Prevention and Management of Gastroesophageal Reflux Diseases (GERD) and Peptic Ulcer Diseases (PUD’s) Among Bhutanese Refugees Utilizing Personalize Patient Education

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Prevention and Management of Gastroesophageal Reflux Diseases (GERD) and Peptic Ulcer Diseases (PUD’s) Among Bhutanese Refugees Utilizing Personalize Patient Education

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Abstract

Background: Bhutanese refugees in the United States frequently suffer from gastrointestinal diseases especially gastroesophageal reflux disease (GERD) and peptic ulcer disease (PUD) which may impact on their quality of life. Purpose: This DNP Project utilized individualized patient education to help improve knowledge on prevention and management of GERD to decrease exacerbations. Methods: Three sessions of individualized live patient education with 15 Bhutanese refugee patients living in Western Massachusetts were provided. Pre and post intervention surveys on patient's symptoms, quality of life, degree of patient knowledge about disease and self-care management and number of ambulatory care visits utilizing the GERD Impact Scale (GIS) questionnaire.

Result: Statistically significant improvements were noted in overall symptoms and quality of life (5.25 points), knowledge scores (2.40 points) and number of ambulatory care visit (0.66 visit). The percentage of patients reported daily experiencing burning sensation on chest or behind the breast bone, pain on chest or behind the breast bone and sore throat or hoarseness was decreased by 53.3%, 26.67% and 33.3% respectively. Moreover, there was 62.5% decrease in ambulatory care visits.

Conclusion: This culturally tailored individualized patient education program helped promote patient's knowledge on disease process, risk factors and self-care management of GERD and PUD. It was also helpful in reducing short term and long-term complications of GERD and PUD, increasing quality of life and decreasing ambulatory care visits among Bhutanese refugee population living in Western Massachusetts.

Keywords: Bhutanese Refugees, gastroesophageal reflux disease (GERDS), peptic ulcer
disease (PUD), language, cultures

Prevention and Management of Gastroesophageal Reflux Diseases (GERD’s) and Peptic Ulcer Diseases (PUD’s) Among Bhutanese Refugees Utilizing Personalize Patient Education

Introduction

After the arrival of a refugee population to the United States, quality healthcare is always a major concern. Refugee resettlement agencies have been struggling to find medical providers with adequate technical and cultural competence to provide high-quality care. Moreover, the major barriers that many refugees face, including accessing health insurance, language services, and navigating the U.S. healthcare system, can lead to further delays in obtaining the recommended initial screening and establishing a relationship to primary care provider (Morris, Popper, Rodwell, Brodine, & Brouwer, 2009, p. 530).

Similarly, PCP’s face challenges in providing health care for refugees due to language, cultural barriers and lack of health system literacy. Communication, difficulty obtaining a health history, increased encounter time for clinic visits, and inadequate reimbursement rates are the major challenges (Eckstein, 2011). Many PCPs in United States lacks knowledge about cultural competency, language and sufficient resources to deal with specific needs associated with this refugee population (Eckstein, 2011). This puts them at a disadvantage for providing high quality health services and it has the potential to have a negative impact on the health and well-being of refugee patients seeking care (Eckstein, 2011). The main propose of this DNP quality improvement project was to decrease the exacerbations of symptoms GERD and PUD and to improve the quality of life among Bhutanese refugees through providing personalize education to the Bhutanese patients.

Background
According to the United Nations High Commissioner for Refugees (UNHCR) report, in 2013 approximately 263,600 refugees entered the United States from all over the world (UNHCR, 2014). The refugee population is a large proportion of the U.S. population and increasing every year. UNHCR defines refugees “as individuals who have been forcibly displaced outside their native countries. They come from a history of hardship, including war, famine, and violence” (Morris et al., 2009, p.529). Every year, refugees come from many countries around the world. Countries from which significant numbers of displaced people and refugees arrive include Afghanistan, Bhutan, Iraq Somalia, Democratic Republic of Congo, Myanmar, Columbia, Sudan, Vietnam, Eritrea, and China (Morris et al., 2009).

According to the UNHCR Global Trends: 2010 report, “countries with strong economies are more likely to be capable of absorbing and supporting refugees” (UNHCR, Global Trends, 2011, p. 12). The United States is one of those country proudly accepting immigrants and refugees. Usually, refugees have lived for several years in refugee camps with limited access to food, adequate shelter, clean water, proper sanitation and health care services. Many refugees arrive with significant medical conditions such as communicable diseases, traumatic injuries from war, and unmanaged chronic health conditions (Centers for Disease Control and Prevention (CDC), 2012).

Bhutanese refugees are known as descendants of the Nepalese who migrated to Southern Bhutan in the late 1800s. They are known as Lhotsampas. According to the 1988 Bhutanese census, they made up 45% of the population of Bhutan (CDC, 2012). The growing number of Bhutanese refugees in the U.S. is due to an ethnic issue by the king of Bhutan in the mid-1980. There was a fear that the Lhotsampas would overpopulate the region and that the traditional Buddhist culture would become dilute (U.S. Department of Health and Human Services [HHS],
2014). So, the king initiated the campaign of “One country, one people” which required one dress code, language and religion among all Bhutanese people (HHS, 2014). Because of this, many people were forced out of Bhutan and fled to Nepal to seek refuge in camps. They put restrictions on ethnic Nepali beliefs, language, practices and random imprisonment, discrimination and torture. By the end of 1990 Bhutanese refugees started entering into Nepal and residing in refugee camps in the eastern part of Nepal (HHS, 2014). While there, Bhutanese refugees were exposed to a high stress environment that lacked a proper balanced diet, pure drinking water, proper sanitation and health care facilities, which put them in high risk of GERD and PUD. There are very limited evidences which demonstrated the extend of GERD and PUD among these population. However, there are plenty of evidences demonstrating of vitamin B12 deficiency among Bhutanese refugees population. Many research suggest GERD and PUD related with H pylori infection are found the secondary causes of vitamin B12 deficiency (CDC, 2012). The investigation among these population showed that insufficient levels of B12 (<150 pmol/L) were identified in 64% (n=99) of random blood samples collected during pre-departure medical exams in 2007-2008, 27% (n=64) of post-arrival exams from three states (MN, UT, TX) in 2010-2011, and 32% (n=60) of medical records from a health clinic in St. Paul, MN from 2009-2011(CDC, 2012).

**Problem Statement**

Bhutanese refugees who suffer from uncontrolled gastrointestinal disease such as GERD and PUD develop complications like nutritional deficiencies and gastrointestinal cancers, which lead to an increase in hospital stays and morbidity. Furthermore, the economic burden of GERD and PUD makes a significant impact on the country’s healthcare economy. Lack of sufficient health literacy, proper communication, cultural awareness, and provider’s difficulty obtaining a
health history put them at risk of not getting quality healthcare in the United States (Eckstein, 2011). Research has demonstrated that resolution of symptoms associated with GERD and PUD in refugees patients as a result of early diagnosis and management correlates with the most favorable patient outcome (American College of Gastroenterology (ACG), 2013). For example, patient with GERD and PUD usually suffer from abdominal pain and heartburn which impact their sleep and daytime productivity. *American College of Gastroenterology* found that heartburn symptom management leads improvement in sleep and is associated with improvements in patient’s daily activities including work productivity, which could have profound economic benefits (ACG, 2013).

Providing individualize patient education to Bhutanese refugee patient about self-care and management of GERD and PUD may help to decrease symptom exacerbation, unwanted health complications, ambulatory care overuse and to lower patient hospitalization rates. Moreover, this intervention may help to improve quality of life, save total health care costs and to increase patient’s satisfaction.

**Organizational “Gap” Analysis of Project Site**

This DNP project was run in a Bhutanese refugee community in Western Massachusetts where a large number of Bhutanese refugees reside. According to my experience working on multiple PCP’s office, I found that most of the Bhutanese refugee patient are with low health literacy level. I observed most of the PCP’s clinic deliver care to Bhutanese refugees in the United States lacks Nepali interpreter which is one of the major barriers providing quality care to them. Also, unavailability of patient’s past medical records takes providers long encounter time, but providers do not have extra time to spend with them as comparison to other population
Moreover, providers lack cultural awareness of Bhutanese refugees, which directly affect their health. There is no special consideration for assessment protocol for people who are the victim of trauma and disaster (Eckstein, 2011). All of these factors lead Bhutanese refugee’s population to visit frequent ambulatory care and emergency department visit with same symptoms (Eckstein, 2011).

Health care providers working with refugees often feel overwhelmed by a complex need of a refugee patient. One of the gaps in the care of patients with chronic GERD and PUD is the lack of a suitable framework to investigate the patient’s special needs. Individualized patient education can be one of the parts of a framework to provide a holistic care to Bhutanese refugee population.

