Ageing of Population and Challenges of Caring of Elderly Patients, Including Palliative Care Services

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Introduction

For the future of Mexico and for the future of other countries, there needs to be more emphasis on the delivery of palliative care services. According to the WHO, palliative care is an approach that improves the quality of life for people with life threatening illnesses and focuses on alleviating suffering. This approach is especially useful for aged people, who have noncommunicable diseases (NCDs) such as cancer or diabetes. Because these diseases are often incurable, palliative care is necessary for these patients in order to manage the symptoms and pain.

However, currently in Mexico, there are not enough palliative care services for the aged population. This will be a bigger burden in the future as there will be more aged people with NCDs due to population patterns and growing health risks that cause NCDs. Because of this, it is important to assess the advantages and obstacles of the different types of palliative care delivery models. Our team looked at the Casa de Acogida de las Hermanas del buen Samaritano, a non-governmental organization (NGO) focused on offering palliative care and primary care to underserved communities located in Malinalco, State of Mexico. Our team assessed the types of patients that used the services at the clinic and why they came to the clinic. Our team also talked to the health care professionals there to identify barriers they encounter at the clinic. We found our results using retrospective and prospective research methods involving reviewing medical records, surveys and structured interviews.

Background

According to the World Health Organization, palliative care is defined as ¨an approach that improves the quality of life of patients and their families facing the problem associated with life threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.”[1]

Because palliative focuses on alleviating suffering in many fields, the palliative care team needs to be multidisciplinary.[2] Physical symptoms and pain needs to be carefully assessed so patients can get the appropriate treatment of symptoms; it is thus important that there is a general practitioner, palliative care specialist nurse, pain specialists or someone similar in the team. What makes palliative care unique is its inclusion of psychological and emotional support. While alleviating physical pain is important, palliative care centers on improving the quality of life

of the patient with life threatening illness; therefore, psychological symptoms must also be addressed. It is thus likely that there would be a psychologist or a psychiatric in the team. This team can also include non-medical support persons, such as a spiritual carer, school support staff and more.

Palliative care is often used for life limiting illnesses.[3] This broad category include chronic diseases such as cancer, end stage organ failure, neurodegenerative disease and diabetes. Most of these diseases are noncommunicable diseases (NCD), or diseases that are non-infectious and non-transferable between people. According to WHO, NCD kill about 38 million people each year.[4] Of this, cardiovascular diseases kill about 17.5 million people each year; cancers kill about 8.2 million people each year; respiratory diseases kill about 4 million people each year; and diabetes kill about 1.5 million people each year.[4] NCDs thus pose as a major public health concern. These diseases also create symptoms that are painful or uncomfortable for the patients, including fatigue, pain, constipation, dyspnea, cognitive impairment, anxiety and depression.[5] Palliative care is thus used to palliate these symptoms to improve the quality of life of a patient.

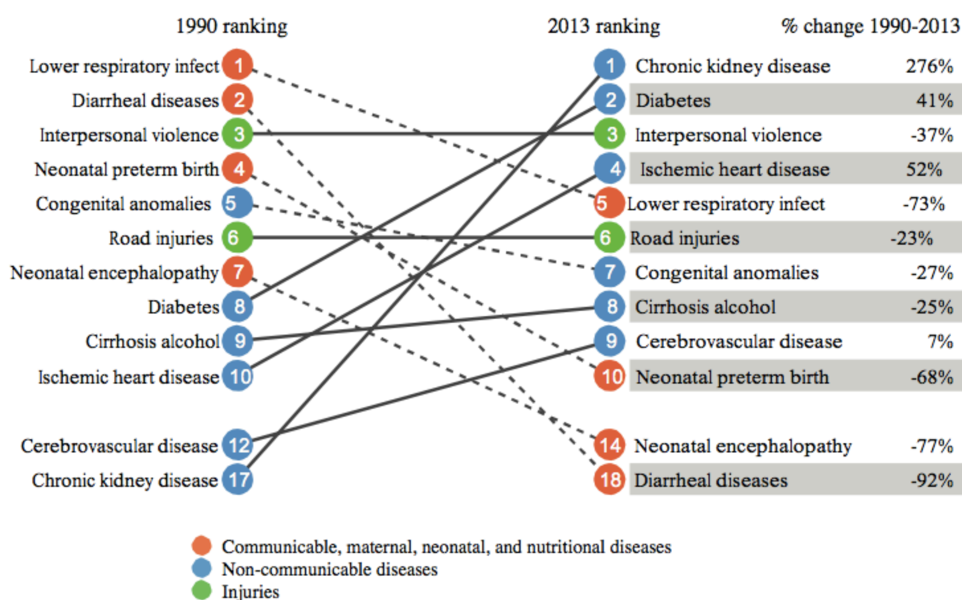
While some NCDs are unavoidable, there are certain risk factors that can lead to developing an NCD. Obesity and poor diet, for example, can lead to the onset of diabetes; this can eventually lead to chronic kidney disease.[6] These health risks have been on the rise and will lead to a higher incidence of NCDs. It is also important to note that mental health disorders can lead to NCDs. Mental health disorders such as schizophrenia and dementia may prevent patients from seeking care for an NCD and wait until the symptoms become acute.[7] In fact, people with mental health disorders often have comorbidities that are NCDs.

In order to improve the quality of life of a patient, the palliative care team needs to first assess the quality of life of the patient to see what can be improved. While measurements such as life expectancy are useful to a certain extent, it is useful to measure the burden of NCDs with disability-adjusted life years (DALYs) and health related quality of life (HRQoL). DALYs is used to quantify the burden of disease by accounting years of life lost (YLL) due to premature mortality and years lost due to disability (YLD) compared to people living with optimal health. This is useful in calculating how much years are lost to disabilities. HRQoL is a measurement of patient's perception of their own health. This questionnaire calculates how much time a person felt debilitated by a physical or mental disability. These two measurements are useful in measuring the burden of chronic illnesses including NCDs. It is especially useful for palliative care teams to measure HRQoL in order to improve the or maintain the quality of life for a patient with a life threatening illness. The Edmonton Symptom Assessment Scale (ESAS) is an

important tool used by health professionals to assist in the assessment of nine symptoms that are common in palliative care patients: pain, tiredness, drowsiness, nausea, lack of appetite, depression, anxiety, shortness of breath, and wellbeing. Patients communicate their intensity of their symptoms on a 1 through 10 scale.

