**Review Article**

**Community Alliance and Empowerment: An Interprofessional Project in Puerto Rico**

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**Abstract**

Because of the detrimental effects of factors on society such as genetics, unhealthy behaviors, and social determinants of health, nursing care and patient education become even more vital in terms of promotion, protection and preservation of health and safety, as well as disease prevention. Although hospitals are the primary setting for direct patient care, they are also where nursing students perform most of their clinical practice. However, each day, students have less exposure to this setting. Therefore, simulation has become an efficient strategy to help nursing students to develop clinical skills, abilities, and judgment. In the other hand, there is also evidence that students need to go through diverse learning strategies and not be limited to high-fidelity simulators and computers. Students need the interaction with real people, real patients, and real settings in need. That is where communities become a key player. Nonetheless, many community members have multiple health problems without adequate follow-up. Communities also encounter transportation problems, distance to urban areas, bedridden patients, uninsured or underinsured individuals, people living alone, overcrowding, low or absent academic level, people without health care provider, abandoned and deteriorating dwellings, among others. This project created an alliance among academic programs from the University of Puerto Rico at Humacao and municipalities of the Eastern region of P.R. By working with and in the communities, new practice settings were created for students and the community members receive needed care. The project is based on the Community Empowerment framework by Bruce Leonard. Familiarization and problem-oriented assessments were performed for a broader perspective of the needs of the communities to identify potential future actions. The needs, strengths, and areas of improvement of the communities were also identified with community leaders to further develop health programming based on their unique needs.

**Introduction**

Issues of public health significance have risen over the years due to various factors, including genetics, unhealthful behaviors, and social determinants of health that further reduce the ability to change unhealthful behaviors [1,2,3]. Because of the detrimental effects of these factors on society, nursing care and patient education become even more vital in terms of promotion, protection and preservation of health and safety, as well as disease prevention. However, hospitals have long been the primary setting where interprofessional care is provided to patients. This is a concern for two motives:

Patients in the hospital setting have already experienced serious disease and there can be limits to the benefits of prevention activities and,

The potential of interprofessional education is also limited with fewer students using this clinical setting. This second motive of concern is one of the reasons for which many nursing programs have incorporated high-fidelity simulators into their skills laboratories.

Historically, simulation has been a strategy to help nursing students to develop clinical skills, abilities, and judgment [4]. In addition, has been a key factor to meet academic program’s curricula and accrediting agencies since, for a variety of reasons, each day, students have less exposure to hospital settings. However, with Covid-19 pandemic, the situation has been aggravated. Although simulation has proved its benefits and efficacy, there is also evidence that students need to go through diverse learning strategies [4] and not be limited to high-fidelity simulators and computers. In other words, it is important that students interact with real people, real patients, and real settings in need. That is where communities become a key player.

A community health needs study was performed in 2016 by University of Puerto Rico at Humacao (UPRH) community health nursing students under the supervision and mentoring of the first author on the Jaguar community in Gurabo, P.R. The students used a needs and risk factors assessment created by the UPRH nursing faculty which eventually, its completion, became a course requirement. Many issues were identified in the study that centered on the needs of elderly people with chronic health conditions caring for other elders with greater health and self-care needs.

To address these concerns, an ongoing project was developed based on the creation of interprofessional health and safety clinics in this and other communities with special needs. Most of these people in this community have multiple chronic conditions and/or other health problems that have not received adequate follow-up. Some of the reasons are, but not limited to transportation problems, distance to urban areas, bedridden patients, uninsured or underinsured individuals, people living alone, overcrowding, low or absent academic level, people without health care provider, abandoned and deteriorating dwellings, among others.

The project created an alliance among the academic programs of Nursing, Occupational Therapy (OT), Physical Therapy (PT), Social Work (SW), Office Systems’ Management and Business Management department of UPRH and municipalities of the Eastern region of P.R. By working with and in the communities new practice settings were created for each of these programs and the community members receive needed care. The purpose of this manuscript is to describe the development and outcomes of this ongoing project.

**Background**

These days, there are fewer opportunities for students to have clinical experiences in the hospital setting. There are more nursing programs and even more students, but not enough hospital settings to provide the desired experiences for each student. In addition, when students are in the hospital setting for clinical practice, their assignments with nurses who have varying expertise in supervising a nursing student result in uneven learning opportunities. There are skills needed to manage the learning needs of a student in combination with providing the required care for the patients, which are often not well executed when the nurse has a larger patient assignment or acuity load. Personal experience in both roles further reinforces this belief. Since nursing schools are still mandated to deliver the required clinical experiences even when there are reduced hospital settings, strategies are necessary so students can still meet the program’s curricula [4]. That is where simulation can be incorporated along with other academic strategies to meet the criteria of accrediting agencies [1,5].

Simulation has been demonstrated to be an effective strategy for preparing students for live clinical experiences including interprofessional practice by providing a setting where it is safe to make a mistake. According to the International Nursing Association for Clinical Simulation and Learning [6], well designed simulation-based experiences incorporate best practices from adult learning, education, and instructional design, clinical standards of care, evaluation, and simulation pedagogy. It can do this by promoting essential structures, processes, and outcomes that are consistent with programmatic goals and/or institutional mission. It is an excellent teaching and learning mechanism that can be managed and transformed into different simulated scenarios that students can experience when working as licensed nurses. Molina M, et al. [4] recognize that high-fidelity simulators “Have taken an essential role in forming and developing skills, competencies and attitudes of nursing alumni” and even more now during Covid-19 pandemic [5]. The use of effective health care simulations can facilitate consistent outcomes and strengthen the overall value of the simulation-based experience in all settings [6]. However, simulation does not substitute for reality. The realism of interacting with live patients and the realities of a clinical practice setting imparts learning in a different way, as it impels the student to be more empathetically present during the patient encounter.