**Review of Literature**

A search of original literature from 2007-2018 in PubMed, Scopus and CINAHL database was conducted. The studies related to refugees from the different parts of world such as Bhutan, Burma, Pakistan, Congo, Uganda, Syria etc. were used on this paper. The search was conducted using the key terms Bhutanese refuges, GERD, peptic ulcer disease, language and self-care. This yielded 50 articles among them 30 articles were used in this project. The inclusion criteria included research articles, reports, available with in past 11 years, available on English language, and review of abstracts. Studies conducted outside of the United States were also included on this to yield maximum result. The exclusion criteria were those literatures studied publishes before 2007, other languages besides English and opinion based. Using limiters to narrow inclusion criteria to peer-reviewed, 15 of them used in this paper to evaluate and develop educational program to prevent and manage GERD and peptic ulcer disease among Bhutanese refugees. Three articles were reviewed of theoretical framework.
The clinical practice guidelines for health screening of refugees has been established by CDC. CDC recommends all the refugees should screen for nutritional deficiency (CDC, 2011). Those who suffer from B12 deficiency need to screen for H-pylori infection. A systematic review of eight articles was done examining health care barriers to care among refugees. One qualitative study used to examine provider preference among refugees. Bases on availability of articles and applicability to the project, total of eight articles were included in the literature review. The studies were rated, and highest level of evidence were obtained using the John Hopkins Evidence Based Practice Model (JHNEBP) (Dearholt & Dang, 2012).

**Helicobacter Pylori Infection and Nutrient Deficiency**

The causes of Vitamin B12 deficiency among Bhutanese refugees is multifactorial. The main cause among this population is thought to be the diet consumed for nearly two decades in Nepal, which lacked meat, eggs, and dairy products, the major dietary sources of vitamin B12 (CDC, 2011). However, the secondary cause of infection with Helicobacter pylori is considered as the secondary causes of Vitamin B12 deficiency. H-pylori infection is considered as one of the major risk factors for peptic ulcer disease. CDC recommended that all refugees be given nutrition advice and supplemental B12 for minimum 30 days upon arrival in the United States.

Those with clinical manifestations should be tested for serum B12, and, if deficient, for underlying causes including H. pylori should be screened (CDC, 2011). Clinical manifestations include megaloblastic anemia, fatigue, weakness, constipation, loss of appetite, weight loss, numbness and tingling in the hands and feet, difficulty maintaining balance, depression, confusion, dementia, poor memory, and soreness of the mouth or tongue (CDC, 2011).

H. Pylori is a gram-negative organism that is widespread all over the world, infecting predominant distribution in developing countries. It is etiologically associated with non-atrophic
and atrophic gastritis, peptic ulcer and shows a deep association with primary gastric B-cell lymphoma and gastric adenocarcinoma (Franceschi et al., 2014). Interestingly, H. pylori infection prevent the absorption of iron and vitamin B12 in stomach leading to iron deficiency anemia, pernicious anemia and macrocytic anemia (Franceschi et al., 2014).

However, *H. pylori* is responsible of iron deficiency anemia in some instant but it highly responsible for pernicious anemia and macrocytic anemia. Franceschi, et.al describes the presence of *H. pylori*-related gastritis as the unique pathological finding in 57.1% of patients with macrocytic anemia caused by B12 deficiency; the majority (76%) of the patients reported a classic pernicious anemia due to atrophy of the gastric body, with associated hypergastrinemia and hypo-achlorhydria (Franceschi, et al, 2014). *H. pylori* has been associated with malnutrition and growth retardation. It has been shown that H. pylori infection may induce growth retardation if acquired very early in the childhood and in malnourished children. Eradication of *H. pylori* has been showed to improve on iron and vitamin B12 absorption (Franceschi, et al., 2014).

**Diagnoses and Treatment of H-pylori infection**

Different methods can be used to diagnose *H. pylori* infection. Analysis of a blood sample for serological tests that measure specific *H. pylori* IgG antibodies reveal evidence of an active or previous *H. pylori* infection. However, urea breath test and stool test can be use testing *H. pylori* infection. Successful treatment of *H. pylori* infection can help the ulcer to heal, prevent re-occurrence of ulcers and reduce the risk of ulcer complications like bleeding (Crowe, 2018). Diagnostic testing for *H. pylori* infection is recommended for those individuals who have active gastric or duodenal ulcers or has a past history of ulcers. Guidelines in the United States recommend that patients who require long-term NSAID’s medications such as aspirin, ibuprofen,
naproxen, and similar drugs treatment for arthritis and other medical conditions should be tested for *H. pylori* and if infected undergo treatment to eradicate the *H. pylori* infection (Crowe, 2018).

Most of the treatment regimens for *H. pylori* infection include a medication proton pump inhibitor (omeprazole, lansoprazole, pantoprazole, etc.), which suppress the stomach's acid production and allows the tissues damaged by the infection to heal may enhance efficacy of the antibiotics against *H. pylori* at the gastric mucosal surface. Generally, most treatment regimens involve triple medication therapy for 14 days as first line treatment of *H. pylori* infection, which consist of two antibiotics and a proton pump inhibitor. Two antibiotics, such amoxicillin, tetracycline (not to be used for children <12 yrs.), metronidazole, or clarithromycin, are generally recommended in order reduces the risk of treatment failure and antibiotic resistance (Crowe, 2018).

Moreover, non-steroidal anti-inflammatory drugs (NSAIDs) has been considered as another major cause of peptic ulcer disease, which are associated with gastrointestinal mucosal injury (Drina, 2017). A research study from a large pooled data from placebo-controlled trials demonstrated that all evaluated NSAIDs including COX-2 inhibitors, ibuprofen, diclofenac, and naproxen were associated with an increased risk of gastrointestinal injury (Drini, 2017). NSAID’s are the common medications frequently prescribed for these chronic pains in primary care settings. Before prescribing these medications, providers should be aware of risk factors such as H-pylori.

In primary care settings the most common pain refugee population complain is various musculoskeletal system and headache. The pain could be the result of experience of physical and psychological torture experiencing on before they arrived on host country. Clinicians
understanding of persistent pain from torture is seriously lacking and more focus should be provided to manage their chronic pain effectively (Amris & Williams, 2015).

Other symptoms often associated with pain insomnia, fatigue, significant distress, cognitive dysfunction and visceral disturbance (Amris & Williams, 2015). The optimal treatment of chronic pain necessary approach is with a focus on agreed goals of understanding the meaning of pain, and improving function, mood and participation (Amris & Williams, 2015). Pain treatment in torture populations should be personalized and manage with compilation with pharmacological and psychosocial therapy. In this DNP project, providers will be educated to use limited use of NSAID’s for chronic pain among Bhutanese refugees knowing they are the high-risk patient to develop GERD and PUD.

**Language Barriers**

A shortage of qualified Interpreters is one of the major challenges in the United States. Miscommunication between patient and health care providers leads to missing of appointments, inappropriate medication doses and schedule misunderstanding (Eckstein, 2011). Refugees themselves are not required to bring their own interpreter to an appointment. Federal law requires that physicians who accept patients with federal payers must provide interpreter services to all of their patients who need them (Eckstein, 2011). Usually, insurance plans pay for the interpreter services, but it is the responsibility of the health care provider’s office staff to make arrangements for providing of interpreter services (Eckstein, 2011). Due to language and cultural barriers, even telephone interpretation is not reliable for the provision of efficient quality care. Taking medical histories, presenting symptoms, and following through on management plans is challenging. The extended time taken by these patients visit affect patient flow and clinic efficiency (Schwartz, Rabin & Doolittle, 2012). Also, the arrangements for interpreters are done
sometime on a causal basis where a member of refugee community or family member who has no knowledge or training in health concepts or terminology is used (Schwartz et al., 2012).

This can lead an inaccuracy in describing severity and symptoms, which can lead to misdiagnosis. Just using the interpreter and taking words what is said at face value and diagnosing a patient does not adhere to competent health care provider. Self-assessing patient's cultural competency is very important, in order to appropriately assess, diagnose, and appreciate the patient's uniqueness and individual needs. Providing some basic language and cultural training can enhance the quality of care while providing care to refugee’s population (Schwartz et al., 2012).

**Cultural Barriers and Provider Preferences**

Likewise, refugees from other parts of world, female Bhutanese refugee patients prefer female providers on physical examination (Odonatan et al., 2015). Due to lack of diverse group of providers in many health care facilities, they are not sensitive about this gender base provider issues. According to the recent qualitative study among Somali women, patient-provider gender discordance has been considered as a barrier to health-seeking behaviors (Odonatan et al., 2015). On this study, fifty Somali women enrolled to a large primary care practice completed pictorial surveys to elucidate preferences of Somali women for providers of different genders and race for different components of the clinical examination using a Likert-type scale. The finding was that Somali women generally preferred a female provider for performing the physical examination, particularly for the breast, pelvic and abdominal examinations. Similarly, these women strongly preferred presence of female interpreters during the physical examination. (Odonatan et al., 2015). Thus, by understanding the cultural issue, providing the female care provider to Bhutanese refugee women is one way improve the quality of refugees’ health care.
Integrated Care Model

According to my own experience and observation of working in a primary care clinic serving Bhutanese refugees, there is no special consideration for assessment protocol for people who are the victim of trauma and disaster. I have also found that lack of proper social services and social workers are other barriers for providing quality health care to Bhutanese refugees population.

