Community Health Assessments in Guatemala and Honduras

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Background

Community Health Assessments (CHAs) give health professionals necessary information to identify and provide care for community needs. The services provided by CHA's are integral, especially in developing and rural communities. This research serves to discuss the outcomes and benefits of community health screenings performed in Hierba Buena, Chiquimula, a rural, mountainous community in Guatemala and three, underserved communities in Copan Ruinas, Honduras. The screenings were conducted by a team of faculty and graduate and undergraduate students from Liberty University, public health professionals, Iglesia Vida, a church in south Florida and Iglesia de las Americas, a church in Lynchburg, VA. The team worked alongside a church in Zacapa, Guatemala and a mission organization in Honduras. To evaluate the health status of the community, health questionnaires were filled out and health screenings were performed. The detailed questionnaires included questions relating to nutrition, hygiene, housing, income, and employment status. Additionally, the health screenings evaluated height and weight, blood pressure, hemoglobin, and blood sugar levels. Cholesterol and triglycerides were evaluated in certain communities as well. Following the screenings, the participants received a personalized health consultation from one of the doctors, and additional participant health concerns were addressed. The data acquired from the health screenings, was used to determine if there was statistical differences with hemoglobin, blood glucose, and systolic blood pressure comparing Guatemala to the three localities in Honduras and when comparing each Honduran locality to one other. The results section gives a comprehensive view of the statistical significance and breakdown of the data. This study clearly depicts the continual need for care in Central American countries. Limitations of this study include missing male vs. female data from Hierba Buena, Chiquimula, Guatemala and a lack of cholesterol and triglyceride numbers, due to dehydration in specific community member participants. Recommendations include continued training for sustainability and awareness programs.

Introduction

Globally, community health assessments (CHAs) are integral to identify pertinent health issues and lay the foundation for proper and necessary steps to impact change. The Center for Disease Control and Prevention (CDC) refers to a community health assessment or community health needs assessment (CHNA) as a "state, tribal, local, or territorial health assessment that identifies key health issues through systematic, comprehensive data collection and analysis" (CDC, 2022). CHAs key principles include multisector collaboration, community engagement, maximum transparency, evidence-based interventions, and research analysis to inform current and future projects. CHAs and CHNAs were the foundation of this study, evaluating communities in Hierba Buena, Chiquimula Guatemala and Copan Ruinas, Honduras. CHAs are increasingly important in developing and rural areas.

Methods

The team from Liberty consisting of professors and students worked along people from Iglesia De Las Americas, a church in Lynchburg and Iglesia Vida, a church in Florida. Prior to leaving for Guatemala and Honduras multiple bags were packed with questionnaires, health assessment forms, normal value cards, and additional forms with graphics and health-based explanations. The questionnaire and health assessment form was evaluated and updated based on recommendations and findings from previous trips to a variety of locations in Guatemala. The questionnaire contained questions on subjects such as education level, where they purchased food and water, and COVID-19 based questions. Once the community member filled out the questionnaire, with the help of a church or team member, they were provided a health screening. The questionnaire was presented in Spanish, along with the top half of the health screening form for the participant to keep. The full health screening, in English, is displayed in Figure 1. The health screenings included height, weight and body mass index. Blood pressure was evaluated using a portable stadiometer and a blood pressure stethoscope and cuff. Blood glucose and hemoglobin (anemia) were also checked using Contour Next and HemoCue201 respectively. At certain locations cholesterol and triglycerides were checked, dependent on how hydrated the community was. Following completion of the health screening, each community member met with one of the doctors to discuss the normality of each health value and the data collected. The normal value card, Figure 2, was used to determine the normal value range. Each doctor was fluent in Spanish and provided culturally competent care. The doctor provided recommendations, and each participant was given the opportunity to ask questions. Previous and current conditions were taken into consideration. Participants were then given medicines, such as Omeprazole, based on the doctors' recommendations. Along with medications, toothbrushes and toothpaste were provided.

Figure 2 - Normal Value Card
Used for participants to see if their values were in normal range

Figure 1 - Health Screening Form
Used to collect participant data during the screening

Height	Blood Pressure Normal: <120/80 mm/Hg, High:>140mg/dL
Weight	Heart Rate Normal: 60-100 beats per min at rest
Have you eaten in the past 8 hours? Yes or no	Oxygen Saturation Normal: 95%-100%
BMI Underweight:<18.5, Normal: 18.5-24.99, Overweight: 25-29.99, Obese: >30	Blood Glucose Normal: <140 mg/dL, High: >140 mg/dL
% Body Fat Normal men: 10-20% Normal female: 20-30%	Hemoglobin (Anemia) Normal men: 13.2-16.6 g/dL Normal women: 11.6-16 g/dL Anything under is anemia
Cholesterol Normal:<200 mg/dL, Borderline: 200-239 mg/dL, High: >240 mg/dL	Triglycerides Normal: < 150 (mg/dL), Borderline: 150-199 mg/dL, High: 200-499 mg/dL