Globally, palliative care is a still relatively new concept that countries are trying to implement. Only 20 countries have achieved advanced integration of palliative care.[8] Because there has been a shift from infectious diseases to noncommunicable diseases in conjunction with growing life expectancy, palliative care is becoming more crucial. According to the "Global Burden of Disease Study 1990-2013, Mexico" conducted by the Institute for Health Metrics and Evaluation (IHME) and the Instituto Nacional de Salud Publica, noncommunicable diseases have risen significantly while communicable diseases have dropped greatly in the last 20 years in Mexico.[9] Noncommunicable diseases such as chronic kidney disease and diabetes have risen to the top of the leading causes of years of life lost (YLLs) by 276% and 41% from 1990 to 2013, respectively.[9] On the other hand, infectious diseases such as lower respiratory infection and diarrheal diseases have decreased by 73% and 92%, respectively.[9] These statistics show the transition of Mexico from a developing country to a developed one with the challenges of treating both types of diseases simultaneous.

Diagram from "Global Burden of Disease Study 1990-2013, Mexico," IHME



Palliative care will be of great concern in the near future for the country of Mexico. Currently, 11.1% of Mexico´s population is over the age of 60 years. This percentage will increase to 30.1% in 2050, and 55.5% in 2100.[10] The Mexican population also has several high risk factors that make the population vulnerable to NCDs, especially chronic kidney diseases and diabetes; Mexico's largest health risks are high fasting plasma glucose and high body-mass index.[11] Because more Mexicans will face these life threatening illnesses in the near future, it is important to identify what components of palliative care in Mexico needs to be strengthened. In 2008, there were only 14 palliative care services for every 7,645,000 Mexicans, while there were 3,300 for every 90,000 people in the US.[12] In general, palliative care in Mexico is provided ¨mainly by hospital-based teams that operate as part of their organization's pain service¨.[12] These can take the form as hospices, inpatient units, hospital teams or home care services. The delivery of care, however, is not consistent in Mexico, as vulnerable populations often do not get the adequate palliative care they need.[13] It is thus important to assess palliative care services that target these vulnerable populations. It is also important to assess if palliative care services have adequate supplies and medication, including opioids such as morphine.

The Casa de Acogida de las Hermanas del Buen Samaritano is one such organization that targets this vulnerable population. Located in the rural area of Malinalco, Estado de Mexico, Mexico, this clinic, started by nuns from Chile who saw the disparities in the community, focuses on offering palliative care and primary care. Any patient around the area can seek free health services from the clinic. The health facilities include 45 beds, 5 offices for primary health care medical consult, a pharmacy that has all its drugs and medication donated, and a free dining hall for children. The clinic has a partnership with the Universidad Panamericana in which health care students volunteer their time and work at there.

The patients at the Casa de Acogida de las Hermanas del Buen Samaritano are often aged (older than 65 years old) and lack access to health care and other resources. While aged Mexicans with progressive illness that have access to health care services are more likely to die in hospitals, those without access often die prematurely and without adequate palliative care.[4] This is because those without access to care lack the screening process that prevents the onset of these non-communicable diseases.

Like other aged Mexicans that lack access to care, many of the patients at the Casa de Acogida de las Hermanas del Buen Samaritano have comorbidities, which is the simultaneous presence of two or more chronic diseases in a patient. This causes an extra burden to be put on the health care providers, as they have to deal with multiple diseases on patients.

Research Objectives

Our research objectives for the project were to perform a situational analysis at the Casa de Acogida Hermanas del Buen Samaritano. At the clinic in Malinalco, we were to assess the different types of patients admitted, assess the prevalence of symptoms and pain in the patients, and identify specific obstacles that health care providers face. By doing this, it provides the framework for future improvements in palliative care services not only at this Malinalco clinic but elsewhere as well.

Methodology

The research project was divided into four different sections:

- The historical characterization of patients in the Casa de Acogida de Hermanas del Buen Samaritano
- The current characterization of the patients
- The prevalence of symptoms and pain
- And identifying the barriers for pain management for health professionals.

The research team used both retrospective and prospective research methods in order to gather data. The team went to the Casa de Acogida de Hermanas del Buen Samaritano and spent three days gathering information.

In order to get a historical characterization of patients in the Casa de Acogida de Hermanas del Buen Samaritano, we reviewed clinical records of dispatched patients to assess medical, psychological and sociodemographic variables of former patients. We also reviewed where patients came from before coming to the clinic. The team went through 119 records that were significantly useful. The results were recorded in Form 1.

Another team talked to the current 34 patients in order to assess the characterization of the patients. These took form as structured interviews using questions from Form 2. In addition, the team reviewed the medical records of the current patient for patient history. A modified Elderly Cognitive Assessment questionnaire was also used to assess the cognitive functions of the patients. The results were recorded in Form 2.

The same team also recorded the prevalence of symptoms and pain. The team talked to the patients and used several measures to assess the what symptoms and pain were prevalent in the patients: the Edmonton Symptom Assessment System, the Barthel Index, the Morse Fall

Scale and a Mini Nutritional Evaluation from the Nestlé Nutritional Institute. The team used the Edmonton Symptom Assessment System to assess symptoms and pain. The team used the Barthel Index in order to assess the patient's performance in activities of daily living. The Morse Fall Scale was used to assess the patient's risk of falling. Finally, the Mini Nutritional Evaluation was used to assess the nutritional status of the patients. The results were recorded also in Form 2.

An additional team talked to the health professionals of the clinic in order to identify barriers in achieving successful medical care. The team interviewed the health professionals and asked questions for Form 3 in order to assess what resources the health professional have at the clinic and to assess what additional resources the health professionals want. The team also asked the health professionals where they thought there could be areas of improvement. The results were recorded in Form 3.

The team analyzed the data using SPSS to determine factors associated with the patient population and the barriers to achieving successful medical care.

Results

Historical Characterization of Patients

The team went through 108 medical records of dispatched patients in Malinalco. The main characteristics of the patients are shown in Table 1. Overall, the mean age was about 68 years and 51% were male. About 60% of these patients were above the age of 65. Nearly half (45.7%) of the patients were from Malinalco, however, there were a number that were from nearby municipalities such as Ocuilan (22 km away) and Tenancingo (17 km away), and as far as Toluca (60 km away) and the Ciudad de Mexico (100 km away).