When patients referred to specialist from PCP’s office, they tend to show up again in PCP’s clinic for same problems due to lack of knowledge about American health care system, social workers and social service (Eckstein, 2011). Providing quality health care for refugees is challenging which requires unique medical knowledge and cross-cultural competence. Schwartz, Rabin, & Doolittle (2012) developed an integrated care model which offers many advantages on caring refugees population. This model offers parallel patient care including home visits along with ongoing primary care. Serving as a medical home to this population help establish a sense of trust between patients and providers. This integrated model focused on refugee-specific matters and general health issues concurrently. This model can helps effectively coordinate care with the resettlement agency and community parallel with home visits and ongoing primary care, limiting its effective, widespread implementation. Home visit offers the providers to assess their daily activities, home settings, food and eating patterns, which can interfere with their medical condition (Schwartz et al., 2012).

Interventions

This DNP project aims to provide educational interventions that includes Patient education program about self-management and preventative measures of GERD and PUD for Bhutanese refugees. The patient education program was mainly focused on disease process,
lifestyle changes, which includes weight loss, diet modification, medication compliance and stress reduction etc. (Appendix A).

Diet and Lifestyle Modifications

Bhutanese refugees diet and life style modification are very important intervention to manage GERD and peptic ulcer diseases. Although the literacy rate among Bhutanese refugee in their native language is fairly good but still the health literacy levels are typically very low (Erikson, 2011). Majority of are unaware of how diet and lifestyle affect their health conditions. The traditional food of Bhutanese refugees includes spicy, fried, and foods with high fats, which are considered as the main exacerbating factor for GRED and PUD (Kang, & Kang, 2015). A systematic review of literature conducted by Kang and Kang (2015), suggests that weight loss, eating small frequent meals through the day, limiting NSAIDS and head of bed elevation were the most effective interventions to manage GERD. Similarly, foods including alcohol, citrus juice, carbonated soft drinks, coffee and tea were cited as heartburn precipitants.

This study showed that fat consumption increases reflux events, fatty meals decreased lower esophageal sphincter (LES) pressure (Kang, & Kang, 2015). Moreover, eating spicy food considered as heartburn precipitant with patients with GERD and PUD symptoms. The American College of Gastroenterology guidelines recommend that patients should avoid eating at least three hours before sleeping (Kang & Kang, 2015). As compared with an upright position, GERD occur more in the supine due to the effect of gravity. Thus, traditionally, GERD patients are advised to maintain an inclined position. Their study demonstrated that patients who slept with the head of bed elevated experienced significantly fewer and shorter and milder reflux episodes and demonstrated faster acid clearance compared with those lying flat (Kang, & Kang, 2015).

This DNP project will use best evidence-based interventions to prevent and manage
GERD and PUD among Bhutanese refugee population. According to the American College of Gastroenterology (2013), proper screening and treatment of symptomatic patient for H-Pylori, limiting or avoiding NSAIDS, weight loss, avoiding going to bed until two to three hours after eating, advising patient to small frequent small meals through a day, elevating head of bed while sleeping, avoiding fatty, greasy foods and spicy foods would be helpful in management of GERD and PUD. In this project, these evidences will be directly applied to design intervention for the patient and to monitor the patient’s outcomes.

Theoretical Framework

Orem's theory of self-care theory of deficit which provides an ideal framework for the concept of self-care management as this quality improvement project aims to promote self-care in patients with chronic PUD and GERD.

Theoretical framework always provides a key guide in nursing practice and nurses follow the concepts from theoretical framework on daily practice (Seed, & Torkelson, 2012). Dorothea Orem has identified the role of a nurse and patient who need nursing care and developed the theory in 1971, called as “Self-Care Deficit Nursing Theory” (See Appendix B& C). Her theory explains when and how nursing care can help patients who cannot meet their own needs. Orem’s believes that people should be self-reliant and responsible for their own care. Self-care deficit nursing theory is a grounded theory in which the concepts and applications of this theory in patients with PUD and GERD who have special needs can prevent symptoms exacerbations and speedy recovery.

Lack of proper health education, knowledge of referrals and set up time for appointments, and proper transportations refugee population are not getting require medical treatment for their conditions (Erikson, 2011). Therefore, self-care concept is very important to human's need for
maintaining and promoting health and speedy recovery. Self-care activities such as avoiding the activities and diets that cause symptoms exacerbation promote symptoms alleviation and decrease complications of diseases, speedy recovery, and reduce hospital stay and re-hospitalization rate. (Hasanpour-Dehkordi, Mohammadi, & Nikbakht-Nasrabadi, 2016).

Orem describes the role of nurse by mentioning terms such as nursing system (wholly compensatory, partly compensatory, supportive and educative system) and nursing agency (abilities). The concept of self-care agency describes the ability and limitations that patients encounter with regard to self-care activities. Orem’s describes sick patient as self-care deficit who have fewer agencies (abilities) and more demands (universal, developmental, health related and therapeutic) (Irshad Ali BH, 2018). Orem believes people are distinct individuals. Orem’s theory explains when and how nursing care helps patient who cannot meet their needs. When an individual is sick and not able to cope with stressor he/she lacks interest in taking care of own self. This makes the individual wholly or totally dependent on the care giver (Irshad Ali BH, 2018). At that moment nurse plays a major role to take care of that patient by providing basic to supportive care. A person’s knowledge of potential health problem is necessary for promoting care behavior. Nursing consist of those actions to overcome or prevent self-care deficit. Nurses need to first assess the patient first what action he or she can perform themselves and what help needed form nurses. Nurses need to figure out where the self-care deficit or the things he/she can’t perform.

Dorothea Orem’s theory is highly applicable in-patient education in community and clinical setting. Her theory helps nurses to improve patient’s health by making them independent and responsible for their own health. By incorporating theoretical concepts into the practice
nurses can assist in the quick recovery of the patient. I am hoping utilizing Self-Care Deficit Nursing theory into practice will result in drastic change in practice and early patient’s recovery.

**Goals, Objectives and Expected Outcomes**

Providing quality care to the Bhutanese refugee population in the United States can be challenging due to their low health literacy as well as cultural and language barriers (Eckstein, 2011). The goals of this DNP project were to (1) Prevent exacerbation of GERD and PUD symptoms and improve quality of life (2) foster self-care management and (3) to decrease ED or ambulatory care visit. The objectives of this DNP quality improvement project were: to implement individualized patient education for Bhutanese refugee patients with GERD and PUD that helps them to improve their knowledge and skills on prevention and management of GERD and PUD; to decrease their exacerbations of symptoms of GERD and PUD; and to improve their quality of life. The patient education contents were basic pathophysiology of disease on simple language but mainly focused on common symptoms, preventative methods, and pharmacological and non-pharmacological methods of disease managements.

The targeted outcomes of this quality improvement project were 1) Participants gained knowledge to describe common sign and symptoms of GERD and PUD 2) Participants’ improved their knowledge and skills to recognize the possible complications of disease 3) Participants will have skills to manage their common symptoms using pharmacological and non-pharmacological methods, lifestyle change and complaint with medication regiment 4) Participants had less number of ambulatory care services visit due to symptoms exacerbations

Methods
The methodology used for this DNP project was based on the assumption that implementing a personalized patient education program that target GERD and PUD among Bhutanese refugee patient in a community would result in reducing symptoms exacerbation, increasing quality of life, patient’s knowledge about disease and self-care management and decreasing ambulatory care and ED visit. We implemented 3 session of 30 minutes on each session between November 2018 and January 2019 among 15 Bhutanese refugees. We collected quantitative data using survey questionnaires including patient level of awareness of disease process, lifestyle, medication and diets, before and after intervention. The primary purpose of this DNP project was to implement education program utilizing evidence-based guidelines of GERD and PUD in clinical practices and compare the relationship between a patient education program with frequency of symptoms exacerbation, patient’s knowledge about disease process and self-care management and number of ambulatory care visit.

Project Site and Population

We implemented personalized patient education program among 15 Bhutanese refugee patients aged 18 and older living in the Western Massachusetts. A purposive sampling method was used to recruit study participants via face to face, emails, phone calls and using flyers (See Appendix D). Bhutanese refugees who were clinically diagnosed with GERD and PUD and also a patient who had gastroesophageal reflux symptoms of three or more from Enrollment Eligibility Questionnaire but not clinically diagnosed with GERD and PUD were also included on this project (See Appendix E for Enrollment Eligibility Questionnaire). The inclusion criteria were Bhutanese refugee patients 18 years and older who came to the United States in the last fifteen years. The patient with cognitive impairments, communication barriers i.e. who were not able to speak Nepali and English and those who were not able to follow the established project
protocol were excluded. This project did not include any children, prisoners, pregnant women or
cognitively impaired population. DNP student who is fluent in Nepali and English provided
education to the patients according to their language preference.

