>
<th>Preferred Method</th>
<th>No Preference</th>
<th>Condom</th>
<th>Injection (Depo-pravera)</th>
<th>IUD</th>
<th>pill</th>
<th>rhythm</th>
<th>ring</th>
<th>sterilization (male or female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>14</td>
<td>2</td>
<td>23</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>14 (23%)</td>
<td>10 (16%)</td>
<td>27 (44%)</td>
<td>1 (2%)</td>
<td>5 (8%)</td>
<td>2 (3%)</td>
<td>1 (2%)</td>
<td>2 (3%)</td>
</tr>
</tbody>
</table>
Table 2. Key Informant Interviews: Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>22</td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
</tr>
<tr>
<td>Indigenous*</td>
<td></td>
</tr>
<tr>
<td>Community leaders: 19*</td>
<td></td>
</tr>
<tr>
<td>Curandero (local healer): 1*</td>
<td></td>
</tr>
<tr>
<td>Parteras (midwives): 2 *</td>
<td></td>
</tr>
<tr>
<td>Health promoters: 2</td>
<td></td>
</tr>
<tr>
<td>Red Cross workers: 2</td>
<td></td>
</tr>
<tr>
<td>Community Peace Corps workers: 3</td>
<td></td>
</tr>
<tr>
<td>Local teachers (non indigenous): 7</td>
<td></td>
</tr>
<tr>
<td>Floating Doctors leadership: 4</td>
<td></td>
</tr>
</tbody>
</table>

*also participated in patient survey

Table 3. Qualitative Patient Survey Data: Key Themes

<table>
<thead>
<tr>
<th>Barriers to Access</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Cost:</strong> “People know what family planning is but they don't use it because it is too expensive.” community member</td>
</tr>
<tr>
<td><strong>2. Geography:</strong> “The Health Center is just so far away, and they often run out of resources. They only have injections every 2 or 3 months.” community member</td>
</tr>
<tr>
<td><strong>3. Education:</strong> “Doctors are best to talk about [family planning] because they are specialists. Professors are not good because they are not experts. Sometimes they do not know the correct/medical words to use and cannot be formal enough. It is rare for parents to talk to their children about family planning.” Community Member</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cultural Preferences</th>
</tr>
</thead>
</table>
1. Family size: “For me, I had 9 children, and they have 13 grandchildren so far, and I have to help raise and feed all of them. For myself, I would have preferred to have 4 children. Also, when women have too many children too young, more die.” community member

2. Gender Conflict: “Men agree that they don't want too many children.” female community member

“There is the cultural tendency to have "pena" or embarrassment [about needing to have fewer children] but I think most would rather be embarrassed than have another child under economic stress.” Peace Corps

3. Culturally Appropriate Education: “Information should be provided in the schools, by parents and by floating doctors. It is easy for foreigners to talk about this because they understand more.” Community member

“Age-appropriate information can be given at any age. Even at a very very young age it can be instilled in children eligir tu vida (choose your life).” Peace Corps

“It is important to talk to the entire culture, together. Otherwise if only a handful of people decide to change their living practices they will be looked upon as "different" by the rest of the community ...This would defeat the purpose of the work of the health care providers in bringing positive change to a community.” Floating Doctors

Human Rights

1. Family size and health: “Family planning is the biggest problem of human rights. The land is good and the people work, but they still can't feed everyone...too many children equals suffering.” Community member

“When you see children pregnant at 11 years old, it's heartbreaking. It affects everything: status in the
community, food, health...There is no aspect of health that is not affected by family planning.” Floating Doctors worker

“[with increased family planning] the community would be better because the children wouldn't suffer because there is not enough food, or because they are sick.” Community member

2. Contraception and sexual health: “People here are very worried about gonorrhea and HIV, though there is no HIV... But sometimes the men don't think when they are in the moment.” Community member

3. Family planning and cultural preservation: “I feel like I am watching the Ngobe culture disappear before my eyes...There are just so many young people being born, they aren’t learning all the old traditions. It is just so damaging when such a high percentage of the population is so young.” Floating Doctors worker

“I can try to explain that they should demand more of their health, but to have someone actually see that things could be better is amazing. Furthermore, if women had access to family planning and could delay pregnancy, they could go to the city and learn. I can just imagine that then there would be women who would comeback with business degrees, and understanding of law. Then they would have so much more economic power to advocate and defend their rights. That is how they would actually protect their culture, because the way it’s going, it’s being lost.” Floating Doctors worker
Figure 1. Satellite Position Map of 9 Clinics Visited in this Study

Figure 2. Quantitative and Qualitative Samples and Overlap

Quantitative Patient Surveys
Indigenous Patients 70

Qualitative Key Informant Interviews
Peace Corps 3
Floating Doctors Staff 4
Red Cross 2