With the continued issue of decreasing clinical sites and students prepared to care for real patients through simulations, the first author proposed to take students to communities in need. As a community health nurse, knows that this is where the real need lies. Before patients are admitted to a hospital, they come from the community. Once discharged home, they go back, oftentimes, to the same community. In other words, the community is where people do or do not engage in healthful behaviors to prevent and/or manage chronic health conditions. The community is where the nurse can engage patients and families in their own healthcare and learn how to use available resources as appropriate.

**The University of Puerto Rico at Humacao**

UPRH serves the Eastern region of Puerto Rico (PR) and is in a low socioeconomic status area. UPRH was founded in 1962 being the first regional College of the University of Puerto Rico and has been continuously accredited by the Middle States Association of Colleges and Universities since. It is also a member of the American Association of Colleges and Universities and accredited by the “Consejo de Educación Superior de Puerto Rico (High Education Council of Puerto Rico). The university has the following health-related academic programs: Nursing, Occupational Therapy, Physical Therapy, and Social Work. Particularly, the Nursing Program is one with a high demand for admission and transfer. It is currently accredited by the Accreditation Commission for Education in Nursing (ACEN). Students obtain their licensure through the Puerto Rico Nursing Board. Approximately, 100% of alumni acquire licensure on their first attempt, and about 10-15% seek nursing positions in the United States of America (USA).

In 2014, a federal grant of $3.5 million entitled "Developing Hispanic-Serving Institutions Program-Title V" was awarded to improve student performance through better laboratory resources in the natural sciences and health academic programs at UPRH. Although the nursing students were successful in passing their licensure exams, the skills laboratory was not necessarily a major contributor to these results. Most of the equipment was obsolete and not parallel to the contemporary technology used in hospitals. In some instances, there was no technology at all, as beds had to be operated manually. The design of the space (square-shaped and open) and the limited number of devices did not meet the learning needs of the nursing students. This five-year grant was used to improve the skill labs of four programs (Biology, Nursing, Physical Therapy, and Occupational Therapy). The sharing of this grant identified similar educational needs for these academic programs.

The nursing laboratory was remodeled and transformed into a skills and simulation laboratory. The intention was to provide a better learning environment for students, similar to a hospital clinical setting. High fidelity simulators were acquired so students could practice and become more confident to perform clinical interventions safely. The video cameras allow recording of clinical activities for analysis and discussion among students and professors to improve skills. This adds to the value of the simulations preparing students for the live clinical experiences and further contributing to continued high passing rates on licensing exams. However, to be fully effective nursing faculty must keep up their knowledge, skills and abilities to best utilize this developing technology, to teach medical advances and emerging diseases to new generations of students. The improvement of the lab space still did not meet the needs for clinical practices for the nursing students, which was a similar situation for other health academic programs. Past meetings with faculty from the OT and PT Programs identified similar needs. The Social Work program has a roster of activities for communities in need and has been an excellent resource in this area, but they too needed to expand their practice setting.

**The Community Health Nursing Course & the Interprofessional Project**

As required objective of the community health nursing course, students collect information about the population, poverty level, cultural diversity, environmental health, level of education, social status of the community, in addition to other pertinent data. The study was performed in conjunction with other community health nursing students and their respective professors at other disadvantaged communities after Institutional Review Board (IRB) approval. Although each professor and respective students visited a different community, the research study applies to all communities. Each course section utilizes the same data collection instrument, informed consent, and protocol.

Since 2016, some course sections have decided to publish their own research findings once the academic semester has ended. The final product is a book donated to the UPRH library to make it available to the public. In addition, a copy is provided to the mayor and community leaders of the municipality for future reference. The communities that have participated on past research studies are Playa Guayanés, Ingenio and Martorell at Yabucoa; and Mariana and Punta Santiago at Humacao. Even though, not all course sections have published their findings, the collected information has allowed for new clinical interventions for students, performance improvement strategies, expansion of partnership and networking, new health/safety promotion initiatives and disease prevention activities, case studies with appropriate follow-ups, among other benefits. The primary author’s course sections have published four books, one for each year (2016, 2017, 2018, 2019). All four research projects took place at Jaguar, Gurabo, PR.

The project creates interprofessional community clinics in which residents can seek for health and safety promotion activities while preventing illnesses. It is a win-win situation as students from mentioned programs have also a real scenario to serve vulnerable populations while studying and practicing their discipline. Some of these academic programs such as Social Work and Occupational Therapy have already projects in place at communities in need. So, this effort is not something new to them.

A great example is the Department of Social Work which for years, students and faculty members led a community project entitled “PRODECO, Inc.” at Jaguar, Gurabo, PR to facilitate the service delivery needed. The success of such program is well-known in the community. Another excellent example was demonstrated by occupational therapy students whom along with their professors, provided field visits at Jaguar in Gurabo, Mariana in Humacao, and Ingenio in Yabucoa, respectively. Recent changes in the status of the community due to economic and government changes solicits the intervention of the Departments of Business Management and Office Systems’ Management in this project. Guidance, training, and support on clinic management can be provided to community leaders as well as training sessions on how to manage their own clinics. Furthermore, assistance with grant applications can secure new sources of financial support creating opportunities for sustainability and empowerment.