We obtained written informed consent prior to data collection. DNP student translated
informed consent verbally in Nepali for those participants with limited understanding of English.
Once the participants meet the inclusion criteria, data collection process was started. This
location of patient education and data collection was chosen according to patient’s choice, where
patient’s confidentiality can be maintained. Patients were kept informed throughout the process
that their information would be kept confidential and will not be shared with their name or any
other personal identification. We provided $50 Walmart gift card to those patients who
participated until the end of project. DNP student was responsible for the all the expanses related
to this project.

**Ethical Consideration/ Protection of Human Subjects**

For the protection of research subjects, first approval from to the University of
Massachusetts-Amherst Institutional Review Boards (IRB) was obtained. All participants were
kept safe from harm and violations of their rights. The intervention was designed to pose no risks
while maximizing potential benefits. In this project, the risk to patient participants was not any
different from the risk of the patients receiving standard of care. Prospective participants were
given the necessary information they need to determine whether or not they want to participate in
project. There was not be any pressure to participate and participants will be given enough time
to decide.

Participant privacy and confidentially was maintained throughout the translation project.
No patients were identified using names. Informed consents were obtained prior to the
implementation of the project (See Appendix F). Confidentiality of participants was provided by
coding the participants using individual identification numbers. The list of participants and their
identifying number were kept in locked cabinet only accessible to DNP student and staff.

All electronic files containing identifiable information was password protected to prevent
access by unauthorized user. In this quality improvement project, there were no any population
under 18 years old, children, people with severe developmental disorders, or individuals
suffering from dementias.

**Implementation/Procedures**

This DNP project aimed to provide personalized education to the patients. A sample of fifteen
(N=15) Bhutanese refugee patient who were older than 18 years, clinically diagnosed with
GERD and PUD or experiencing gastroesophageal reflux symptoms, and who came to the
United States in last fifteen years was included. Initially patients were screened using enrollment
eligibility questionnaires. Informed consent was obtained from each participant prior to survey
from those who were selected for the project. The pre-intervention data was collected about
frequency of gastroesophageal symptoms, degree of knowledge of GERD and PUD and
ambulatory care visit with in last three months.

The gastroesophageal symptoms were mostly focus on symptoms like chest pain, heartburn, acid
regurgitation, epigastric pain and hoarseness and the degree of knowledge was mainly focus on
knowledge about the disease process and self-care management. After collecting pre-intervention
data by interviewing patients, personalized education was provided about disease process,
medication management prevention and management of GERD’s and PUD using evidence-based
practice (See Appendix A). Educational materials were presented based on standards of care, which are culturally relevant.

The presentation was prepared reviewing evidence and guideline of American College of Gastroenterology. The education materials were provided in English and written at the 5th grade literacy level. Individualized patient education sessions were organized in three sessions, monthly for three months each with 30 minutes/patient on each session according to availability of patient’s time. (See Appendix G for session schedule). The three sessions were scheduled with following educational contents and tasks.

Session 1:
- What Is GERD and PUD?
- Pathophysiology of GERD and PUD
- Risk Factors of GERD and PUD
- What are the symptoms of GERD and PUD

Session 2:
- What are Complications of GERD and PUD
- Behavior Modification to prevent and manage GERD and PUD
- Pharmacotherapy manage GERD and PUD

Session 3
- Revision of educational materials from session 1&2
- Patient will demonstrate their learning outcomes by asking questions
- Answering Patients questions
- Completion of post-intervention surveys
The patient education was provided live according to patient’s availability time and preferred location where patient confidentiality can maintained. Patient education was provided in the form of verbal presentation by the DNP student during individual meetings. Each participant provided color printed handout on every session. Topics were focused on basic mechanism of disease, signs and symptoms of acute and chronic complications of GERD and PUD, lifestyle modification with diet and compliance with medications regiment. The final evaluation was done after the third education intervention session.

The DNP Student was the one who was responsible for patient’s education, data collection and data analysis. The effectiveness of intervention was measured comparing pre and post intervention data of frequency of patient’s symptoms, quality of life, the degree of patient knowledge about disease and self-care management and rate of ambulatory care visit. Symptoms were measured using The GERD Impact Scale (GIS) questionnaire.

**Measurement Instruments**

**GERD Impact Scale (GIS):** The GERD Impact Scale (GIS) questionnaire is a simple communication tool, which is very useful for managing primary care patients with GERD (Jo et al., 2013) (Appendix H). GIS tool is also helpful to determine the impact of symptoms on patients' daily lives, and to evaluate the benefit of appropriately targeted therapy. GIS demonstrated good psychometric properties in newly diagnosed gastro-esophageal reflux disease patients and those already receiving treatment (Jo et al., 2013). The questionnaire is comprised of nine items including five questions on GERD symptoms (chest pain, heartburn, acid regurgitation, epigastric pain and hoarseness) and four questions on quality of life (QOL) (Jo et al., 2013).
This GIS instrument has a four-point graded Likert-type scale questionnaires’ where 1 represents never experience of symptoms and 4 represents daily experience of symptoms. The GIS survey was conducted before implementation of interventions and three months after implementation of intervention. Patient’s reported ratings of GERD-related symptoms was measured utilizing pre and post GIS scale scores.

**Self-care knowledge of GERD’s and PUD:** Fifteen True/False patient survey questionnaires were completed pre and post interventions which measured the degree of patient knowledge by comparing percentage of correct answers regarding etiology, prognosis, and treatment of GERD and PUD (See Appendix I).

Also, the number of times of pre-and post-ambulatory care visit, three months before and three months after utilization of intervention was asked with patients directly and compared to see if there were any differences after the utilization of educational interventions. The effectiveness of the patient education was tested and analyzed to determine if results are statically significant. Improvements of patient condition were identified using in differences in the mean GIS scores, which was obtained from patient interview between intervention responders and non-responders. Outcome measures was helping to predict if patients benefited from a particular intervention and to document whether the patient improves after the intervention is provided. DNP student make sure the questionnaires asked had proven reliability, validity, and responsiveness of interventions. The GIS tool has been found to be valid and reliable instrument to measure GERD symptoms and quality of life (Jo et al., 2013).

**Data Collection**

Immediately after the approval of IRB from University of Massachusetts Amherst, data collection procedure was started. Data collection began at the end of November 2018 and ended
at the end of January 2019. Purposive sampling method of recruitment was done for patient population. Bhutanese refugees who were officially diagnosed with GERD and PUD and also a patient who had gastroesophageal reflux symptoms but not officially diagnosed with GERD and PUD was included on this project. Patients who had three or more symptoms from screening enrollment questionnaires were included to participate for this project.

Participants were recruited from Bhutanese refugee community located in Western Massachusetts by posting flyers in Facebook of Bhutanese refugee group, Asian grocery stores, restaurants, in person verbal and telephone request. Once the participants met the inclusion criteria, data collection process was started. The location for patient education and data collection was according to patient’s choice, where patient confidentiality can maintain. Pre intervention surveys were obtained on GIS survey questionaries’ patient knowledge, and ambulatory care visit and post-intervention surveys were collected after three months utilization of interventions. GIS instrument has a four-point graded Likert-type scale questionaries’ where 1 represents never experience of symptoms and 4 represents daily experience of symptoms. whereas knowledge surveys consist to fifteen True/False patient survey questionnaires. Similarly, patient’s number of ambulatory care visit pre and post interventions was obtained from patients verbally.

Patient education sessions and data collection was held in a private room. Patients were kept informed throughout the process and they were protected under the policies surrounding the Health Insurance Portability and Accountability Act (HIPPA).

Data Analysis

The data were entered into excel spreadsheet and analyzed using SPSS software. The quantitative data were analyzed using descriptive statistics, such as frequency, mean and median.
A bar diagrams were used as a visual tool to compare pre and post intervention data. Paired t - test was used to compare pre and post GIS score, knowledge of GERD and PUD and ambulatory care visit. Moreover, Pearson’s correlation coefficient (r) was calculated to determine the correlation between the GIS score (GERD symptoms and quality of life) and knowledge to ambulatory care visit. We also presented bar diagram of percentage difference between pre- and post-intervention of frequently reported GERD symptoms and quality of life and number pre and post ambulatory care visit.

Results

There were 15 participants recruited with 6 (40.0%) being male and 9 (60.0%) being female. The mean age (years) of our participant was 40 (SD 11.91) with age range of 30-71. All 15 participants were involved on face to face personalized education about GERD’s about PUDs management and completed pre-and post-surveys. In our QI project, individual patient education intervention significantly decreased frequency of symptoms exacerbation, improved knowledge about GERD and PUD, self-care awareness and management by 25.17% and there was 62.5% decreased on ambulatory care visit among Bhutanese refugees.