Table 1: Demographic Characterization of Dispatched Patients, mean ± SD or number (%)

Characteristics	Study Population (n=108)
Gender	
Male	55 (50.9%)
Female	53 (49.1%)
Missing	n=0

Age	
Male Mean	66.9 ± 2.4
Female Mean	70.4 ± 2.7
Total Mean	68.6 ± 1.8
0-49	14 (15.6%)
50-59	13 (14.4%)
60-69	14 (15.6%)
70-79	20 (22.2%)
80-89	22 (24.4%)
90 or more	17 (7.8%)
65 or older	55 (61.1%)
Missing	n=18
Location	
Malinalco	43 (45.7%)
Ocuilan (22 km)	9 (9.6%)
Mexico City (100 km)	8 (8.5%)
Tenancingo (17 km)	7 (7.4%)
Toluca (60 km)	3 (3.2%)
Other	24 (25.5%)
Missing	n=14
Education	
Illiterate	13 (18.8%)
Primary (Incomplete)	14 (20.3%)
Primary	21 (30.4%)
Secondary	9 (13.0%)
Preparatory (Incomplete)	2 (2.9%)
Preparatory	5 (7.2%)
Bachelor Degree	4 (5.8%)
Post Graduate	1 (1.4%)
Missing	n=39
Where they came from before the clinic	
Their Own Home	36 (46.8%)
Family Member's Home	17 (22.1%)
Hospital	17 (22.1%)
Abandoned on Street	4 (5.2%)
Hospice or Senior Home	3 (3.9%)
Missing	n=31
Marital Status	
Single	36 (40.4%)
Married	24 (27.0%)
Divorced	3 (3.4%)
Widowed	26 (29.2)
Missing	n=19

Primary Caregiver	
Spouse	8 (9.4%)
Parents	2 (2.4%)
Brother or Sister	8 (9.4%)
Children	34 (40.0%)
Nephew or Niece	11 (12.9%)
Other	22 (25.9%)
Missing	n=23
Reportedly has a Caregiver	
No	23 (21.3%)
Yes	85 (78.7%)
Missing	n=0
Medical Reason for Admission	
Palliative Care	31 (31.0%)
Chronic Prostration	7 (7.0%)
Special Care of an Illness	57 (57.0%)
None	2 (2.0%)
Other	3 (3.0%)
Missing	n=8
Social Reason for Admission	
Abandoned	11 (14.3%)
Caregiver Exhaustion	12 (15.6%)
Poor Social Network	16 (20.8%)
Economic Difficulty	5 (6.5%)
None	29 (37.7%)
Other	4 (5.2%)
Missing	n=31
Main Diagnosis for Admission	
Diabetes	4 (4.0%)
Cardiovascular	16 (15.8%)
Cancer	17 (16.8%)
Rheumatologic	0 (0.0%)
Trauma/Burn	20 (19.8%)
Psychiatric	16 (15.8%)
COPD/Respiratory	6 (5.9%)
Others	22 (21.8%)
Missing	n=7
Presence of Two or more Illnesses	
Not Comorbid	28 (27.2%)
Comorbid	75 (72.8%)
Missing	n=5
Symptoms	
Hypertension	21 (20.4%)
Diabetes	19 (18.4%)
Both	8 (7.8%)
Missing	n=5

Because Malinalco and other previously mentioned municipalities are mostly low-income rural areas, many of the patients had limited access to education. Approximately 70% of the patients at the clinic completed elementary school or less, which contributes to the barriers healthcare providers have to go through to communicate with them.

Many of the patients, prior to receiving care from the clinic, lived alone. 47% of the patients came from their own home; of those, about 58.3% of them were single or widowed. While additional details were not provided in the records, it can be assumed that they did not have a caretaker before coming to the clinic. However, many of them did have family members that helped bring them to the Casa. Of the 108 patients, 85 of them had a family member bring them to the clinic, while the other 23 patients did not seem to have a family member with them at the time of admission. 40% of the patients were brought by their children.

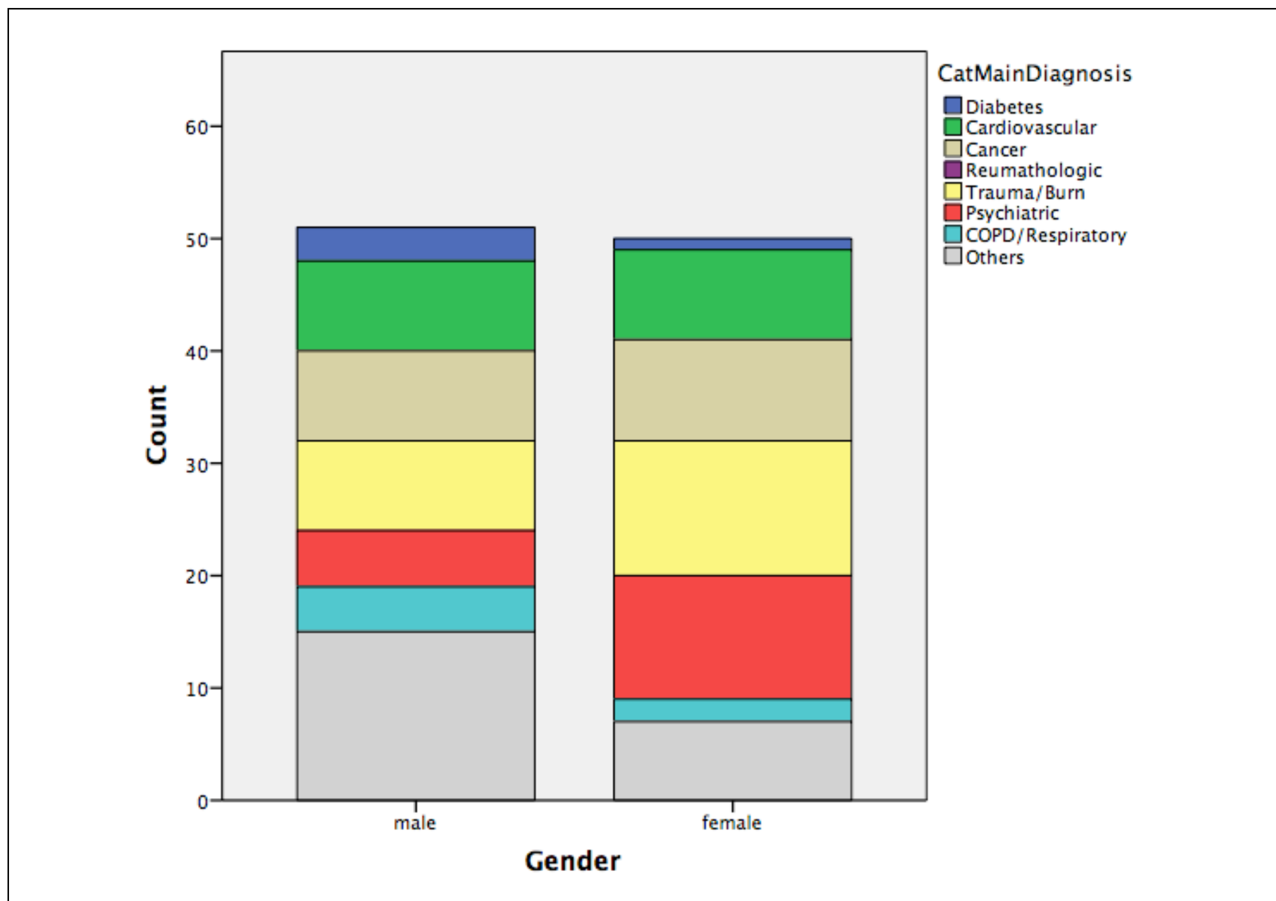
A majority of the patients from Malinalco came to the clinic for special care for an illness (57.9%). A significant amount of patients from Malinalco also went to the clinic for palliative care (34.2%). Of the patients from Malinalco, about 61.5% of them were above the age of 65. The youngest of them was 34 years old, and the oldest was 92 years old.