Some efforts had already started in Jaguar and Ingenio where, thanks to engaged community leaders and respective Municipalities, unoccupied buildings were made available for the use of the communities. Community leaders have welcomed Community Health Nursing students and their professors to host a variety of health promotion and illness prevention activities. The Mayors of Gurabo and Yabucoa, respectively, have enabled a building to become available for UPRH students to perform their field visits and clinical interventions as appropriate. The Municipality of Gurabo [7] has agreed upon providing some equipment and medical supplies through their Emergency Management Division. Community leaders have been a key factor on this effort as well.

Meetings with the mayor of Yabucoa, have been held to share the ambition of this project and make him aware of some of the most important activities that have taken place with nursing and occupational therapy students during past academic years in different communities at Yabucoa. Recently, the Martorell community, also at Yabucoa, became another clinical setting for UPRH nursing students. The communities of Punta Santiago and Mariana at Humacao have also served as excellent clinical settings for nursing, social work, and occupational therapy students.

Important meetings have also been held with Humacao Municipality Administrators to collaborate on health and safety situations identified in some communities. Community leaders from Mariana at Humacao have acquired a school building, closed after Hurricane Maria to base their work. Community leaders have become engaged in efforts to provide valuable resources and support to residents and applied for a financial grant, which was awarded. Solar panels were installed to facilitate power to the entire building, medical supplies were purchased or acquired through donation, former classrooms were remodeled, and the entire building was repainted. In addition, an area was separated for UPRH students to provide service to the community. The resulting community alliance, empowerment, and engagement facilitated the creation of the interprofessional clinics.

**Literature Review on Community Projects**

A population refers to individuals from a specific geographic area such as a neighborhood, community, city, or country, or being part of a group (e.g. racial, ethnic, age, disease) that are going through “disproportionate burden of poor health outcomes” [8]. Following that definition, the American Nurses Association (ANA) Scope and Standards of Public Health [9] directs to improve the health of populations. Mentioned directive converges with economic, political, social factors, Healthy People 2030 and the Patient Protection and Affordable Care Act (ACA). On the other hand, health departments deliver core services to provide “safe sanitation services for sewage and solid wastes, safe food and water supply, immunizations, and communicable disease contact follow-up” [8], for communities.

Therefore, health care professionals are poised to facilitate healthcare delivery to the public. This is possible through interprofessional health care service, partnership, and education. On that note, all partners are responsible for identifying problems and areas of system waste, devise and implement improvement plans, track the improvement over time, and make necessary adjustments to realize established goals [10]. However, it “requires outreach, negotiation and the development of systems to manage partnerships across entities within the health sector, as well as with other sectors and community organizations” [11].

The term of interprofessional education in community-based settings has brought the attention to funding agencies as they have also witnessed the necessity of universities partnering with and being present at communities. The Robert Wood Johnson Foundation, the Josiah Macy Jr. Foundation, the John A. Hartford Foundation and the Gordon and Betty Moore Foundation are some of those agencies. According to Pittman [11], those Foundations supported 16 nursing schools to partner with other professional schools to develop community-based education and practice programs. A good example is the Washburn University Nexus Project. Between the School of Business, the Department of Communications, the Office of Sponsored Projects, and the local housing authority developed a common curriculum for social determinants of health. Furthermore, they opened a community clinic in a high-need public housing project staffed by students and preceptors to address the social determinants [11]. This example demonstrates that the commitment and engagement of universities with communities in need is crucial and it substantiates the value of this project. Universities are the right setting for students of all disciplines to learn and embrace the importance of collaborative community efforts leading to a healthier population. It is a big responsibility but also demands committed faculty who can serve as models to their students.

Community Health Nurses (CHN) are key stakeholders to improve health of populations through “identification, implementation, and evaluation of universal and targeted evidence-based programs and services that provide primary, secondary, and tertiary preventive interventions” [8]. Focusing on those levels of prevention, it is evident that the presence and responsibilities of CHNs in communities in need are crucial since the leading causes of death in the United States are highly preventable or modifiable throughout health and safety promotion activities [8]. Those activities should be led by CHNs in collaboration with community leaders, religious leaders, health care and non-health care related agencies from non-governmental organizations as well as government agencies among other valuable resources. (Table 1) shows the 10 leading causes of death by gender in the U.S. as of 2015 [12]:

|  |  |
| --- | --- |
| **Female** | **Male** |
| Heart disease | Heart disease |
| Cancer | Cancer |
| Chronic lower respiratory disease | Unintended injuries (motor vehicle poisoning, fire, falls, suffocation) |
| Stroke | Stroke |
| Unintended injuries | Diabetes |
| Diabetes | Suicide |
| Influenza and pneumonia | Alzheimer’s disease |
| Kidney disease | Influenza and pneumonia |
| Septicemia | Chronic liver disease and cirrhosis |

**Table 1**: Leading Causes of Death in USA (2015).

The CDC [12] also presents 10 essential public health services in which CHNs should focus on:

|  |  |
| --- | --- |
| **Essential Public Health Services** | **Selected Nursing Activities / Competencies** |
| Monitor health status to identify community health problems | Participate in community assessment, identify potential environmental hazards |
| Diagnose and investigate health problems and hazards in the community | Understand and identify determinants of health and disease |
| Inform, educate, and empower people about health issues | Develop and implement community-based health education |
| Mobilize community partnerships to identify and solve health problems | Explain the significance of health issues to the public and participate in developing plans of action |
| Develop policies and plans that support individual and community health efforts | Develop programs and services to meet the needs of high-risk populations as well as members of the broader community |
| Enforce laws and regulations that protect health and ensure safety | Regulate and support safe care and treatment for dependent populations such as children and the frail elderly |
| Link people to needed personal health services and ensure the provision of health care when otherwise unavailable | Establish programs and services to meet special needs |
| Ensure a competent public health and personal health care workforce | Participate in continuing education and preparation to ensure competence |
| Evaluate effectiveness, accessibility, and quality of personal and population-based health services | Identify unserved and underserved populations in communities |
| Research new insights and innovative solutions to health | Participate in early identification of factors detrimental to the community’s health |