Table 1.1 Anemia Outcome T-test in Women Comparing El Barrio San Pedrito to other Honduran localities

	Honduras 1: Rincon del Buey	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Fail to reject Ho	0.082
Significantly More	Reject Ho	0.041
Significantly Less	Fail to reject Ho	0.041
	Honduras 2: Monte Fresco	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Reject Ho	0.001
Significantly More	Reject Ho	0.000
Significantly Less	Fail to reject Ho	0.000

Table 2.1: Elevated Blood Glucose Outcome T-test Comparing Guatemala to each Honduran locality

	Honduras 1: Rincon del Buey	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Fail to reject Ho	0.506
Significantly More	Fail to reject Ho	0.253
Significantly Less	Fail to reject Ho	0.253
	Honduras 2: Monte Fresco	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Fail to reject Ho	0.302
Significantly More	Fil to reject Ho	0.151
Significantly Less	Fail to reject Ho	0.151
	Honduras 3: El Barrio San Pedrito	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Fail to reject Ho	0.639
Significantly More	Fail to reject Ho	0.320
Significantly Less	Fail to reject Ho	0.320

Table 1.2 Anemia Outcome T-test in Men Comparing El Barrio San Pedrito to other Honduran localities

	Honduras 1: Rincon del Buey	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Reject Ho	0.026
Significantly More	Reject Ho	0.013
Significantly Less	Fail to reject Ho	0.013
	Honduras 2: Monte Fresco	
(p1-p2) t-test	Hypothesis Outcome	Associated p-value
Significantly Different	Reject Ho	0.026
Significantly More	Reject Ho	0.013
Significantly Less	Fail to reject Ho	0.013

Results

Hemoglobin, glucose, and systolic blood pressure were evaluated for Hierba Buena, Guatemala and the locations in Copan Ruinas, Honduras. In the evaluation of this data, multiple difference in proportion t-tests were performed to discover if any statistical significance was present when comparing one location to another. A 5% level of significance was used and p-values under 0.05 were recognized as significant. For men and women, when comparing Rincon del Buey and Monte Fresco, no statistical significance was found (men: one-sided p-value= 0.294, two-sided p-value= 0.589; women: one-sided p-value=0.119, two-sided p-value=0.237). However, El Barrio San Pedrito was significantly more than both locations in each gender (Table 1.1 and 1.2). The prevalence of anemia was 15% in Rincon del Buey (8 of 52 participants), 11% in Monte Fresco (19 of 168 participants), 37% in El Barrio San Pedrito (32 of 87 participants), and 19% overall (59 of the 307 participants). Next, when evaluating elevated blood glucose, none of the comparisons were statistically significant and all p-values were above the targeted p<0.05 (Table 2.1). Furthermore, 4% (15 of 374) of the participants exhibited high blood glucose levels. To further analyze this, when examining the prevalence of high blood glucose within each location, there was 2% in Guatemala (1 of 48 participants), 4% in Rincon del Buey (3 of 72 participants), 5% in Monte Fresco (8 of 166 participants), and 3% in El Barrio San Pedrito (3 of 88 participants). In examining systolic blood pressure, each value was classified as normal or hypertensive. Hypertensive statuses included those at each stage of hypertension. 26% of the participants (91 of 347 participants) were classified as having stage one, two, or three hypertension. To further detail this percentage, 13% had stage one hypertension (44 of the 347 participants), 12% had stage two hypertension (43 of the 347 participants), and 1% had stage three hypertension (4 of the 347 participants). Hierba Buena, Guatemala was found to be significantly different and significantly less when comparing the location to Rincon del Buey (one-sided p-value=0.007, two-sided p-value= 0.014), Monte Fresco (one-sided p-value=0.002, two-sided p-value= 0.003), and El Barrio San Pedrito (one-sided p-value= 0.000, two-sided p-value=0.000). Additionally, when comparing Honduras locations, El Barrio San Pedrito tested to be significantly more than Rincon del Buey (one-sided p-value=0.037, two-sided p-value=0.075) and Monte Fresco (one-sided p-value=0.022, two-sided p-value=0.044). However, El Barrio San Pedrito was only found to be significantly different in Monte Fresco. Comparisons between Rincon del Buey and Monte Fresco were not statistically significant (one-sided p-value=0.468, two-sided p-value=0.936). Furthermore, when comparing Guatemala to all three Honduras locations using the same methodology, Guatemala was found to be significantly different and less than the Honduras locations (one-sided p-value=0.000, two-sided p-value=0.000).

Future Work

1. Continue to provide sustainable care to people in developing countries, specifically to remote areas of Hierba Buena, Guatemala and underserved areas of Copan Ruinas, Honduras.
2. Increase education and training for the community and community health workers
3. Include CPR/First aid training
4. Provide additional deliverables for diabetes, anemia, etc. along with recommendations for improved care
5. Additional studies to continue to provide more comprehensive view of health disparities in each area studied

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