The majority of the patients at the Malinalco clinic came in for special care of an illness (57%). The top four diagnoses for admission at the clinic were trauma/burn (20%), cancer (17%), psychiatric disorder (16%), and cardiovascular disease (16%). It should be noted that 73% of the patients had comorbidities meaning that the health care providers had the task of treating two or more diseases simultaneously. More women came into the clinic for trauma/burn or psychiatric reasons than did men (Fig. 1).

Diabetes and hypertension were prevalent among the patients. About 20% of the patients had hypertension, about 18% had diabetes, and 8% had both. There was a correlation between those who had hypertension and those who had diabetes (r=0.256, p< 0.01).

60% of the patients died while receiving care at the clinic. 15.6% of patients were voluntarily discharged, which means that while the caretaker recommended the patient to stay at the clinic, the patient voluntarily left the clinic. Only about 10% recovered from their illness at the clinic, and another 10% were transferred to another institution.

Figure 1: Category of Main Diagnosis of Past Patients between Genders



A description of length of stay is shown in Table 2. The median length of stay was 76 days, however, this has changed throughout the years. Before 2014, the median length of stay was 204 days; from 2014 onwards, the median length of stay was 44 days (Fig. 2).

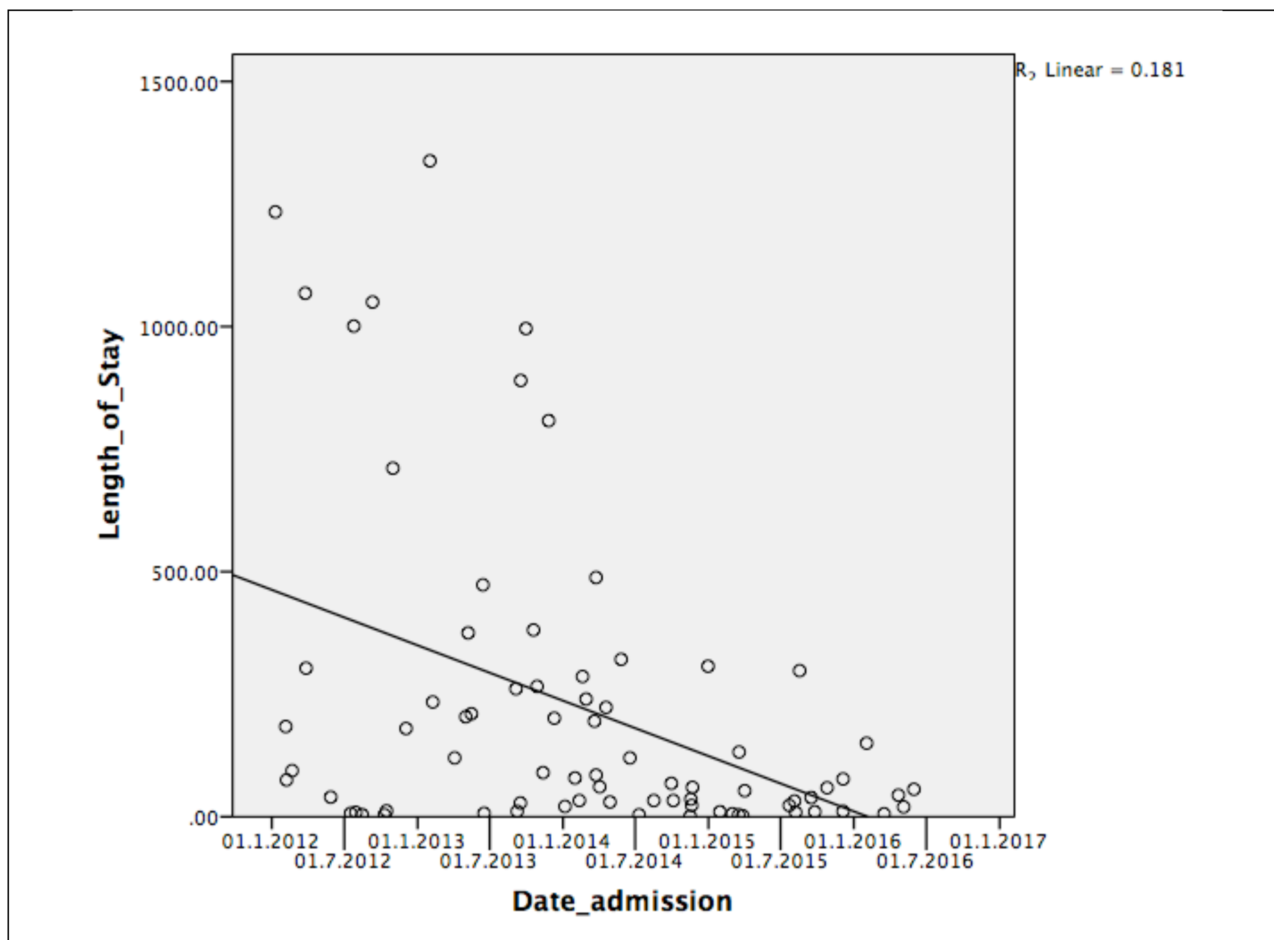
Table 2: Length of Stay and Discharge Reason of Patients