GERD Impact Scale (Symptoms and Quality of Life)

The GERD Impact Scale (GIS) questionnaire is a simple communication tool, which is very useful for managing primary care patients with GERD (Jo et al., 2013). A lower score is improvement in GERD symptoms. From the pre-intervention \( M = 25.73, SD = 5.077 \) to the post-intervention \( M = 20.46, SD = 5.841 \) GIS test there was a statistically significant mean difference of 5.25 points, \( t (14) = 3.890, p = 0.002 \) (Tables 1 and 2). The null hypothesis is rejected, since \( p < 0.05 \), which mean there is evidence that the individual patient education
intervention significantly improves GERD symptoms (Figure 1). After utilizing individualize patient education the percentage change of GIS score (symptoms and quality of life) improved significantly which is illustrated on Figure 3 and 4.

![Paired Samples Statistics on GIS](image)

*Figure 1.* Bar graph illustrating the mean scores for the GIS test.

**Table 1**

*Paired Samples Statistics on the Symptoms and Quality of Life from GIS score*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-GIS</td>
<td>25.73</td>
<td>15</td>
<td>5.077</td>
</tr>
<tr>
<td>Post-GIS</td>
<td>20.46</td>
<td>15</td>
<td>5.841</td>
</tr>
</tbody>
</table>

**Table 2**
Paired Samples T-test on Symptoms and Quality of Life from GIS score

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Std. Error</th>
<th>95% Confidence Interval of the Difference</th>
<th>p (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>GIS</td>
<td>5.26</td>
<td>5.243</td>
<td>1.35</td>
</tr>
</tbody>
</table>

**Figure 3.** Bar graph illustrating the percentage of daily symptoms for the GIS test.

Initially 60% had long term daily experienced burning sensation on chest or behind the breast bone, after implementation of intervention only 6.7% reported daily experiencing of those symptoms. Similarly, after implementation of intervention there is significant improvement on every single associated symptom.
Before intervention there was 26.7% patients had difficulty daily getting good sleep night’s sleep because of their symptoms, however after the implementation of intervention only 6.7% difficulty daily getting good sleep night’s sleep because of their symptoms. Similarly, there was improvement on eating and drinking as well as functioning on daily activities. However, there was no difference between pre and post additional medication use other than what physician told them or prescribed. This result shows there was high prevalence of self-medicating to relief symptoms among Bhutanese refugee population.

**Knowledge of GERD and PUD**

The knowledge test was measured using fifteen True/False patient survey questionnaires before and after interventions which measured the degree of patient knowledge by comparing percentage of correct answers regarding etiology, prognosis, and treatment of GERD and PUD. (See Appendix -H) From the pre-intervention ($M = 9.53, SD = 2.18$) to the post-intervention ($M$
= 11.93, SD = 2.58) knowledge of GERD and PUD test there was a statistically significant mean difference of 2.40 points, $t (14) = -3.716, p = 0.002$ (Tables 3 and 4). The null hypothesis is rejected, since $p < 0.05$, which suggests that the individual patient education intervention significantly improved patient knowledge about self-care and disease process (Figure 4).

![Knowledge Mean Test Scores](image)

**Figure 5.** Bar graph illustrating the mean knowledge of GERD and PUD test scores.

**Table 3**

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$N$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention</td>
<td>9.53</td>
<td>15</td>
<td>2.099</td>
</tr>
<tr>
<td>Post-intervention</td>
<td>11.93</td>
<td>15</td>
<td>2.576</td>
</tr>
</tbody>
</table>

**Table 4**
Paired Samples T-test on Knowledge

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>95% Confidence Interval of the Difference</th>
<th>p (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. Error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Lower Upper</td>
</tr>
<tr>
<td>Knowledge</td>
<td>-2.40</td>
<td>-3.78 -1.01</td>
</tr>
<tr>
<td>test</td>
<td>2.501</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>.645</td>
<td>.002</td>
</tr>
</tbody>
</table>

Knowledge on Self-Care Management of GERD’s and PUD’s

Table 5
Percentage of Correct Answers for self-care management of GERD’s and PUD’s

<table>
<thead>
<tr>
<th>Knowledge on self-care management</th>
<th>Pre intervention (%)</th>
<th>Post intervention (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough may be a symptom of reflux disease</td>
<td>46.75</td>
<td>100</td>
</tr>
<tr>
<td>Difficulties with swallowing may occur in reflux disease</td>
<td>60</td>
<td>73.33</td>
</tr>
<tr>
<td>Small meals will often increase reflux</td>
<td>93.33</td>
<td>60</td>
</tr>
<tr>
<td>Fatty and spicy foods will often increase reflux</td>
<td>86.75</td>
<td>86.75</td>
</tr>
<tr>
<td>Coffee will often aggravate reflux</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Late night meals may stimulate reflux</td>
<td>53.33</td>
<td>80</td>
</tr>
<tr>
<td>Bending forwards may worsen reflux</td>
<td>26.75</td>
<td>73.33</td>
</tr>
<tr>
<td>Tight clothing improves reflux symptoms</td>
<td>60</td>
<td>73.33</td>
</tr>
<tr>
<td>Acid production inhibitors are used against reflux disease (Omeprazole, Rabeprazole, Zantac)</td>
<td>93.33</td>
<td>93.33</td>
</tr>
<tr>
<td>Reflux may cause ulcer in the esophagus</td>
<td>93.33</td>
<td>86.75</td>
</tr>
<tr>
<td>Sleeping flat improves reflux disease</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>PUD can cause vitamin B12 deficiency</td>
<td>33.33</td>
<td>73.33</td>
</tr>
</tbody>
</table>
H-pylori infection can cause PUD

<table>
<thead>
<tr>
<th></th>
<th>26.75</th>
<th>86.75</th>
</tr>
</thead>
</table>

NSAID’s (Ibuprofen, Aleve, Advil) can improve PUD and reflux disease

<table>
<thead>
<tr>
<th></th>
<th>13.33</th>
<th>66.75</th>
</tr>
</thead>
</table>

Stress worsen PUD and reflux disease

<table>
<thead>
<tr>
<th></th>
<th>86.75</th>
<th>93.33</th>
</tr>
</thead>
</table>

Ambulatory Care Visits.

The number of ED or ambulatory care visit was gathered from pre-intervention and post-intervention (Table 6). From the pre-intervention ($M = 1.07, SD = 1.162$) to the post-intervention ($M = .40, SD = .736$) ambulatory care visits there was a statistically significant mean difference of .66 visits, $t (14) = 3.568, p = 0.003$ (Tables 7 and 8). This suggests that the individual patient education intervention significantly may have impacted a decline in ambulatory care visits (Figure 6).

Table 6

<table>
<thead>
<tr>
<th>Number of Ambulatory Care Visit Pre and Post Intervention</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>71</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>37</td>
</tr>
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<td>60</td>
</tr>
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<td>50</td>
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<tr>
<td>38</td>
</tr>
<tr>
<td>52</td>
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<tr>
<td>58</td>
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<tr>
<td>51</td>
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<td>40</td>
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<tr>
<td>49</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>62</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Table 7

*Paired Samples Statistics on the Ambulatory Care Visits*

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$N$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention</td>
<td>1.07</td>
<td>15</td>
<td>1.162</td>
</tr>
<tr>
<td>Post-intervention</td>
<td>.40</td>
<td>15</td>
<td>.736</td>
</tr>
</tbody>
</table>

Table 8

*Paired Samples T-test on Ambulatory Care Visits*

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$SD$</th>
<th>Mean</th>
<th>Lower</th>
<th>Upper</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$ (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory Care Visits</td>
<td>.66</td>
<td>.723</td>
<td>.186</td>
<td>.26</td>
<td>1.06</td>
<td>3.568</td>
<td>14</td>
<td>.003</td>
</tr>
</tbody>
</table>
Figure 6. Bar graph illustrating the pre and post ambulatory car visit means.
Figure 7. Bar graph illustrating the number of pre and post Ambulatory care visits

GIS Score and Knowledge Relation with Ambulatory Care Visit

We found positive correlation between GIS score and ambulatory care visit ($r=0.65$, $p=0.0086$) (Figure 8). The GIS score was significantly correlated with ambulatory care visit. However, we found negative correlation between knowledge and ambulatory care visit ($r=-0.542$, $p=0.037$) (Figure 9).
**Figure 8.** Scatterplot illustrating the relationship between GIS score and Ambulatory care visit.