**Table 2**: Essential Public Health Services and Selected Nursing Activities.

There are five important factors influencing CHN efforts. The first factor is the health care reform. In 2014, the ACA established that all individual and small health insurance plans cover certain essential benefits categorized by ambulatory patient services; emergency services; hospitalization; maternity and newborn care; mental health and substance use disorder services, including behavioral health treatment; prescription drugs; rehabilitative and habilitative services (those that help patients acquire, maintain, or improve skills necessary for daily functioning) and devices; laboratory services; preventive and wellness services and chronic disease management; and pediatric services, including oral and vision care [13]. According to APHA [8], health reform was originated due to “the high rate of uninsured Americans under the age of 65, unsustainable health care spending, a lack of emphasis on prevention, poor health outcomes, and health disparities”.

Puerto Rico (PR) as a US territory is governed by the same federal regulations, including those related to health care. However, since October 1, 2010, the PR government enacted the health reform named “Mi Salud” (My Health) transferring 100% of the risk of all medications, prevention diagnosis tests and immunization to health insurance plans, and 50% of the risk of Emergency Department [14]. Historically, those risks have always fallen under primary care providers. The intention of “Mi Salud” is to provide access and flexibility to patients by eliminating referrals to specialists within the preferred network and laboratory tests or X-rays, eliminating approvals to prescriptions, and integrating physical and mental health services; improve quality by providing incentives to providers for prevention measures; and protect patients by amending patient rights regulations [14]. This information is important since despite the health reform, it is estimated that 400,000 people in PR do not have private health insurance and do not qualify to the government health plan. In 2013, an estimated number of 282,000 people in PR were uninsured [15].

Another influencing factor relates to migration, which has also been meaningful in Puerto Rican history. Between 2010 and 2011, migration to the US increased between 60,000 to 76,000 people whereas 23,000 people migrated from the US to PR. The biggest exodus in the history of Puerto Ricans migrating to the US was between 1950 to 1960 and occurred again in 2000. It is not certain the number of Puerto Ricans that migrated to the US immediately after Hurricane Maria. However, Sutter and Hernández [16] revealed that 179,000 passengers were registered to travel from PR to the US between September and November 2017. Furthermore, it is estimated that between 114,000 and 213,000 residents will leave PR annually in the aftermath of Hurricane Maria [17]. The report also revealed the expectation of losing approximately 470,335 inhabitants (14% of the population) between 2017 and 2019. Florida received most of the population after the hurricane and is expected to continue to be affected by the exodus with an estimated annual flow of between 40,000 and 82,000 people [17]. According to Santos-Lozada [17], the estimated population of PR by 2010 was 3.7 million people. After Hurricane Maria, the population of PR lowered to 2.97 million in December 2017. However, the total population increased to 3.02 million people by September 2018.

According to the predictions of the U.S. 2010 Bureau of Census, the population of PR will continue decreasing gradually to reach 2.3 million by 2050. In 2012, the people over 60 years of age increased to 36.1% in comparison to 11.2% in 2000. The expectation is to reach 39.3% of the population by 2050. However, when comparing those numbers with natality rates, results are very significant to make decisions about health promotion initiatives. Those rates have decreased significantly for the past 40 years. Between 1965 to 1997, annual natality rate decreased 19% (up to 64,214). In 1970, the rate was 25 natalities per 1,000 inhabitants. Between 1997 to 2009, 44,080 natalities were registered showing a decrease of 31%. In 2009 there were 44,380 natalities whereas in 2010 the rate was reduced to 11.3 natalities per 1,000 inhabitants (42,203). The natality rates are also reflected in fecundity rates, which is the average of children that a woman will have throughout her lifespan. For example, in 2009, the fecundity rate was 49 natalities per 1,000 women versus in 2010, it was reduced to 47 natalities per 1,000 women.

The next influencing factor is globalization, which is considered the principal factor affecting communities. It comprises a global market of capital, technology, and information around the world. As stated by Knollmueller [8], communities can be on potential risk due to unstable financial market, when trade agreements are negotiated, and when recessions threaten the countries that purchase the products made in those towns or communities. People travel and move from place to place constantly, so any product to be used by humans, animals, or earth itself is part of globalization. “Prevention and health promotion initiatives are the key to reducing and treating the spread of communicable and infectious diseases caused by morbidity among people” [8].

Poverty and growing disparities are also factors influencing the work of CHNs. The health and well-being of the people fall in jeopardy when people do not have education or access to good schools, employment, health care, electricity, safe drinking water, among others. Poverty is a disparity that gets to malnutrition, illness, more exposure to pollution and other harmful substances. In addition, poor people are more likely to smoke tobacco [8]. Geographic, racial or ethnic, lack of or limited health insurance, and access to care are some of the other growing disparities. As an important fact, approximately, half of the population in PR (48%) live in poverty.

The last factor influencing the work of CHNs is related to violence, injuries, and social disintegration. From 2006 to 2014, the cost of hospital care for gunshot wounds was $6.6 billion [8]. According to Public Health Newswire [8], the $6.6 billion only covered the initial treatment. In other words, those being treated and released, treated but died, or those readmitted for further treatment were not included on that portion of costs. There is no question that those injury-related costs could have been prevented. Human trafficking has also increased attention within the public health sector. “Communities are concerned about the weakening of human relationships in families, between generations, gender, and in the community itself, that often results in social disintegration” (page 34).