Length of Stay	
Overall Median	76 Days
A Week or Less	12 (16.0%)
1-4 Weeks	11 (14.7%)
1-2 Months	12 (16.0%)
2-6 Months	11 (14.7%)
6-12 Months	16 (21.3%)
1-2 Years	5 (6.7%)
More than 2 Years	8 (10.7%)
Missing	n=33

Discharge Reason	
Died	54 (60.0%)
Recovered	8 (8.9%)
Transfer	10 (11.1%)
Voluntary Discharge	14 (15.6%)
Family Reason	2 (2.2%)
Other	2 (2.2%)
Missing	n=18

We observed that patient´s stay was dependent of the main diagnosis. For patients that came in for psychiatric reasons, the median length of stay was about one year, while for those that came in for respiratory reasons it was 20 days. Patients that died at the institution had a median length of stay of 85 days; whilst dispatched patients had a median length of stay of 60 days. The average age of death was 71.3 years.

Figure 2: Length of Stay (Days)of Dispatched Patients Throughout Time



Current Patients

Currently, the Casa de Acogida de las Hermanas del Buen Samaritano has a population of 38 patients, and main characteristics are shown in Table 3. The patients have a mean age of about 69 years and 53% were male. Approximately 70% of these patients are over 65 years old. The two most common locations the patients come from are Malinalco (22%) and Mexico City (19%). However, there are still many that come from neighboring locations such as Tenancingo and Ocuilan. The majority of the patients at the clinic have only completed elementary school or less (70%).

Table 3: Demographic Characterization of Current Patients, mean ± SD or number (%)

Characteristics		Study Population (n=108)
Gender		
	Male	18 (47.4%)
	Female	20 (52.6%)
Age		
	Male Mean:	71.8 ± 3.6
	Female Mean:	65.8 ± 6.0
	Total Mean:	68.6 ± 3.6
	0-49:	9 (23.7%)
	50-59:	0 (0%)
	60-69:	5 (13.2%)
	70-79:	11 (29.0%)
	80-89:	7 (18.4%)
	90 or more:	6 (15.8%)
	Majority 65 or older	25 (65.8%)
Location		
	Malinalco	7 (21.9%)
	Ocuilan	3 (9.4%)
	Mexico City	6 (18.8%)
	Tenancingo	2 (6.3%)
	Toluca	3 (9.4%)
	Other	11 (34.4%)
	Missing	n=6

Education	
Illiterate	8 (26.7%)
Primary (Incomplete)	6 (20%)
Primary	7 (23.3%)
Secondary (Incomplete)	1 (3.3%)
Secondary	4 (13.3%)
Preparatory (Incomplete)	0 (0%)
Preparatory	2 (6.7%)
Bachelor Degree	1 (3.3%)
Post Graduate	1 (3.3%)
Missing	n= 8
Where they came before admittance	
Own home	13 (44.8%)
Relative's home	8 (27.6%)
Hospital	4 (13.8%)
Hospice/ Elderly home	1 (3.4%)
Homeless	3 (10.3%)
Missing	n= 9
Marital Status	
Single	22 (64.7%)
Married	3 (8.8%)
Divorced	2 (5.9%)
Widowed	7 (20.6%)
Missing	n=4
Primary Caregiver	
Parents	4 (11.2%)
Brother or Sister	6 (16.7%)
Children	7 (19.5%)
Nephew or Niece	2 (5.6%)
Grandchildren	1 (2.8%)
Cousin	2 (5.6%)
Friend	1 (2.8%)
Other	13 (36.1%)
Missing	n=2
Medical Reason for Admission	
Palliative Care	11 (30.6%)
Chronic Prostration	6 (16.7%)
Special Care of an Illness	17 (47.2%)
None	1 (2.8%)
Other	1 (2.8%)
Missing	n=2
Social Reason for Admission	
Abandoned	12 (37.5%)
Caregiver Exhaustion	11 (34.4%)
Poor Social Network	6 (18.8%)
None	3 (9.4%)
Missing	n=6

Main Diagnosis for Admission	
Diabetes	4 (10.5%)
Cardiovascular	11 (28.9%)
Cancer	1 (2.6%)
Rheumatologic	3 (7.9%)
Trauma/Burn	2 (5.3%)
Psychiatric	9 (23.7%)
COPD/Respiratory	1 (2.6%)
Others	7 (18.4%)
Missing	n=0

Similarly to past patients, many of the current patients at the clinic (48%) came from their own home and were single or widowed (90%) before being admitted to the Casa de Acogida de las Hermanas del Buen Samaritano. However, for this current patient population, 36% and 20% of them had their brothers or sisters and children as their primary caregivers before admission, respectively. Again, many of the patients came in for special care of an illness (57%). Currently, the top three diagnoses for admission at the clinic are cardiovascular disease (29%), psychiatric disorder (24%), and diabetes (11%). An astonishing number comes from 90% of the patients having comorbidities, which again shows how difficult it is to care for this population. As many as 15 of the 38 patients were malnourished, as shown in Table 4. Malnourishment increases the risk of comorbidities for the patients.

Table 4: MNA Scores among Current Patients

MNA Score	
12-14 (Normal Nutritional)	2 (11.8%)
9-11 (Risk of Malnutrition)	7 (41.2%)
0-7 (Malnourished)	8 (47.1%)
Missing	n=21

While at Malinalco, the patients who were capable answered a questionnaire asking about their symptoms and current status. According to the ESAS, there was no significant difference on the intensity of symptoms between male and female. However, although not statistically significant, there was a difference between prevalent symptoms in patients under 65 years old compared with those over 65 years old. Patients under 65 years old had minor symptoms but for some reason suffered from drowsiness with an average score of 6.5. On the

other hand, we found that patients under 65 years old had more severe complications with pain and well being with average scores of 4.5 vs 0 (p=0.016) and 3 vs 0 (p=0.03), respectively.