**Figure 9.** Scatterplot illustrating the relationship between knowledge and Ambulatory care visit.
Discussion

Our culturally tailored individualized patient education improved patient symptoms and quality of life, improved knowledge about disease process of GERD and PUD and decreased ambulatory care visit. The educational program was designed understanding patient’s origin, culture, lifestyle, diets and literacy level. We adopted flexible teaching methods according to patient’s preferred time and location. We delivered education sessions in their native language which is Nepali. Although GERD and PUD’s are curable disease many people are not diagnosed in time and cured properly and ended up with nutritional deficiencies, esophagitis, Barrett’s esophagus, and gastric cancer that might be leading towards high morbidity and mortality. The educational tools prepared including simple culturally appropriate terms with colorful visual pictures were helpful for them to understand better about the basic pathophysiology of disease, preventative method, recognition and management of sign and symptoms. Most importantly, we focused our education on their culture, diet and lifestyle which directly impact their health. Patients were educated from evidence-based guidelines recommended by CDC and The American College of Gastroenterology. The material presented in the educational program was shown to be applicable to Bhutanese refugee population.

DNP student who is responsible for patient educational intervention is culturally competent with Bhutanese refugees’ language and culture. Providing culturally appropriate education method was one of the facilitators for this project. Research has shown that cultural and linguistic barriers between patient and healthcare providers can interfere with the effective delivery of health services. In healthcare, cultural competence and patient centeredness approaches enhance healthcare delivery focusing how healthcare providers and patients interact and how patients should be treated by the healthcare system as a whole (Saha, Beach, & Cooper,
Providing culturally appropriate care to refugee’s population can improve communication, health care utilization, and improve patient’s experience and satisfaction. Moreover, enhancing cultural competency improved trust with health care providers, improve perceptions of care, improves specific knowledge of health needs and eventually health outcomes (Saha, Beach, & Cooper, 2008).

We noted significant improvement on patient’s knowledge about self-care and disease process. Prior to intervention 60% of patients were daily suffering from burning sensation on chest or behind the breast bone, however after individualizing educational intervention only 6.7% of patients reported daily experiencing burning sensation on chest or behind the breast bone. It was observed that traditionally Bhutanese refugees tend to eat two large meals per day and many of them avoid snacks. They tend to eat their evening meal shortly before the bedtime. Stir-frying were common cooking methods and they tend to eat spicy foods which contains green chilies, onion, garlic, tomatoes and citrus fruits product which is directly related to exacerbation of GERD’s and PUD symptoms. Identifying the risk factors of disease, educational interventions were focused on their dietary practices and eating habits. Patients were educated to avoid going to bed immediately after eating, elevate head of bed while sleeping and avoiding the food which can exacerbated symptoms of GERD’s and PUD’s.

According to American College of Gastroenterology, (2013) using certain medicines, especially some NSAID’s (Ibuprofen, Aleve, Advil), and wearing tight clothes and belts exacerbates symptoms of GERD’s and PUD’s. Prior to intervention only 13.33 % of patients were aware that they should not have taken NSAID’s for any pain. However, after utilization of intervention 66.75% patients were aware that’s NSAID’s can exacerbates symptoms of GERD’s and PUD’s. Refugees, faces various kind of torture during their journey of violence in their own
country to host the country which leads to a combination of physical and psychological trauma. Research has shown that refugee survivors of torture has a high prevalence of chronic pain (Kaur, 2017). NSAID’s are the first line of medication commonly used for such chronic pain. Thus, primary care providers should be aware of risk of GERD and PUD among those Bhutanese refugee patients before prescribing NSAID’s for chronic pain which can exacerbate their symptoms.

It was observed that Bhutanese refugee’s patient’s believe in applying pressure with tight clothes improves symptoms of reflux, abdominal pain and burning. Also, traditionally Bhutanese refugee women wears dress set called Saree-Petticoat (underskirt) and some older women use “Patuka” which is a piece of cloth worn around the waist to prevent back pain. We found that these women wear this kind of clothing very tight on their abdomen which is responsible for their reflux exacerbation. Prior to intervention 60% of patients were aware that tight clothing worsens reflux symptoms but after utilization intervention 73.33% of patients were aware the effect of aware tight clothing. Patients were educated about symptoms recognition and self-management technique themselves before going to ambulatory care visit for example taking PPI’s to manage symptoms at home. Thus, here was 62.5% decreased on rate of ambulatory care visit after utilization of intervention as compared to pre-intervention.

Thus, this study suggests providing culturally tailored individualize patient education regarding GERD’s and PUD’s on clinical settings or community settings can decrease patient symptoms exacerbation, improve knowledge of self-care management and decrease ambulatory care visit and prevent unnecessary health care cost not only limited to Bhutanese refugee population but applicable to any ethnicity.

Implications for practice
This quality improvement project demonstrated overall symptoms and self-care knowledge about GERD’s and PUD’s improvement and decreased ambulatory care visit. This project showed the positive impact on culturally tailored individualized patient education in the community setting. Individualized patient education is a low-cost intervention that can be implemented in both community and clinical setting, and applicable to any race and ethnicity for example, African, Asian, Hispanic etc. to improve patient’s symptoms quality of life and ultimately patient outcomes. This project highlights the need for this kind of culturally tailored educational patient programs addressing the needs of the specific patient population. This study also adds to the evidence on how an individualized patient education program knowing their culture can care for the refugee’s populations and improve the care that is provided.

**Setting facilitators and barriers:** Due to the low health literacy level among Bhutanese refugee population there was some difficulty on recruiting the patients’ populations from community. They had a difficulty in understanding medical terminology such as “GERD” and “PUD”. Therefore, patients were recruited using the group of symptoms associated with GERD and PUD such as chest pain, heartburn, acid regurgitation, epigastric pain etc. Since, most of the Bhutanese refugee patients hold multiple jobs and busy with caring their children and elderly at home, they have a very limited available time to involve on patient education program. Thus, we faced some difficulty on data collection. To overcome this barriers, education program and data collection were held according to patient’s available time and preferred location. Most of the Bhutanese refugee speak Nepali and the DNP student who is responsible for patient education and data collection is fluent in Nepali language which was a major facilitator for this project.
There was very important role of interdisciplinary collaboration between the stakeholders in achieving the goals of the project. As the team leader, the DNP student collected required materials and created the surveys and set the time frame and goals of the initiative. The DNP student continuously received feedback from other stakeholders in order to make positive changes to the plan for the benefit of all the participants.

**Estimated Cost**

The DNP student was responsible for implementation of intervention, data collection, data entry and data analysis. All the cost related to this project was paid by DNP student. The services of the research assistant specially trained with in UMASS was used for data collection. The rate for this service was $30 per hour for DNP student. It is estimated that data collection and data entry required 100 hours and it cost $3000. Similarly, printing of patient consent form and other required paperwork 250 pages at $0.10/page cost total $25. Text book cost was approximately $250. Also, 500 brochures was needed, at $1.00/ brochures x 500 = $500. Quality improvement conference attendance required for networking and disseminating the result of the project. Total of two conferences were planned over the semester. Each conference cost about $1,500 including travel parking fees, hotel and conferences fees. The total cost for two conferences was about $3000. Each patient who completed both pre and post surveys received $50 Walmart gift card.

Total cost for 15 participants spent be $750 for gift cards. Laptop and software were purchased to complete the project. The total cost was $1000. Also, was a cost for technical supports and maintenance, which was approximately $1000. Total cost: $3000 +525+$3000+750+2000 = $9,275 (Appendix J). The benefit associated with culturally competent training,
patient education on lifestyle modification and self-management for refugees with GERD and PUD outweigh cost associated with this quality improvement project.

**Estimated Cost Savings**

Most of the refugees tend to use emergency departments (EDs) as their primary source of care at the expense of primary care, especially during an early phase of resettlement (Carrico et al., 2017). This may place further burden on already overcrowded EDs and lead to poor patient’s satisfaction with ED care. This quality improvement project will minimize the emergency visit of this population and will be helpful to reduce medical expenses. The emergency care in these refugee population involves a lower workload than that of corresponding to the other populations which could be provided in primary care. In contrast, inappropriate use of the ED can lead to excessive healthcare cost, unnecessary treatment, and loose an opportunity for patient and primary care provider to establish a relationship (Hsiao & Boult, 2014). The research shown that 30 %, or nearly $700 billion, of all health care spending is wasteful, meaning it could be eliminated without reducing the quality of patient care. The overuse of U.S. emergency departments (EDs) is responsible for $38 billion in wasteful spending each year (Hsiao & Boult, 2014). The targeted benefit of this quality improvement project is to decrease symptoms and episodes of GERD and PUD, improve quality of life, decrease ambulatory care overuse, save total health care cost and increase patient satisfaction.

**Timeline**

The timeline of DNP quality improvement project was total six months from November 2018 to April 2019 (Appendix K). Data were collected the verbal information patients experienced three months before the intervention and three months after intervention. Pre-
intervention data from patient was collected from end of November 2018 to end of January 2019. The result was disseminated to the stakeholder in April 2019.