The literature review presented above includes general information affecting the population of Puerto Rico as a whole. Nonetheless, to have a better understanding of the direct impact that described information has in a smaller sample, this project presents information from the community of Jaguar, Gurabo, PR as evidence to the need of the interprofessional clinic and the benefits it brings to the community by promoting health and safety while preventing illnesses.

**Jaguar Demographic Data**

**Community Profile:** Jaguar appears as part of the town of Gurabo since 1831, being one of the first neighborhoods founded. Previously, its name was Jagual and in 1941 the Puerto Rico Planning Board changed its name to Jaguar. Its name is based on the number of Jagual trees that exist in the region. It is the smallest neighborhood of Gurabo counting with 0.72 miles of territorial extension. It is located at latitude 18.2395 and longitude -65.9688. Its relief consists of mountains and hills. Jaguar comprises several sectors named mostly by family generations that owned the land and the illustrious people of this community. It counts in its hydrography the river “Diente de Caballo” (Horse Tooth). Its flora is varied as expressed by its inhabitants. Its fauna has the presence of many insects (e.g., mosquitoes, flies, bees, spiders) and animals (e.g., dogs, cats, iguanas) that are normally observed in this type of area.

It has a population of 735 inhabitants (373 men and 362 women) distributed in 360 housing units [18] as compared to the 2000 Census which revealed 820 inhabitants. That number could have further changed due to the migration of people to the US after Hurricane Maria in 2017. The local government of Gurabo has not finished the Census of the population as notified by the mayor (R. Rivera, personal communication, August 23, 2019). The percentage change in population from Jaguar was -9.3 compared to the Census carried out in 2000. The percentage change in housing units was 21.2. Of the 735 inhabitants, Jaguar was composed of 69.12% of Whites, 18.91% Black, 7.35% were of other races and 4.63% belonging to two or more races. Of the total population 99.59% were Hispanic or Latino of any race (U.S. Department of Commerce, 2012; 2016). The age average is 65 years or older.

A research study performed in 2011 by UPRH students from the Department of Social Work reported that the highest causes of death in the community were related to old age and renal diseases [18]. There was 1.3% prevalence of mental illnesses in the community. Nonetheless, the leading cause of death in Gurabo is cardiovascular diseases [19]. In 2013, 14% of the people in PR had diabetes mellitus which increased to 14.8% in 2016. Health care services are not located nearby [19]. To receive medical treatment, they must drive to the town of Gurabo. However, one of the challenges is that many families at Jaguar do not have a vehicle.

As presented in this review of literature, Jaguar is one of many communities in PR mainly comprised of an elderly population with numerous health disadvantages and disparities. Their health status is compromised, and they do not have continuity in access to health care services. Therefore, bringing health to the community of Jaguar also facilitates access to care to a variety of resources and health care providers, improves quality of life, and provides appropriate follow-up to medical conditions and treatments.

**Theoretical Framework**

This project is based on the Community Empowerment framework by Bruce Leonard as presented in the Community as Partner: Theory and Practice in Nursing book [8]. The framework emphasizes the importance of establishing and strengthening partnership between community members and health care professionals to make “decisions that promote awareness and understanding of a community’s health needs” [20]. Empowerment is a relationship building concept that can be applied and used to influence the environment to address health disparities, especially when referring to vulnerable populations.

According to Rector [3], vulnerable populations are at greater risk for health problems and economic stress due to their disadvantaged state. They have “higher morbidity and mortality rates, less access to health care, shorter life expectancy, and an overall diminished quality of life than the general population” [3]. They are at high risk to be harmed and have the least social capital [20]. The author adds that generally, the risk is not voluntary or under their control. Therefore, “the more risk encountered, the more vulnerable the person or population becomes … leading to symptoms of victimization, alienation, helplessness, or powerlessness, all approaches opposite to empowerment” (page 98). (Table 3) shows the list of factors and populations that lead to vulnerability as per Aday [3].

|  |
| --- |
| Children and the elderly |
| Income and education |
| Age and gender |
| Race and ethnicity |
| Chronic illness and disability |
| HIV/AIDS |
| Mental illness and disability |
| Alcohol and substance abuse |
| Familial abuse |
| Homelessness |
| Suicide and homicide risk |
| High-risk mothers and infants |
| Immigrants and refugees |
| Uninsured or underinsured |
| Single parents and those living in violent environments |
| Prisoners |

**Table 3:** Factors and populations that lead to vulnerability.

Based on community health nursing and social work research projects performed by UPRH students, in Jaguar predominates some of those factors and populations. They can be identified as children and the elderly, income and education, age and gender, chronic illness and disability, mental illness, and disability, and the uninsured or underinsured. Therefore, most of the Jaguar population fall under vulnerability. This situation makes Jaguar a community in need.

Community Health Nurses (CHNs) are main stakeholders developing crucial relationships to promote health and empower others to engage community leaders and other members in collaborative efforts, partnerships, and coalitions. As stated by Leonard [20], involvement of the community is critical at the time of problem solving and decision-making successful mechanisms. Empowerment requires that communities make their own agendas that can serve as a cohesive force to bring about change. According to Laverack [21], community members are the ones responsible to provoke long term and relevant social change.