From the modified Elderly Cognitive Assessment questionnaire, we found that 58.3% of the patients were cognitively impaired. We found there were relationships between cognitive impairment and other symptoms.

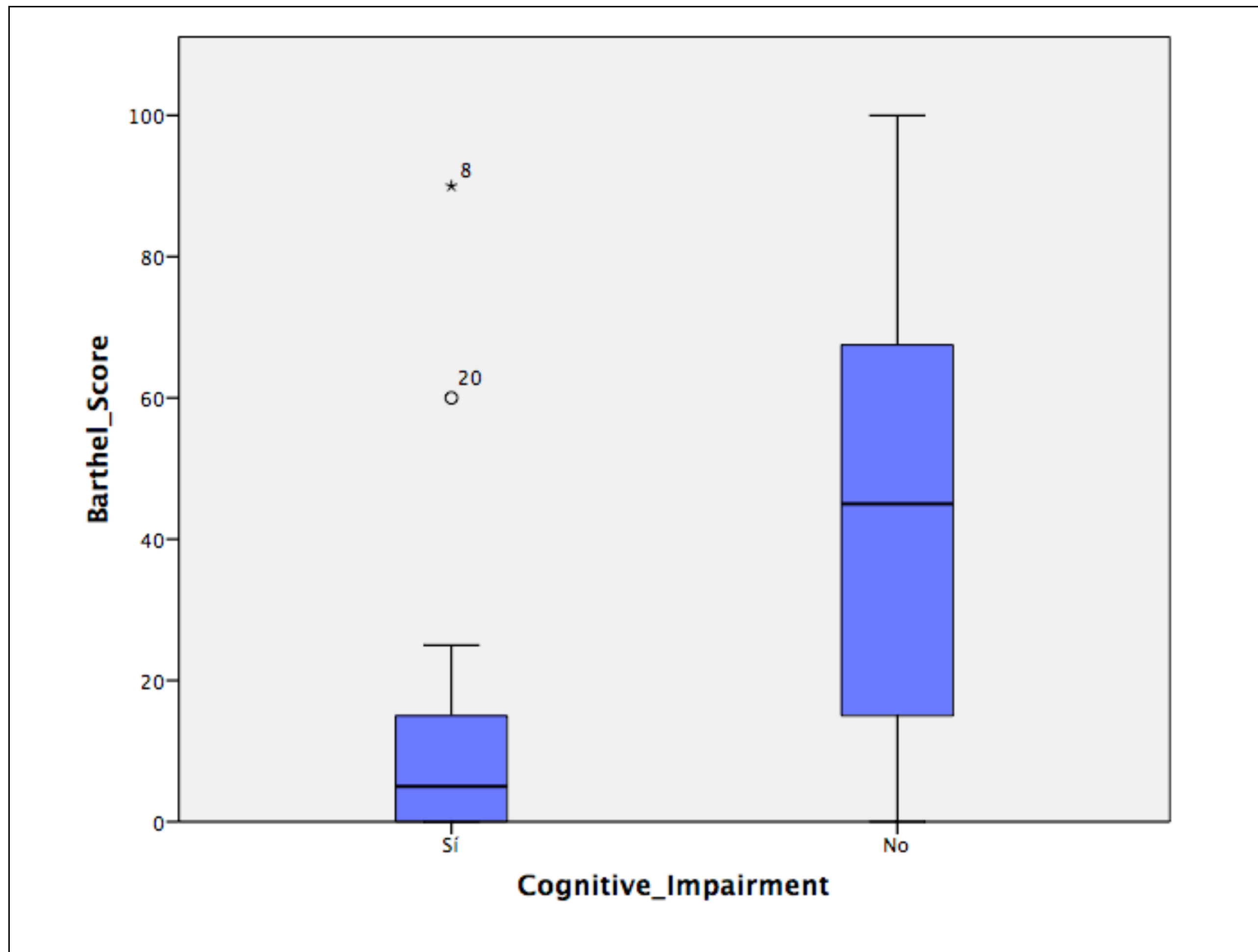
Risk of the patient falling was also assessed. The results from the Morse Fall scale revealed that more than half of the patients had a risk of sustaining a fall. This means that half of these patients had a high likelihood of falling. Although not statistically significant, we observed that patients with cognitive impairments tended to have a higher score and were more likely to fall (Table 5).

Table 5: Risk of Falling between those with Cognitive Impairments and those without

		Without risk	*Low-moderate risk*	*High risk*	*p*
Cognitive impairment	*Yes*	*6 (33.3%)*	*8 (44.4%)*	*4 (22.2%)*	*0.51*
	No	*6 (54.5%)*	*3 (27.3%)*	*2 (18.2%)*	

Of the 34 patients, a third of them scored a 0 on the Barthel Index. Scoring a 0 means that these patients were not capable of living independently and carrying out everyday activities such as bathing or feeding themselves. Interestingly, the Barthel score was drastically different between those with cognitive impairments and those without. The median Barthel score for those with cognitive impairments was 5, while those without cognitive impairments had a median score of 45 (Fig. 3).

Figure 3: Barthel Score Depending on if Patient has Cognitive Impairments



Health Professional Survey

Currently, there are ten health professionals working at the Casa de Acogida de las Hermanas del Buen Samaritano, six of which are doctors and four of which are nurses, as shown in Table 6. The average age of these health care providers is around 24 years old. We conducted a survey asking them a few questions regarding the status of the Malinalco clinic. According to the survey, the most commonly used medications were analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) used by every health professional; hypoglycemics used by 85.7%; laxatives and/or prokinetics used by 28.6%; and antihistamines and/or antitussives. However, what is strange is that the top two used medications used (analgesics, NSAIDs and hypoglycemics) were also quoted to be the scarcest.