**Conclusion**

Large numbers of Bhutanese refugees frequently visit ambulatory care and emergency department due to unmanaged GERD and PUD symptoms. Since the cause of these GERD and PUD among Bhutanese refugees is multifactorial, these conditions can be managed using multidimensional approaches such as individual implementing individualized patient education and using pharmacological and non-pharmacological approaches. Chronic disease, especially PUD and GERD, can have a significant impact on the quality of life of the patients. Patients with chronic PUD and GERD may face many physical and psychological problems such as fatigue, weakness, lack of appetite, sleep disorders, and anxiety. Therefore, it is very important for health care provider provide to be aware of the culture of their patients they are taking care for and provide education individualize education which are relevant to their culture. This approach will enhance communication with providers and encourage patient to take responsibility for their own health and improve patient satisfaction. The frequent communication and patient education related to their diet and lifestyle will provide reassurance and encouragement to the patient with chronic PUD and GERD and ultimately lead to improved self-management. Improving self-care will ultimately lead to improve compliance to the treatment plan while also improving self-management skills and knowledge.

Culturally tailored individualized patient education can implement on community as well as clinical settings and it is applicable to any racial and ethnic group. This educational program can improve patient’s overall knowledge and daily symptoms of GERD’s and PUD and improve
quality of their life and decrease ambulatory. Our results showed a significant increased knowledge of self-care, decreased patient’s frequency of symptoms and ambulatory care visit.

References


Displaced People Figures: 2010. Retrieved on November 50 2016, from:

http://www.unhcr.org/pages/49c3646c23.html


http://www.cdc.gov/immigrantrefugeehealth/profiles/bhutanese/index.html

**Appendix A**

**Patient Education Tools**

<table>
<thead>
<tr>
<th>No.</th>
<th>Patient Education topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>limiting NSAID’s</td>
</tr>
<tr>
<td>2.</td>
<td>Education about H-pylori, risk factors</td>
</tr>
<tr>
<td>3.</td>
<td>Lose weight</td>
</tr>
<tr>
<td>4.</td>
<td>Avoiding going bed until 2-3 hours after eating</td>
</tr>
<tr>
<td>5.</td>
<td>Eat small frequent small meals through a day</td>
</tr>
<tr>
<td>6.</td>
<td>Elevating head of bed 6-8 inches while sleeping</td>
</tr>
<tr>
<td>7.</td>
<td>Avoid tight clothing,</td>
</tr>
<tr>
<td>8.</td>
<td>Elimination of food that can trigger reflux (including chocolate, caffeine, alcohol, acidic and/or spicy foods/ greasy foods</td>
</tr>
<tr>
<td>9.</td>
<td>Appropriate use of prescribed medication PPIs (PPIs should be administered 30–60 min before meal), H₂-receptor antagonist (H₂RA)</td>
</tr>
</tbody>
</table>
Diet and Gastroesophageal Reflux Disease (GERD)

What is GERD?
Gastroesophageal reflux is a chronic disease that occurs when stomach contents flow back (reflux) into the food pipe (esophagus). It is usually caused by failure of the muscle valve (called the lower esophageal sphincter) between the stomach and the esophagus to close properly. The backwash of stomach acid irritates the lining of the lower esophagus and causes the symptom of heartburn.

TRIGGER FOODS
Some foods are known to trigger symptoms of GERD. By keeping a food diary, you can identify your trigger foods and change your diet to reduce discomfort. Below is a list of some foods recognized to trigger symptoms of GERD and how they affect the digestive tract.

- **Coffee** (with or without caffeine) and caffeinated beverages relax the lower esophageal sphincter.
- **Citrus fruits and juices** such as orange, grapefruit and pineapple have high acid content.
- **Tomatoes** and processed tomato-based products such as tomato juice, and pasta and pizza sauces are highly acidic.
- **Carbonated beverages** (fizzy drinks) cause gaseous distension of the stomach (bloating) which increases pressure on the lower esophageal sphincter causing acid reflux.
- **Chocolate** contains a chemical called methylxanthine from the cocoa tree, which is similar to caffeine. It relaxes the lower esophageal sphincter, which causes acid reflux.
- **Peppermint, garlic and onions** relax the lower esophageal sphincter causing acid reflux.
- **Fatty, spicy or fried foods** relax the lower esophageal sphincter as well as delay stomach emptying and therefore cause acid reflux.

Contact your healthcare provider if symptoms do not improve with diet and lifestyle changes. Initial treatment may start with over-the-counter (OTC) medications that control stomach acid.

For more information, visit [www.asge.org](http://www.asge.org).

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Appendix B
Theoretical Framework
Appendix C

Theoretical Framework

Orem’s self-care deficit theory
- Defines self-care as a learned, goal-oriented activity direct toward the self in the interest of maintain life, health, development and well being

Patient’s ADL
- Personal Hygiene care
- Patients ability to manage disease
- Self-care needs
- Self-care deficits
- Patient’s perspective about his/her health nutrition
- Biological/Psychological/social/Developmental

Self-care deficits related to insufficient knowledge

Goal: to increase the patient’s ability to independently meet these needs
Outcome: Patient will practice self-care management efficiently

Assessment

Diagnosis

Planning

Intervention

Evaluate

Client demonstrate practicing self-care management

Assess patient’s ability to care for himself/herself
- Educate patient about importance of self-care
- Mutually identify the factors where patient needs improvement on
- Provide assistance where needed for self-care activities
- Provide encouragement and positive reinforcement for smaller improvement in the activity level
- Teach family and help them to proactive how to help the patient according to his/her needs
Appendix D

Flyer
ARE YOU A BHUTANESE REFUGEE AND HAVE PAIN IN ABDOMEN?

If you are a Bhutanese refugee age 18 or above and who came to the United States last fifteen years and have following symptoms you could be eligible for Education Program. SHARADA PAUDELI a graduate student from University of Massachusetts looking for participants educational program for her DNP project:

“Prevention and Management of Gastroesophageal Reflux Diseases (GERD) and Peptic Ulcer Diseases (PUD) Among Bhutanese Refugees Utilizing Personalize Patient Education”

Symptoms
1. Pain in Stomach
2. Chest pain
3. Bad taste in mouth
4. Nausea
5. Sensation of full stomach
6. Heart Burn
7. Bleaching
8. Decreased appetite
9. Easy bleeding gums

Education topics will be focused on:
1. What Is GERD and PUD
2. Basic Pathophysiology of GERD and PUD
3. Risk Factors of GERD and PUD
4. What are the symptoms of GER and PUD
5. Complications of GERD and PUD
6. Behavior modifications to manage GERD and PUD
7. Pharmacotherapy for GERD and PUD

Each participant will receive a total of $50 Walmart gift cards
To determine if you are qualifying, please call
Sharada Paudel call at 681-281-9330 or at spaudel@umass.edu

Appendix E
Enrollment Eligibility Questionnaires
Enrollment Eligibility Questionnaire

This questionnaire is a screening tool that will ask you questions about your health history to determine your eligibility for participation in the study. If you are determined ineligible to participate, your completed questionnaire will be destroyed. To complete eligibility questionnaires it should not take more than 10 minutes to complete. If you are determined eligible to participate, the completed questionnaire will become part of the study materials, and we will protect your information as confidential and safeguard it from unauthorized disclosure. Only DNP student and committee will have access to the information contained in your questionnaire. If the questionnaire indicates that you are eligible to participate, we will proceed to obtain your written informed consent for participation in the study when we meet in person.

Do you have any questions?

Name: 
Home Phone: 
Cell Phone: 
Came to the United States 

Gender:
Male | Female
Bhutanese Refugee

Yes | no

Please check yes or no for following questions:

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain in Stomach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bad taste in mouth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation of full stomach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bleaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased appetite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy bleeding gums</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PLACE COMPLETED FORM IN THE PROVIDED STAMPED ENVELOPE
PLACE IN MAIL FOR RETURN
Patient Inform Consent

Consent Form for Participation in a Research Study  
University of Massachusetts Amherst

Researcher(s): Sharada Paudel, FNP-C, DNP Student  
Kalpana Poudel Tandukar, PhD, MPII, MPH, CGM, Faculty Sponsor  
Pamela Aschford, PhD, MPII, FNP-BC, Mentor

Study Title: Prevention and Management of Gastroesophageal Reflux Diseases (GERD) and Peptic Ulcer Among Bhutanese Refugees Utilizing Personalize Patient Education

1. WHAT IS THIS FORM?
This form is called a Consent Form. It will give you information about the study, so you can make an informed decision about participation in this research.

This consent form will give you the information you will need to understand why this study is being done and why you are being invited to participate. It will also describe what you will need to do to participate and any known risks, inconveniences or discomforts that you may have while participating. We encourage you to take some time to think this over and ask questions now and at any other time. If you decide to participate, you will be asked to sign this form and you will be given a copy for your records.

2. WHO IS ELIGIBLE TO PARTICIPATE?
Bhutanese refugees who are older than 18 years and who came to the United States in last fifteen years and have officially diagnosed GERD or/and PUD or signs/symptoms of GERD or/and PUD (are eligible to participate in the education program. The patient with cognitive impairments and is not able to speak Nepali and English will be excluded. The education will be provided in either English or Nepali language according to patient preference. This project will not involve any children, prisoners, pregnant women or cognitively impaired population.

3. WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this DNP quality improvement project is to implement individualized patient education for Bhutanese patients with GERD and PUD that will help them to improve their knowledge and skills on prevention and management of GERD and PUD; to decrease their exacerbations of symptoms of GERD and PUD; and to improve their quality of life.

4. WHERE WILL THE STUDY TAKE PLACE AND HOW LONG WILL IT LAST?
The setting for this project will be Bhutanese refugee community located in Western Massachusetts. Fifteen Bhutanese refugees will be recruited via asking face to face, sending emails, phone calls and using flyers. Three sessions (30 minutes each) of individualized patient education will be delivered to each participant through in person, phone, skype, or facetime according to patient’s preference. The participant
will be scheduled for education according to their availability of time preferred location such as Starbucks, University cafeteria, library and other coffee shops where required confidentiality can be maintained. Individualized patient education sessions will be organized in three sessions, monthly for three months. Pre-Intervention survey will be obtained during first session and post-intervention survey will be obtained during the third session which is after three months (three sessions) of individualized patient education program.

5. WHAT WILL I BE ASKED TO DO?
If you agree to partake in this study, you will be asked to complete surveys before and after completion of educational program. You may skip any question you feel uncomfortable answering. You will be asked about:
- Number of emergency or ambulatory visit
- Five questions on GERD symptoms (chest pain, heartburn, acid regurgitation, epigastric pain and hoarseness) and four questions on quality of life
- Fifteen True/False questionnaires on knowledge, causes, prognosis, and treatment of GERD and PUD.

6. WHAT ARE MY BENEFITS OF BEING IN THIS STUDY?
We are hoping Individualized patient education implementation will promote participant’s self-care that would be helpful to reduce short term and long-term complications of GERD and PUD and to improve the quality of life among Bhutanese refugee population.

7. WHAT ARE MY RISKS OF BEING IN THIS STUDY?
We believe there are no known risks associated with this educational program; however, a possible inconvenience may be the time it takes to complete the study.

8. HOW WILL MY PERSONAL INFORMATION BE PROTECTED?
1. The following procedures will be used to protect the confidentiality of your study records.
2. The DNP student will keep all study records, including any codes to your data, in a secure location in locked cabinet at her office.
3. Project records will be labeled with a code. A master key that links names and codes will be maintained in a separate and secure location.
4. All electronic files, such as databases, spreadsheets, etc. Containing identifiable information will be password protected.
5. Any computer hosting such files will also have password protection to prevent access by unauthorized users. Only the DNP student will have access to the passwords. At the conclusion of this study, the DNP student may publish their findings. Information will be presented in summary format and you will not be identified in any publications or presentations.

9. WILL I RECEIVE ANY PAYMENT FOR TAKING PART IN THE STUDY?
You will be provided $50 Walmart gift card after completing before and after program surveys and attending three educational sessions.

10. WHAT IF I HAVE QUESTIONS?
Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the researcher, Sharada Paudel at 681-285-9330, Email: spaudel@umass.edu; Faculty sponsor Kalpana Poudel Pandulkar at 413-545-5095, Email: kalpana@umass.edu. If you have any
questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humanstudies@ora.umass.edu.

11. CAN I STOP BEING IN THE STUDY?
You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate.

12. WHAT IF I AM INJURED?
The University of Massachusetts does not have a program for compensating subjects for injury or complications related to human subjects research, but the study personnel will assist you in getting treatment.

13. SUBJECT STATEMENT OF VOLUNTARY CONSENT
When signing this form, I am agreeing to voluntarily enter this study. I have had a chance to read this consent form, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this signed Informed Consent Form has been given to me.

Participant Signature: ___________________________  Print Name: ___________________________  Date: ___________________________

By signing below, I indicate that the participant has read and, to the best of my knowledge, understands the details contained in this document and has been given a copy.

Signature of Person Obtaining Consent: ___________________________  Print Name: ___________________________  Date: ___________________________
## Appendix G

### Patient education Schedule

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1</td>
<td>• Introduction with patients</td>
</tr>
<tr>
<td></td>
<td>• Assessment of patient level of education</td>
</tr>
<tr>
<td></td>
<td>• Learning needs and understanding adopted lifestyle.</td>
</tr>
<tr>
<td></td>
<td>• Introduction of GERD and PUD.</td>
</tr>
<tr>
<td></td>
<td>• Discussing pathophysiology of GERD and PUD in simple language.</td>
</tr>
<tr>
<td></td>
<td>• Recognizing risk factor and etiologies of GERD and PUD</td>
</tr>
<tr>
<td></td>
<td>• Discussing symptoms of GERD and PUD</td>
</tr>
<tr>
<td>Session 2</td>
<td>• Discussion of possible complications of GERD and PUD</td>
</tr>
<tr>
<td></td>
<td>• Discussion of behavior modification to prevent and manage GERD and PUD</td>
</tr>
<tr>
<td></td>
<td>• Pharmacotherapy manage GERD and PUD, Medication and treatment compliance</td>
</tr>
<tr>
<td>Session 3</td>
<td>• Revision of educational materials from session 1&amp;2</td>
</tr>
<tr>
<td></td>
<td>• Patient will demonstrate their learning outcomes</td>
</tr>
<tr>
<td></td>
<td>• Answering Patients questions</td>
</tr>
<tr>
<td></td>
<td>• Completion of post-intervention surveys</td>
</tr>
</tbody>
</table>
Appendix-H

Measurement Instrument  GIS

Please complete the following questions by marking one response per question. Consider your symptoms over the past week. There are no right or wrong answers. Please be sure to answer every question.

<table>
<thead>
<tr>
<th>In the past week...</th>
<th>Daily</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often have you had the following symptoms:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Pain in your chest or behind the breast bone?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>b. Burning sensation in your chest or behind the breast bone?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>c. Regurgitations or acid taste in your mouth?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>d. Pain or burning in your upper stomach?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>e. A sore throat or hoarseness that is related to your heartburn or acid reflux?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>2. How often have you had difficulty getting a good night’s sleep because of your symptoms?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3. How often have your symptoms prevented you from eating or drinking any of the foods you like?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4. How frequently have your symptoms kept you from being fully productive in your job or daily activities?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>5. How often did you take additional medication other than what the physician told you to take (such as Tums, Rolaids, Maalox)?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

The text of the GERD impact scale is copyright AstraZeneca LP (©2001). All rights reserved.

Daily-4, Often-3, Sometimes-2, -Never-1
## Appendix-I

### Table. Knowledge Degree of GERD and PUD in Subjects

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cough may be a symptom of reflux disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Difficulties with swallowing may occur in reflux disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Small meals will often increase reflux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fatty and spicy foods will often increase reflux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Coffee will often aggravate reflux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Late night meals may stimulate reflux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bending forwards may worsen reflux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Tight clothing improves reflux symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Acid production inhibitors are used against reflux disease (Omeprazole, Rabeprazole, Zantac)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reflux may cause ulcer in the esophagus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Sleeping flat improve reflux disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PUD can cause vitamin B12 deficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>H-pylori infection can cause PUD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>NSAID’s (Ibuprofen, Aleve, Advil) can improve PUD and reflux disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Stress worsen PUD and reflux disease</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Answers

<table>
<thead>
<tr>
<th>Question No.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>True</td>
</tr>
<tr>
<td>2</td>
<td>True</td>
</tr>
<tr>
<td>3</td>
<td>False</td>
</tr>
<tr>
<td>4</td>
<td>True</td>
</tr>
<tr>
<td>5</td>
<td>True</td>
</tr>
<tr>
<td>6</td>
<td>True</td>
</tr>
<tr>
<td>7</td>
<td>True</td>
</tr>
</tbody>
</table>
Appendix J

Cost Itemization

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation</td>
<td>$3000</td>
</tr>
<tr>
<td>• Research assistant DNP student-100 hrs @30/hr</td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td>$25</td>
</tr>
<tr>
<td>• Printing patient consent 250 pages at @0.10/page</td>
<td></td>
</tr>
<tr>
<td>• 500 brochures @$1.00</td>
<td>$500</td>
</tr>
<tr>
<td>Education and Training</td>
<td>$3000</td>
</tr>
<tr>
<td>• Two educational conferences @1500</td>
<td></td>
</tr>
<tr>
<td>Participants incentives</td>
<td>$750</td>
</tr>
<tr>
<td>• 15 Participant gift cards @50 per person</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>$1000</td>
</tr>
<tr>
<td>• Laptop and software will be purchased</td>
<td></td>
</tr>
</tbody>
</table>
- Website development and maintenance

| Total Cost | $9275 |

**Appendix -K**

**Timeline**

(November 2018 - April 2019)

<table>
<thead>
<tr>
<th>Task</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare education tool, Recruitment of eligible participants</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of Intervention;</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation of pre-and post-test and Analysis of outcomes</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Documentation of outcomes and dissemination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>