In certain way, past failures had led to new strategies and ideas on helping communities to become more committed with themselves. The best lesson learned was that “effective partnerships require active community participation, community ownership and control programs, and continual relationship building” [20]. One of the useful strategies is that community health professionals are leading communities to solve their own problems by creating alliance with other partners and identifying the right resources that could continuously provide them with exemplar guidance. The project implemented in Jaguar followed this guidance. The purpose is to allow communities to integrate their own ideas, people, and resources during the integration and implementation processes. That is one of the strengths of Jaguar since it possesses a small but committed group of community leaders who are always seeking for opportunities to assist residents with special needs, especially with health necessities. Many experts in community alliance believe upon increasing the level of commitment and involvement of communities through development and improvement of their own capacity. In other words, lead communities to gain knowledge, learn skills, and gain confidence to improve their health through partnerships [20]. This is not a simple task as requires collaboration from academics, community leaders, and health care providers to help promote and provoke change. Also, requires commitment and agreement among mentioned partners in order to open ways for assertive communication, understanding and feedback in lieu of a common goal, community health promotion programs [20].

Following that thought, CHN students and professors deliver a variety of health and safety promotion activities throughout communities in need. In Jaguar, community leaders have welcomed UPRH students and feel very grateful after witnessing all accomplishments met with most vulnerable inhabitants. Students form part of monthly meetings with community leaders. Also, participate actively in meetings with Municipality representatives and other valuable resources such as Fire Department, Police Department, communities of Faith, non-governmental entities, among others. Such actions help to enhance partnership and maintains the community on top of problem-solving and decision-making disclosures for their own well-being. One of the principles to understand when establishing successful partnerships is maintaining a culturally and ethnic sensitive mentality. That same mentality directs to assist communities on aligning their perceptions of health problems. CHNs have a great responsibility on that task through primary health care strategies. Thus, are key players on transforming the current fragmented individualized health care system into a reformulated vision for the future [20]. Therefore, the target should be seeking for ways to improve health and quality of life for all and exploring primary health care community program options. Community members deserve comprehensive health care guided by “principles of equity, participation, and involvement of communities in making decisions about health care” [20].

**Empowerment through Community Participation**

The advantage of having a primary health care framework in communities is that services are provided based on current socioeconomic status. Historically, there have been three community health program approaches used in different countries to promote participation. Rifkin [20] described them as:

Medical approach controlled by physicians with emphasis on curing diseases (follows the Primary Care Model rather than the Primary Health Care Model)

Health services approach mobilizing people to take an active role in the delivery of services based on modifying unhealthy behaviors, and

Community development approach involving people in the decision-making process to improve health (p. 95).

As explained by Rifkin, the first two approaches above do not meet community needs since health care providers inject their health care values for the public. Opposite to the third approach (primary health care-oriented) where community members determine the health care services that they should be provided. Having that said, CHNs are responsible to empower community members “to make decisions and to act on issues they believe are essential to their health or well-being” [20]. This is called participation.

There are three components within empowerment through participation. The first one is known as active participation. In other words, there is no space for outsiders to impose their values on the community. This has been a challenge for community leaders as they feel that their health necessities and disparities have not been addressed properly by the local government. As expressed by community leaders, they have sustained numerous meetings with current and previous Municipality leaders without success. Although community leaders have presented the specific needs of the community, they still feel abandoned and ignored by government authorities. Community leaders have felt that the government act every four years when approaching government elections. However, their actions are not led by the real needs of the community, but what they believe is needed. In other words, they perceive that the government is trying to impose what they want, but not what the community needs.

The second component involves choice, meaning that people have the right to make their own decisions regarding their lives. As stated by Jaguar community leaders, this component has two ongoing issues that need great attention. One of them relates to what was pointed out above (first component) where community leaders feel that they do not have the opportunity to make their own decisions. In other words, decisions are imposed by government officials. The second one is provoked by their own inhabitants. No matter how much they try to involve the entire community in social activities (e.g., health fairs, field days, “bingo and domino day”, bazaars), participation is limited and carried out by the same group of people. Those who attend end up enjoying all activities, but they would like to have more participation. As an important addition to this project, as expressed by community leaders, a bigger participation is seen when activities are organized and led by UPRH students. Nonetheless, they do not see students as outsiders, but an important integration to the community.

The third component states that once decisions have been made through participation, there is also a big chance for those decisions to become effective. Eventually, social systems will arise allowing implementation. When incorporating all health care experts into the primary health care strategy, the goal goes to empower communities to visualize their needs and have them participate actively in the phases of planning and implementation of the needed change. This has been an area of success once UPRH students became an asset to the community. According to B. Torres, community leaders’ president, (personal communication, January 27, 2021), what students have accomplished on behalf of Jaguar, based on its real necessities, has been a key factor to where Jaguar stands today, and its visibility to the government. As pointed out by B. Torres, there are still issues to address, typical on any community; however, he denotes how grateful the entire community is just by having the presence of UPRH students in their community.

Adding to developing partnerships through a process of empowerment, Freire describes four characteristics of an empowered community [20]. The first characteristic is faith in people, which means that any person has the potential to have a voice in any issue, either favorable or unfavorable, related to the community. Faith demands for commitment among community members to create alliances within the community with those more vulnerable. Those people living in vulnerability conditions have also a voice and may be of great help to implement changes on behalf of the community. However, to have faith in people, it is crucial to also trust (second characteristic) people and promote effective communication among all parties [22]. In response, people will collaborate with one another by transforming ideas into real actions [22] that will also bring about change into the community [20].