Table 6: Health Care Professional Demographics and Medication Used

Characteristics	Study Population (n=10)
Gender	
Male	6 (60%)
Female	4 (40%)
Age	
Male Mean:	23.33 ± 0.67
Female Mean:	24.50 ± 0.50
Total Mean:	23.80 ± 0.47
Health Professional	
Doctor	6 (60%)
Nurse	4 (40%)
Most Used Medication	
#1) Analgesic and AINEs	100% used
#2) Hypoglycemics	85.7% used
#3) Laxatives and prokinetics|	28.6% used
#4) Antihistamines and antitussives	28.6% used
Scarce Medication	
#1) Analgesic and NSAIDs	100% agreed on
#2) Hypoglycemics	57.1% agreed on

Table 7 shows the remaining portions of the health professional survey. An interesting figure came in the form of a question asking whether the health professionals felt they had the skills necessary to work at the clinic. Out of the ten providers, three answered that they did not. However, considering the work is voluntary, we feel that it leaves a lot of room for the students to improve. At the Casa de Acogida de las Hermanas del Buen Samaritano, 50% of the health professionals feel that there is not an adequate number of providers. More specifically, 60% feel that the healthcare field that needs the most help at the clinic are the nurses, due to the amount of patients they have to assist throughout the day. Additionally, 70% of the providers agree there are many barriers they have to go through to give adequate care to the patients. This heavy amount of tough, voluntary work really puts a toll on the workers at the Malinalco clinic, as 40% of the healthcare providers admitted to being burnt-out. Burnout or occupational burnout is characterized by lack of enthusiasm, exhaustion, and reduced efficacy due to high-stress in the workplace. Although many of the professionals at the clinic are burnt-out, they all feel they are making a significant impact in the community. The survey asked on a scale of 1 to 10 how they impactful they feel they are in the community, 1 being no impact at all and 10 being a great impact, and everyone answered with at least a 7.

Table 7: Health Professional Survey

Question / Response	Percentage
Skills necessary to work at La Casa?	
Strongly Disagree	10%
Disagree	10%
Neither Agree or Disagree	10%
Agree	20%
Strongly Agree	50%
Adequate number of health professionals?	
Disagree	30%
Neither Agree or Disagree	20%
Agree	30%
Strongly Agree	20%
Who needs the most help (health professionals)?	
Nurses	62.5%
Doctors	25%
Psychologist	12.5%
Burnout Syndrome?	
Yes	40%
No	60%
Community Impact (Scale from 1-10)	
7	20%
8	30%
9	40%
10	10%
Barriers for treatment?	
Yes	70%
No	30%

Discussion

In our research, we identified and characterized the patient population, what pain and symptoms were prevalent and what barriers to delivering care were present for both the patients and the caregiver. While there have been large-scale studies about palliative care in Mexico, there has been limited research on specific palliative care centers in low-income areas.

There are several limitations in our data. First, our sample size is relatively small, the Casa de Acogida de las Hermanas del Buen Samaritano only recently started keeping formal records, and thus, our dataset was small. Second, in addition to our small dataset, a lot of the medical records were not complete. Some of the data we wanted to look for, such as a person's economic background, were scarce. We found that because many of these health care providers are overworked, they do not have time to fill out documents or records. We found this especially challenging during the retrospective part of our research. Third, during our surveys of current patients, we found that many of the patients did not have the capacity to give us the data

we were looking for. It was especially hard to do the physical assessment because many of the patients could not be moved or be placed in a position that would allow us to get their height or weight. As a result, our data was devoid of some of the physical measurements.

Our results about dispatched patients were similar to other findings in research done in Mexico City about palliative care; however, there were significant differences as well. We compared our data to the results from “Hospital Versus Home Death: Results from the Mexican Health and Aging Study.” The gender distribution was essentially the same; both had about an even number of male to female. We found that the mean age at the time of death in the Casa de Acogida de las Hermanas del Buen Samaritano was similar to those who die in Mexican hospitals.[14] At the Casa, the mean age at the time of death was 71.3 years, while the mean age at the time of death in Mexican hospitals was 73.5 years. We also found that the level of education was similar: both of the data showed that most of the patients only completed all or part of primary education.[14]

While there were similarities between our findings and other data regarding palliative care or the aging population, we found distinct differences as well. While in general hospitals, 79.5% of deceased patients died in their city of usual residence, while in the Casa de Acogida de las Hermanas del Buen Samaritano, only 45.7% of the deceased patients were from Malinalco.[14] We believe that this is due to the lack of health care services for these people. Because Malinalco and other municipalities nearby are low-income areas, health care services are relatively sparse. This means that certain individuals may have to travel long distances in order to get the care they need. This explains why so many people outside of Malinalco come to the Casa de Acogida de las Hermanas del Buen Samaritano to get care. Unfortunately, for these people, transportation can be especially burdensome due to travel cost. It can also be burdensome for the family members of these patients to take time off to travel. There was also a drastic difference in terms of length of stay. While the median length of stay for patients who died in a hospital stayed in the hospital was 8 days, the median length of stay for patients who died in the Casa was 76 days.[14] The cause for this, we believe, is due to the way the clinic is run. The Casa accepts anyone that is in need of care, and as a result, they accept those that have NCDs that are not necessarily immediately life threatening. While this means that those with NCDs are receiving treatment, it also means they might be occupying space that could go to those who have more acute conditions.

Compared to the aging population in Mexico, there were some interesting similarities and differences between prevalence of diseases and symptoms in the Casa. The top four leading causes of premature death in 2013 in Mexico was Chronic Kidney Disease, diabetes,

interpersonal violence and ischemic heart disease.[9] Meanwhile, many of the patients at the Casa came were admitted in order to get treated for trauma/burns, cancer or cardiovascular diseases. Interestingly, not a lot of the patients came in to be treated solely for diabetes or Chronic Kidney Disease. However, in addition to trauma/ burns, cancer, cardiovascular diseases, etc, a lot of the patients were had comorbidities with diabetes. It is also important to note that 16% of admitted patients came in for psychiatric reasons.

