



Comprehensive evaluation of male health in four communities in rural Honduras

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ABSTRACT

PODEMOS (Partnership for Ongoing Developmental, Educational and Medical Outreach Solutions) has been a long-standing healthcare provider in 4 communities in northern rural Honduras. In this study, we sought to understand and quantify the health challenges faced by men in the rural communities served by PODEMOS in order to improve the way PODEMOS delivers healthcare. Between June and July of 2015, we conducted 104 structured survey interviews with men 18 years and older in rural Honduras. We found that most men face significant economic limitations in their ability to pay for healthcare and health-determining services and due to low formal education levels face health literacy challenges. Furthermore, we found that a quarter are at risk for health problems due to smoking, and the majority are at risk for musculoskeletal problems due to work in strenuous outdoor labor. However, we found that zero respondents drank alcohol heavily, which is defined as more than 14 drinks in one week. Lastly, we found varying opinions on female contraception use. Our findings indicate that medical brigades to the developing world should understand and quantify the relevant health challenges faced by their target populations.

1. Executive summary

1.1. Objectives

To understand and quantify the health challenges faced by men in the rural communities served by PODEMOS (Partnership for Ongoing Developmental, Educational and Medical Outreach Solutions) in order to improve the way PODEMOS delivers health care.

1.2. Background

PODEMOS was founded by medical students at The Ohio State University in 2008. Since that time, it has expanded and partnered with the Colleges of Nursing, Dentistry, and Pharmacy. A multi-disciplinary team of students and faculty travel to Honduras each June and December to provide primary and chronic care to residents of several communities. The biannual trips consist of 5 full clinic days set up in 4 different communities. During the interim months, PODEMOS works with local healthcare providers to check in on chronic care patients and help Ohio State to act as a primary care provider, at a distance. PODEMOS has established itself as a key player in providing care in the rural El Progreso region of Honduras and has the opportunity to have a

positive impact as the main primary care provider for the villages of Siete de Abril, Brisas de la Libertad, Brisas del Norte, and Colonia Ebenezer.

2. Materials and methods

2.1. Research design

Our structured survey took part in two phases. The first phase administered structured surveys to individuals who were present at a PODEMOS clinic during the June 15–June 19, 2015 trip. The second phase administered surveys to participants via door-to-door, face-to-face interviews with men living in the communities we were investigating. At Siete de Abril, 24 surveys were completed in 1 clinic day (June 15). At Brisas de la Libertad, 17 surveys were collected during the first day of clinic on June 16, 20 were collected during the second day of clinic on June 17, and 3 were collected in door-to-door visits during post-trip visits between June 22 and June 26. At Brisas del Norte, 20 surveys were conducted during clinic on June 18, while 7 were conducted during post-trip visits. Finally, at Colonia Ebenezer, all 13 surveys were conducted during the clinic day on June 19. Our study focused on men since PODEMOS researchers conducted a similar study in

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2013 that focused on maternal and child health. After an extensive search of the literature, we were unable to find data characterizing the health status of rural communities in Honduras similar to our study.

2.2. Sample

The target population for the first phase of the survey was men over 18 who presented to a PODEMOS clinic for medical attention. The study sample consisted of a total of 104 men from the villages Siete de Abril, Brisas de la Libertad, Brisas del Norte, and La Colonia Ebenezer. The survey response rate in clinics was 92.3% at Siete de Abril, 88.8% at Brisas de la Libertad, 90% at Brisas del Norte, and 100% at Colonia Ebenezer. The survey response rate in clinics was 92.3% at Siete de Abril, 88.8% at Brisas de la Libertad, 90% at Brisas del Norte, and 100% at Colonia Ebenezer. Brisas del Norte and Brisas de la Libertad have a population of around 25,039 and 44,549, respectively (Pueblos20.net, 2018). Data for Siete de Abril and Colonia Ebenezer was unavailable to us but we estimate based on the size of the villages that Siete has a population between 15,000–25,000 and Colonia Ebenezer between 10,000–15,000.

2.3. Measurement/Instrumentation

The survey was divided into multiple parts to assess various aspects of men's health: demographics, general health, environmental health, healthcare access, sexual history, and contraceptive use.

The phase 1 and phase 2 surveys ask the same questions to the participants, the difference between them was how the patient was recruited into the study.

Please see Figs. 1–5 attached to view the survey instrument used. We did not encounter any difficulties in communication (See Tables 1–3).