The third characteristic is hope, which impulses people to act, mobilize forces, and envision a better future. According to Rodríguez-Howell [22], all humans go through that wave of “ups and downs” in life that with hope, there is still a spark that provides the strength and determination to continue living and seeking for possibilities, especially during the “down” moments. However, none of the three characteristics mentioned above can be achieved without critical thinking (fourth characteristic) and evaluation of their thoughts. In other words, people should speak out and share their ideas freely [22]. It is important to critically evaluate as opposite to ignore the living conditions of those in vulnerability. As denoted by Freire [20], it is time to “develop new abilities through education to influence others and transform our communities”.

**Methodology**

As part of the community health assessment studies being performed at Jaguar, a complete needs and risk factor assessment was used to collect data related to health and safety issues that affect the community. The familiarization and problem-oriented assessments [3] were selected to assess the community. The familiarization assessment was completed by walking through the community to identify health and safety factors affecting the population. In addition, demographic and geographical data was obtained: gender, age, socioeconomic level, poverty level, education, safety, among other social systems [3]. This information provided a broader perspective of the needs of the community to identify potential future actions, such as, developing health and safety promotion and disease prevention activities. The needs, strengths, and areas of improvement of the community were also identified in conjunction with community leaders to further develop health programming based on their unique needs.

The methodology of the project involved assigning students along with their professors to communities in greater need from the Eastern region of PR. Professors and community leaders identify community residents (clients) that may benefit from health care services and with whom nursing students can intervene. All cases are coordinated and managed through their correspondent health/safety promotion and illness prevention clinic. Depending on the selected clients, relevant health agencies and providers are consulted for continuity of care and treatment as appropriate. Many of these clients are normally referred to the local government. For example, in Jaguar, clients are referred through the “Oficina de Ayuda al Ciudadano” (Citizens Support’s Office) to serve as liaison to other resources and the Gurabo Emergency Management Department when ambulance transportation is required. A "collaboration agreement" between UPRH Department of Nursing, the Municipality of Gurabo [7] and community leaders is in place to maintain the viability of this project.

For bedridden persons or other special limitations preventing them from visiting the clinic, occupational health and nursing students carry out the interventions in their homes. In addition, physical therapy students participate in health fairs and social community events to provide orientation on and model examples of physical movements and therapies that may be performed by clients at home to avoid injuries as well as getting involve in other activities related to their area of expertise. Any safety concern is directed to relevant governmental and non-governmental agencies. Examples include cutting trees, paving, landscaping, electrical and water issues, disposal of solid waste, recycling, flooding, contaminated waters, stagnant sewage, poor or lack of illumination, and infestation, among others.

Rotation of visits to the community clinics by advanced-level Business Management and Office Systems’ Management Programs’ students and their professors are essential for proper administration and coordination of the project. Also, to join efforts on providing training and orientation to community leaders and other interested community inhabitants on topics such as writing grant proposals, computer programs (e.g., Excel, Power Point, Word), inventory, among others. The involved academic programs have clear and precise objectives and tools in place for evaluating the performance of their students. The evaluation instruments are used for project assessments as well as collection of reporting data required by accrediting agencies. The academic programs that perform research studies in the communities submit their research proposals to the UPRH IRB for approval. Once approved, an informed consent is signed by both, participants, and researchers before data collection begins.

**Community Assessment Findings**

Historically, the community of Jaguar has had very few businesses (e.g., shops, sport bars), but they have suffered a remarkable reduction since Hurricane Maria, with some businesses staying closed. This is a community with a strong grounding in their faith and their values are passed down from generation to generation. Another strength of the community is that many residents know each other and help one another as necessary (B. Torres, personal communication, September 18, 2018). The community has a “Residents’ Committee” led by very engaged leaders who work and advocate for the community. According to B. Torres, "they always want residents to feel proud of where they come from" (personal communication, September 18, 2018). While the leaders are open to community activities, for example, recreational, and education that can benefit the community, a weakness (area of improvement) is that attendance at these activities is poor. Many people in the community have lost their homes completely or partially during Hurricane Maria. Those who are bedridden continue to live in the structures that are unsafe for their health.

**Familiarization Assessment**

**Physical:** The community is divided into nine sectors; although none of them have a physical or natural structure or a sign that divides them. Rather, the division is made by the same residents. Even so, within these sectors there are also internal divisions and mostly given surnames of families living in the area.

Related to drinking and potable water services, there are several sectors that finally have the service, but they struggled significantly since Hurricane Maria in September 2017, as many people spent between three to four weeks without potable water (B. Torres, personal communication, October 22, 2019). Even worse, numerous residents said that they had lost their potable water service since Hurricane Irma which preceded on September 6, 2017. Others were able to regain service after Hurricane Irma, only to lose it again with Hurricane Maria. The entire community spent around five months without electricity service (B. Torres, personal communication, October 22, 2019). The community suffered so much structural and natural damage that by December 2018, there were still areas that required restoration efforts, limiting student access to these areas. Today, there are some areas with limited to no lighting on the roads. As expressed by B. Torres, many community residents have a great concern and fear about their safety because at night any stranger could enter their neighborhood and homes.

The ravages of the hurricane were reflected in exterior household drawings (graffiti), the amount of rubble and in some cases, the complete destruction of homes. After the hurricane there were sectors that required greater efforts over a duration for recovery. One of the difficulties and biggest challenges was the need for heavy equipment to reach to some of the areas to clear debris. Safety was of great concern as live electric wires either hanging or on the ground; fallen trees and electric and light poles; blocked highways, main roads, streets, and paths to people’s homes. The accumulation of debris and standing water created an unsanitary environment allowing rodents, insects, and other vectors to proliferate. Abandoned canines and felines also roamed freely through the community bringing other safety and health concerns.