Community Leaders 22
Midwives 2
Local Healer 1
Figure 3. Patient Surveys: Unmet Need for Family Planning

Reproductive age + sexually active
N=62

Wants more children or No opinion
N=17

Did not want more children
N=45

Using a modern method of contraception
N=12

Not using a modern method of contraception
N=33

Unmet Need

Would not use a modern method of contraception, if accessible
N=16

Women
N=8

Men
N=9

Would prefer to use a modern method if accessible
N=17
**Appendix 1. Quantitative Patient Survey Instrument**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comunidad</td>
</tr>
<tr>
<td>2</td>
<td>Mujer/Hombre</td>
</tr>
<tr>
<td>3</td>
<td>Que métodos conoce Ud. o de cuales ha oído hablar?</td>
</tr>
<tr>
<td>4</td>
<td>Esterilización Femenina</td>
</tr>
<tr>
<td></td>
<td>Algunas mujeres pueden someterse a una operación para evitar tener mas hijos.</td>
</tr>
<tr>
<td>5</td>
<td>Esterilización Masculina</td>
</tr>
<tr>
<td></td>
<td>Algunos hombres pueden someterse a una operación para evitar tener mas hijos.</td>
</tr>
<tr>
<td>6</td>
<td>Píldora</td>
</tr>
<tr>
<td></td>
<td>Las mujeres pueden tomar unas pastillas todos los días para evitar tener mas hijos.</td>
</tr>
<tr>
<td>7</td>
<td>DIU</td>
</tr>
<tr>
<td></td>
<td>El medico puedo colocar dentro de la matriz de la mujer un anillo.</td>
</tr>
<tr>
<td>8</td>
<td>Inyección</td>
</tr>
<tr>
<td></td>
<td>Algunas mujeres se hacen aplicar una inyección cada mes o cada 3 meses para evitar quedar embarazadas.</td>
</tr>
<tr>
<td>9</td>
<td>Implantes</td>
</tr>
<tr>
<td></td>
<td>Las mujeres pueden mandarse colocar por un doctor o enfermera, tres capsulas o seis capsulas en la parte alta de su brazo las cuales pueden prevenir el embarazo por cinco anos.</td>
</tr>
<tr>
<td>10</td>
<td>Preservativo o Condón</td>
</tr>
<tr>
<td></td>
<td>Hombres pueden usarlo durante los relaciones sexuales para evitar que la mujer quede embarazada.</td>
</tr>
<tr>
<td>11</td>
<td>Espuma, Jalea, Óvulos (Métodos Vaginales)</td>
</tr>
<tr>
<td></td>
<td>Las mujeres pueden colocar una espuma, jalea ovulo o crema dentro de ellas antes de la relación.</td>
</tr>
<tr>
<td>12</td>
<td>Método de Amenorrea por lactancia</td>
</tr>
<tr>
<td></td>
<td>Después de un nacimiento, una mujer estaría protegida de quedar embarazada mientras este lactando frecuentemente hasta que le regresa la menstruación.</td>
</tr>
<tr>
<td>13</td>
<td>Abstinencia periódica, ritmo, calendario</td>
</tr>
<tr>
<td></td>
<td>Las parejas pueden evitar relaciones sexuales ciertos días del mes en los cuales la mujer tiene mas probabilidad de quedar embarazada.</td>
</tr>
<tr>
<td>14</td>
<td>Retiro</td>
</tr>
<tr>
<td></td>
<td>Los hombros pueden ser cuidadosos y retirarse antes de terminar, desarrollarse o eyacular por fuera de la vagina de la mujer.</td>
</tr>
<tr>
<td>15</td>
<td>Anticoncepción de emergencia</td>
</tr>
<tr>
<td></td>
<td>Las mujeres pueden tomar píldoras anticonceptivas hasta 72 horas después de haber tenido una relación sexual o mandarse colocar un DIU hasta 5 días después para evitar quedar embarazada.</td>
</tr>
<tr>
<td>16</td>
<td>Otros métodos</td>
</tr>
<tr>
<td>17</td>
<td>¿Cuántos hijos tenia Ud. en ese momento?</td>
</tr>
<tr>
<td>18</td>
<td>¿Embarazada?</td>
</tr>
<tr>
<td>19</td>
<td>¿Alguna vez, a usado Ud. alguna manera de demorar o evitar un embarazo?</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>20</td>
<td>¿Estan usando un metodo de PF?</td>
</tr>
<tr>
<td>21</td>
<td>¿Que metodo están usando ustedes?</td>
</tr>