3. Discussion

3.1. Income and ability to pay for healthcare

The mean monthly income of the study population (5453L) was lower than the minimum wage (8448.4L) and the current monthly price of the market basket of consumer goods in Honduras (8326L) (Heraldo, 2017; Carranza, 2018). The market basket includes items such as dairy products, meats, eggs, beans, cereals, sugar, oil and butter, vegetables, fruits, and coffee that are meant to provide a basic supply of food each month to an average family of 5 in Honduras. It does not include prices of medications, healthcare visits, or education (Heraldo, 2017; Carranza, 2018; Panama, I.d.N.d.C.A.y, 2002). Honduras has the most expensive market basket in Central America, and the percentage of Hondurans who are unable to afford the market basket and thus fall into the poverty category is 60.9%. 42.6% of Hondurans live in extreme poverty, earning less than 2\$ per day (Carranza, 2018). The highest income of males was reported at Brisas de La Libertad, where the mean monthly income was 6143L. The lowest mean income was 4220L at Colonia Ebenezer. On average, men in wealthier communities reported earning at most 69% of the price of the market basket. In order to purchase more goods and services, including healthcare and education, these men interviewed would have to rely on their partners or other household income to cover the extra costs of living.

3.2. Education and health literacy

Our results showed that the most educated community was Siete de Abril with an average of 6 years of formal education, whereas Ebenezer had an average of only 2.6 years of formal education. Even with the use of translators, many of the men at Ebenezer have poor health literacy given their lower educational level. A study by Johnston et al. investigated the relationship between education obtained and health

knowledge and found that the level of education significantly impacts health understanding. According to their estimates, a one-year increase in schooling can increase health knowledge by 15% (Johnston et al., 2015). As the men in the communities become more educated and the average education level increases, so will the health literacy in the communities. Higher levels of health literacy is critical to better healthcare outcomes, and PODEMOS patients will be more prepared to perform basic health-related tasks, such as reading nutrition labels, following medication instructions, or adhering to a vaccination schedule (McKinney, 2013).

3.3. Smoking prevalence and possible interventions

Across all communities, approximately one in every four men was an active smoker. Smoking has long been established as a major risk factor for cardiovascular disease and stroke (Villablanca et al., 2000). A meta-analysis reviewing 114 articles on smoking cessation for the U.S Preventative Services Task Force concluded that both behavioural and pharmacological interventions improve rates of smoking cessation. Effective interventions include physician advice, nicotine replacement therapy, bupropion and varenicline (Patnode et al., 2015). As medical providers to communities in rural Honduras, PODEMOS should be aware of smoking rates within the communities. Furthermore, PODEMOS has the opportunity to contribute to education and prevention of cardiovascular and pulmonary disease.

Given the effectiveness of smoking cessation interventions, PODEMOS should consider educating patients on the harmful effects of tobacco smoking and provide pharmacologic treatment for smoking cessation. Purchasing or receiving donations of nicotine replacement gums and patches, bupropion, and varenicline could help PODEMOS combat the high prevalence of smoking in rural Honduras.

3.4. Prevalence of light to moderate and heavy alcohol use

Almost a quarter of the male responders drank at least one alcoholic drink per week. In all communities, the average male drank less than 14 drinks per week, and therefore is not considered a heavy drinker.

Light to moderate alcohol use (1 drink per day for women and 2 drinks per day for men) is associated with a decreased risk of total mortality, coronary artery disease, diabetes, congestive heart failure, and stroke. However, heavy alcohol use, defined as drinking > 14 alcoholic drinks per week, is associated with increased cardiovascular disease, development of non-ischemic dilated cardiomyopathy, new-onset or recurrent atrial fibrillation, and markedly increases the risk of both hemorrhagic and ischemic stroke (O'Keefe et al., 2014). Furthermore, even light to moderate alcohol consumption has been associated with increased risk of many types of cancers, including those of breast, rectum, liver, esophagus, and oropharynx (Testino et al., 2013).

Given the poor health literacy among the people in our communities, the perils of heavy alcohol consumption including risks of cardiovascular disease and cancer are likely to be relatively unheard of. Fortunately, the male responders in the communities did not seem to consume dangerous amounts of alcohol.

3.5. Risk of mosquito-borne illnesses

The *Aedes* spp. mosquito is a vector of the tropical diseases such as dengue, Chikungunya, and Zika in the country of Honduras. In 2015, there were 19,289 confirmed cases of dengue and 85,386 of Chikungunya in Honduras (Zambrano et al., 2017). During the PODEMOS trips from 2014 to 2015, providers encountered a significant volume of chronic musculoskeletal pain from patient-reported prior Chikungunya illness. Symptoms such as headache, fever, rash, headache, and arthralgia are common in all three diseases (Norman et al., 2016). During the nineties, a team of researchers from Johns Hopkins University tried different interventions to reduce the populations of

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