Chronic pain conditions also known as painful chronic medical illnesses (PCMIs) affect approximately 100 million adults in the nation at a cost of $560-635 billion annually due to medical expenses and lost productivity (IOM, 2012). Chronic illnesses such as heart disease, cancer, diabetes, stroke, sickle cell disease (SCD) and chronic lung disease account for 70% of deaths and 75% of health care costs in the United States (Harris & Wallace, 2012). There are a myriad of consequences or sequelae associated with chronic diseases that affect the individual physically, mentally/emotionally, and socially which add to patient suffering and health care costs (Harris & Wallace, 2012). These sequelae have an inter-relational and inter-actional connection that represent the mind-body-social relationship of the person living with the chronic illness. This relationship is known as the triadic sequelae. The triadic sequelae refer to the three domains in which patients exhibit symptoms when they have a chronic illness. These domains are labeled physical sequelae, mental/emotional sequelae, and social sequelae. Physical sequelae of chronic diseases refer to sequelae that affect the body. Pain, weakness, and yellowing of skin resulting from effects of the chronic illnesses are examples of physical sequelae. Mental and emotional sequelae are sequelae that affect the mood, thinking, and behavior often triggered by physical and/or chemical imbalances, caused by chronic diseases. Depression, feeling tense or nervous, and feeling short-tempered are examples of mental/emotional sequelae. Social consequences of a chronic disease are the attributes and characteristics affiliated with the individual’s ability to contribute and be supported by their community and family. Lack of the ability to function in social roles, inadequate social support, poor school attendance and/or unemployment are examples of negative social sequelae experienced by persons with chronic diseases. Chronic diseases are typically characterized by different sequelae. There are several phenomena that determines the more common sequelae associated with a chronic illness. These phenomena are known as the varying factors which include age at disease on-set, pathophysiological aspects of the condition, and the debilitating effects of the disease processes (Harris & Wallace, 2012). The triadic sequelae of SCD are more likely different from the triadic sequelae of fibromyalgia. Thereby making it imperative to consider varying factors when exploring, assessing, and determining domains of each chronic disease.

II. Behavioral Health Outcomes

Behavioral health outcomes include one’s beliefs and attitudes about the disease, one’s beliefs about what others think about the disease, one’s own perceptions of themselves and others who have the disease, their perceptions of their ability to manage their disease, and their subsequent disease self-management behaviors. Negative behavioral health outcomes are associated with poorer motivation and negative coping strategies relating to the disease. Positive behavioral outcomes are associated with positive self-care and positive coping strategies relating to the disease.

Negative Behavioral Health Outcomes.
Sickle Cell Disease Fatalism is the belief that one has no control over sickle cell pain or other symptoms and complications due to the disease’s perceived negative impact and consequences physically, mentally/emotionally, and socially. Perceived Sickle Cell Prejudice is the belief that others view them negatively and unfairly because they are diagnosed with SCD.

**Positive Behavioral Health Outcomes.**

Sickle Cell Disease self-efficacy is an individual’s self appraisal of their ability to engage in daily functional activities despite having SCD and is referred to as sickle cell disease self-efficacy.

### III. Application of CDOT Model to Sickle Cell Disease

Varying Factors- are the determining factors used to consider the common sequelae of the chronic diseases.

- **Age at-onset**- is the reported age at which individuals first exhibited symptoms manifested from the chronic disease. Individuals with SCD are born with this disease.
- **Pathophysiological aspects**- are the functional changes within the body resulting from the chronic disease. The pathophysiological genotypes that cause an individual’s condition must be considered since they greatly influence the nature and severity of SCD sequelae expressed.
- **Debilitating Effects**- are the degree or amount of limiting effects that interfere with one’s ability to function or perform activities of daily living and social roles. Poor school attendance, poor work performance or unemployment are some common limiting effects that results from SCD.
- **Triadic Sequelae**- are the three domains of common sequelae associated with the chronic disease.
  - **Physical Domain**- Pain, weakness, yellowing of skin or eyes, vomiting, nausea, heart problems, gall stones, eye trouble, kidney problems, swelling of hands or feet, and shortness of breath.
  - **Mental/emotional Domain**- Depression, feeling sad, tense or nervous, short-tempered, worried or concerned, problems coping, sleeping, eating, and paying attention.
  - **Social Domain**- Social support, Unemployment/poor school attendance.

**Behavioral Health Outcomes**

- **Negative**
  - Sickle cell fatalism
  - Perceived sickle cell prejudice
- **Positive**
  - Sickle cell self-efficacy.

### IV. Conclusion

The purpose of this study is to investigate the inter-relational and interactional relationship of triadic sequelae and how it may predict behavioral health outcomes of people living with chronic diseases. This is based on propositions of the Chronic Disease Outcomes Triad (CDOT) Model which was developed as the basis for this study. After extensive literature review, it is concluded that the identified sequelae are common among patients with SCD. Furthermore, it is presumed that an extensive presence of these sequelae will predict behavioral health outcomes. This is imperative for healthcare providers because understanding the presence and the role that the triadic sequelae play in chronic diseases will provide knowledge of behavioral health outcomes. This knowledge is important for determining what we can expect when caring for persons with PCMI's, such as SCD.
Title:
Chronic Disease Outcomes Triad Model

Keywords:
chronic illness, sequelae and sickle cell disease

References:


Abstract Summary:
The purpose of this presentation is to investigate the inter-relational and interactional relationship of the triadic sequelae (physical sequelae, mental/emotional sequelae, and social sequelae) as predictors of negative or positive behavioral health outcomes based on the propositions of this newly developed model named Chronic Disease Outcomes Triad Model.

Content Outline:
CDOT Model
1. The triadic sequelae
   1. Definition
   2. Varying factors
2. Behavioral Health Outcomes
   1. Description
   2. Negative
   3. Positive
III. Application of CDOT Model to Sickle Cell Disease
IV. Conclusion

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