<tr>
<td>23</td>
<td>¿Su esposo/companero sabe que Ud. esta usando un metodo de planificacion familiar?</td>
</tr>
<tr>
<td>24</td>
<td>No: ¿Cual es la principal razn por que Ud. no esta usando un metodo anticonceptivo para evitar un embarazo?</td>
</tr>
<tr>
<td>25</td>
<td>Oposicion a usar</td>
</tr>
<tr>
<td>26</td>
<td>Falta de conocimiento</td>
</tr>
<tr>
<td>27</td>
<td>Falta de acceso</td>
</tr>
<tr>
<td>28</td>
<td>Falta de dinero</td>
</tr>
<tr>
<td>29</td>
<td>No Sabe</td>
</tr>
<tr>
<td>30</td>
<td>Otra</td>
</tr>
<tr>
<td>31</td>
<td>¿La ultima vez que obtuvo esta metodo, fue gratis?</td>
</tr>
<tr>
<td>32</td>
<td>¿Cuanto cuesta?</td>
</tr>
<tr>
<td>34</td>
<td>¿En el momento de empezar a usar el metodo, un medico le habl acerca de otras metodos de planificacion familiar que Ud. Podia usar?</td>
</tr>
<tr>
<td>35</td>
<td>¿Sabe de efectos secundarios o complicaciones que Ud. podria tener con su metodo?</td>
</tr>
<tr>
<td>36</td>
<td>¿Donde puede obtener metodos de planificacion familiar?</td>
</tr>
<tr>
<td>37</td>
<td>Hospital</td>
</tr>
<tr>
<td>38</td>
<td>Farmacia</td>
</tr>
<tr>
<td>39</td>
<td>Supermercado/tienda</td>
</tr>
<tr>
<td>40</td>
<td>Centro de Salud</td>
</tr>
<tr>
<td>41</td>
<td>No Sabe</td>
</tr>
<tr>
<td>42</td>
<td>Otra</td>
</tr>
<tr>
<td>48</td>
<td>¿Le gustaria tener un hijo o preferiria no tener ningn mas hijos?</td>
</tr>
<tr>
<td>49</td>
<td>*¿Cuanto tiempo le gustaría esperar desde ahora antes del nacimiento de otro hijo?</td>
</tr>
<tr>
<td>50</td>
<td>¿Esta usando metodo anticonceptivo?</td>
</tr>
<tr>
<td>51</td>
<td>*Ud. me dijo que no quiere tener otro hijo pronto; sin embargo usted no esta usando ningun metodo para no quedar embarazadas. ¿Ud. podria decir por que no esta usando un metodo?</td>
</tr>
<tr>
<td>52</td>
<td>*¿Es posible que en el futuro usara algun metodo anticonceptivo para demorar el embarazo o evitar quedar embarazada?</td>
</tr>
<tr>
<td>53</td>
<td>¿Que metodo preferiria usar?</td>
</tr>
<tr>
<td>54</td>
<td>¿Por qué?</td>
</tr>
<tr>
<td>55</td>
<td>¿Preferiria usar un metodo que es privada de su compañero?</td>
</tr>
<tr>
<td>56</td>
<td>En los ultimos 12 mese Ud. ¿ha oído hablar acerca de la planificacion familiar?</td>
</tr>
<tr>
<td>57</td>
<td>La hospital</td>
</tr>
<tr>
<td>58</td>
<td>Doctores Flotantes</td>
</tr>
<tr>
<td>59</td>
<td>el la radio</td>
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<td>60</td>
<td>en la tele</td>
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<td>61</td>
<td>en las revistas</td>
</tr>
<tr>
<td>62</td>
<td>en los periódicos</td>
</tr>
<tr>
<td>63</td>
<td>en el centro de salud</td>
</tr>
<tr>
<td></td>
<td>¿El decisión para usar PF es un decisión de la mujer, del hombre, o para una familia juntos?</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>65</td>
<td>Ud. piensa que se esposo/compañero aprueba o desaprueba el que las parejas usen un método para evitar los embarazos?</td>
</tr>
<tr>
<td>66</td>
<td>¿Ud. piensa que su esposo/compañero desea el mismo número de hijos que Ud?</td>
</tr>
<tr>
<td>67</td>
<td>Mismo</td>
</tr>
<tr>
<td>68</td>
<td>Más</td>
</tr>
<tr>
<td>69</td>
<td>Menos</td>
</tr>
<tr>
<td>70</td>
<td>No sabe</td>
</tr>
<tr>
<td>71</td>
<td>Por que</td>
</tr>
<tr>
<td>72</td>
<td>¿Cuántos hijos es el perfecto número para tener en total?</td>
</tr>
<tr>
<td>73</td>
<td>* ¿Cuántas hijas y cuánto hijos? Hijas</td>
</tr>
<tr>
<td>75</td>
<td>Hijos</td>
</tr>
<tr>
<td>76</td>
<td>¿Cuántos años tiene?</td>
</tr>
</tbody>
</table>