**Economy:** As observed during the familiarization assessment the economy in the area is low. The community is mostly composed of elderly people, so most of their income comes from government aid such as “Tarjeta de la Familia” (Family Card), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the Social Security. There are no industries, manufactures, businesses or shops that can provide employment to the younger residents, many of whom provide care to their elderly parents and grandparents. Those who are alone do not have family to care for them, due to migration to the US or for other reasons. Besides the destruction of the homes by hurricanes, many of the residences are in disrepair because of the lack of finances to maintain the buildings and properties.

**Services:** Within the community there are not many services to benefit the residents. The community had a school many years ago, but it is no longer operational due to the census of children was not sufficient to keep it open. As stated before, Jaguar is mainly comprised by the elderly. Education from elementary through secondary and vocational schools are accessible in neighboring communities. Most of the children get to school by school district bussing and private transportation (e.g., parents or relatives). The community also does not have a communal library; therefore, inhabitants must reach the main town of Gurabo, where the Municipal library is located.

Most services are accessed by travelling into the nearest town of Gurabo. These include gasoline for their personal vehicles and social services such as the center for the elderly. The nearest hospital and medical clinics are also in Gurabo. Medical specialist care must be sought in larger municipal centers. There are home medical visits by physicians every three months for those unable to leave their houses. Bus service has returned to the area after the vehicles were used for the distribution of supplies post Hurricane Maria. The busses only run on the main road connecting the community to other areas twice a day, with one departure and one arrival. This situation greatly limits the mobility of the community as they must travel to the bus stop from their home and then must wait for hours for the bus in both directions.

The community is reliant on all services from Gurabo: police, fire, and sanitation departments. The location of Jaguar on hilly terrain limits the regularity of waste removal as reported by residents. This forces residents to keep trash in their homes for extended periods of time or carry it to waste disposal locations in their personal vehicles.

**Social:** The average annual income of the assessed families was between $12,000 to $35,999. The study from Pagán, et al. [18] revealed that 2.8% of participants stated that the school dropout rate was a social problem in the community.

The community has four places of worship, each representing a different Christian denomination throughout the community. A community center provides various recreational resources including an indoor basketball court and a playground for younger children. The basketball court was damaged by Hurricane Maria and was reopened in April 2019. The children's playground has not been observed to be used by any residents. Larger recreation centers are located in Gurabo, such as a soccer court, a larger youth center and a sports museum. In general, safety has not been reported to be an issue, however the loss of electricity, clean water, employment, and destruction in the aftermath of Hurricane Maria created uncertainty or, as expressed by a resident, “living in the mouth of the wolf", make them uncomfortable and even fearful at night.

**Project Outcomes**

As discussed in the community assessment findings, Jaguar has multiple needs and goes through many disadvantages that are demonstrated by the poor health outcomes of the residents. The first author and the students first used the Community Center in Jaguar for meetings as well as pre- and post- clinical conferences. After Hurricane Maria, the building was declared unsafe by the municipality. Meetings with the mayor were needed to make a former school classroom available to coordinate student activities and serve as a clinic for the delivery of care to community members. The mayor was provided with documentation of students’ previous research activities and interventions in the community to begin plans for what could be done going forward.

As explained above, thanks to the confidence given by community leaders and the municipalities of Yabucoa, Humacao, and Gurabo, UPRH already has three clinics to provide health and safety promotion initiatives as well as illness prevention activities. Health and safety fairs as well as diverse education activities have taken place in those clinics in a variety of topics with excellent support from community leaders and ample participation of community members. Another great outcome is that the Gurabo Municipality has provided some residents (clients) with housekeepers to assist certain days and times of the week. This has provided some relief to elderly caregivers who take care of other household elders. In addition, students have made new and follow-up medical appointments to residents who have not been able to do so for many years. Also, some of those clients, through this project, finally have a primary medical provider. Others, now, have scheduled home visits by health care providers.

Local schools from mentioned municipalities have also been designated sites for educational activities. To maintain communication and collaboration, the first author and students participate in residential committee meetings. Community leaders along with some residents are invited to attend oral research presentations made by students at UPRH. The importance and advantage given to students’ presentations is that community leaders from each community can witness what has been done at the other communities. Some actions for improvement may also work at other communities, respectively. Another advantage is that community leaders have the chance to get together and to know each other, sharing their own experiences with UPRH students. These are examples of opportunities for strengthening the alliances and building new ones with other communities.

**Conclusion**

This project allowed local government authorities to provide a space in which community residents with certain needs can receive health and safety promotion activities with the goal of preventing diseases. This is a win-win situation where residents benefit from receiving holistic health assessments and education related to their individual conditions while students further their practice of caring for people directly. Collaboration with other valuable community resources such as firefighters, local police (state and municipal), Federal Emergency Management Agency (FEMA), Red Cross, or non-governmental agencies among others creates safety in their united efforts to provide needed services.

The collaborative nature of the project provides an environment for community leaders to become empowered and take control of the management and coordination of their respective clinics. The students from the Departments of Business Management and Office Systems’ Management provide training, advice, and support to community leaders on clinic management, delivering a service while they hone their skills. Local government and public health officials demonstrate engagement and commitment along with UPRH academic departments.

This project validates the community setting as most appropriate for health profession student learning and delivery of care interventions to individuals and families to promote health and safety and prevent illness. The incorporation of students and faculty from academic programs such as Occupational Therapy, Physical Therapy, Social Work, Business Management, and Office Systems’ Management provides opportunities to learn interprofessional practices that improve outcomes by bringing about change, community alliance and empowerment, new health and safety strategies, and partnership.

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