A lot of these patients had symptoms that are often present in later stages of NCDs and this is due to patients waiting until their symptoms become life threatening to get the care they need. Because of the multiple barriers to accessing care in low-income areas, it is sometimes in the best interest of the patient to wait until their conditions are life threatening. Many of these patients suffered from diabetes or hypertension, which might be due to unhealthy lifestyle habits such as obesity and poor diet. These unhealthy lifestyle habits may be due to the fact that these patients are from low-income area. For example, because these patients are from a low-income area, these patients may only be able to afford cheap, high-calorie food. As a result of diabetes and hypertension, a lot of these patients had acute complications and came into the clinic to address these acute complications. In addition, while most of these patients came in for physical ailments, many of these patients had psychological ailments as well. As mentioned before, having a cognitive impairment can make it hard for these patients to access care or to follow their treatment regimen.[7]

The health care professionals at the Casa de Acogida de las Hermanas del Buen Samaritano generally feel burnt-out, as 40% agreed on this. As mentioned before, these health professionals are still medical or nursing students and volunteering their time and efforts as a result of the clinic's partnership with the Universidad Panamericana. Therefore, they do not receive any type of payment or living stipend from the clinic or university. Additionally, 70% of the health care professionals agree that there are many barriers to providing adequate care for the patients in this community. These barriers include patients being unable to hear or speak due to illness or being illiterate, which causes unnecessary stress and emotion to compile. These factors can all quickly deteriorate the motivation one has to continue helping the community clinic.

In order to improve the way palliative care is delivered to the aging population in low-income areas such as Malinalco, we suggest that there needs to be both broad and specific changes. Primarily, there needs to be an effort to reduce the barriers to accessing care. One way to reduce these barriers is to increase the number of health resources. While there are clinics such as the Casa de Acogida de las Hermanas del Buen Samaritano in these areas,

there are not enough of these clinics to accommodate the growing aging population, let alone the current one. These clinics should be placed in areas where there are limited services available, thus reducing the travel time for these patients and to make accessing these clinics physically possible. It would also help if the roads were improved so accessing the clinic is not a challenge. These areas also need broader economic and infrastructural improvements. Because of poor education, the were some miscommunication between the patients and the care provider. We believe that if Malinalco had better schools and retention rates, it will improve the communication between patients and the care provider. With economic and infrastructural improvements, we believe that will also improve the relationship between the patient and his or her family. If these family members had to work less hours, that means they can take care of their aging patient.

It is important to increase the efforts for preventing NCDs. It is important thus to address unhealthy lifestyle habits, because while some NCDs are inevitable, many of the NCDs the patients at the Casa de Acogida de las Hermanas del Buen Samaritano had were caused by unhealthy lifestyle habits. We believe that there needs to be more awareness of the dangers of obesity and poor diet– Mexico's current largest health risks. It is also important to improve accessing general health care in order for patients to get screened for illnesses such as diabetes and hypertension. These diseases, if not treated properly, can later develop into life-threatening illnesses. We believe that improving the broader Mexican health care structure can improve rates of screening for the aging population in Malinalco. Specifically, we believe that unifying the fragmented healthcare system can reduce the barriers to accessing preventative care.

A solution to improving the overly high rates of burnout at the Malinalco clinic is to hire more staff. In other palliative care centers, there is a multidisciplinary team of specialists that work together; there are primary physicians, specialized doctors (e.g. oncologists), psychologists, nurses, and more. To better improve, the Casa de Acogida de las Hermanas del Buen Samaritano should hire staff more in line with the survey answered by the current health providers. This, according to the survey, should include more nurses, psychologists, and auxiliaries. The nurses provide the most care and attention to patients for everyday necessities, so we feel there is the most need for them. The patients at the clinic tend to have psychological issues, like dementia and depression, along with their other symptoms and diseases. Currently, there are no psychologists at the Malinalco clinic but if there were, they would make an immediate impact in providing mental health care to patients so that they may better communicate with health professionals. Auxiliaries at the clinic would also relieve some of the

doctor and nurse's work, thus reducing their stress, which helps in the treatment of burnout. In addition to the ones mentioned in the survey, specialists that would benefit the Malinalco clinic are nutritionists and spiritual guides. Another plausible solution to reducing the high burnout rates in Malinalco is to refer patients to other hospices and government clinics nearby. That way there will be fewer patients for the medical staff to work with and thus more effort can be placed on the current ones. However, due to the conditions that most patients are in (alone, poor, comorbidities, etc.), it would be difficult for them to get the care they need at these other facilities.

Conclusion

While the Casa de Acogida de las Hermanas del Buen Samaritano provides free care to the vulnerable population in Malinalco and other nearby municipalities, there needs to be broad and specific changes to improve the delivery of palliative care to these patients.

Because many of these patients are from low-income areas, they could not access the various care they need. This care encompasses screening and preventing disease, psychological care and palliative care. Barriers to care for the people in this area included lack of health care services, lack of proper education for understanding their diagnosis and the challenges of having a care provider, especially when they are the patient's family member. We suggest that there needs to be more resources for the people in this area. This includes more health care services like the Casa de Acogida de las Hermanas del Buen Samaritano, better education and a better economic condition so people have time and resources to provide care for themselves or for others.

We found that many of the patients came to the clinic during the later stages of a NCD. For many of these NCDs, if properly treated early in the progression of disease, would not have become life threatening. We suggest that prevention and screening is essential for these types of NCD. Given that there are various barriers to accessing basic care like screening for many of these patients, we believe that the broader Mexican health structure needs to be more accessible.

Health care professionals often felt burnout at the Casa de Acogida de las Hermanas del Buen Samaritano. This was due to the fact that the ratio between health care professional to patients was relatively large. Many of the health care professionals were also students, and thus, some felt like they were not adequate in providing care.

For future research endeavors and investigation, it would be interesting to compare the Casa de Acogida de las Hermanas del Buen Samaritano to other palliative care centers like the ones at JourneyCare in Chicago, Illinois and the Instituto Nacional de Cancerologia. We visited all three centers and noticed various differences between them, including but not limited to more medical resources and patient selectivity. The Malinalco clinic already does many things well, like care for the underserved and make the best of the resources they have, but they still have things to improve on, like hiring more medical staff. By drawing these comparisons, it would show what these other clinics do really well and the Malinalco center could make the necessary adjustments to make important changes for its improvement of overall care.

Our research is important because of the significance palliative care will play in the very near future. As stated before, the aging population of Mexico is projected to grow from 11.1% of the population to 30.1% in the next 35 years. The world population will also have similar growths on aged peoples. This, with the added fact that only 20 countries have achieved some form of palliative care, highlights the significance of this important type of care. The Casa de Acogida de las Hermanas del Buen Samaritano is an excellent palliative care clinic to investigate due to its upstart in an underserved community and the way it has managed to give quality care with its limited resources. Many future palliative care centers globally can learn a lot from the Malinalco clinic.

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