Facial nerve incorporates about 7,000 individual nerve fibers. Each fiber brings the electrical impulses to a specific facial muscle. All information through the fibers of this nerve permits us to make any facial expression such as laugh, cry, smile, and frown. Human express the emotions such as sadness, surprise, happiness, excitement and confusion through facial expressions. For example, a smile can be interpreted as the sign of happiness while frowning shows some disagreement and sadness. Facial nerve paralysis will take place when some of the individual nerve fibers are disrupted. Besides, the movement of facial muscles starts spasming or twitching if these fibers are irritated. Figure 1.1 shows some of the facial muscles that are responsible for the facial expressions.

Figure 1.1: Head and facial muscles (Knysh B., 2015).
Facial nerve paralysis (FNP) is a common problem which involves the paralysis of any structure innervated by the facial nerve. Literature shows that the prevalent cause of this paralysis is Bell’s palsy, named after Sir Charles Bell (1774-1842). Bell’s palsy is an idiopathic disease category, reporting approximately 50% of the cases (Brach & VanSwearingen, 1999; Singhi & Jain, 2003).

The other possible causes of facial paralysis are due to birth, trauma, neurologic syndromes, infection, metabolic, neoplastic, toxic and iatrogenic (Benecke, 2002). Patients with these paralyses suffer serious functional, cosmetic and psychological problems with impaired ability to communicate both verbally and non-verbally. Numbness can occur on the affected side of the face although no actual sensory loss occurs (Singhi, 2003). Besides, they will be unable to close the eye on the affected side, which can lead to irritation and corneal ulceration. Because of that, the eye should be lubricated with artificial tears until facial paralysis ends (Piercy, 2005). However, the most dramatic impact of the paralysis is its psychological effect where the patients may have low confidence and fear when interacting with others.

A thorough medical history of patients and physical examination are the earliest steps in making a facial diagnosis. Clinicians examine whether the forehead is involved in motor defect or not. This is commonly accomplished by assessing how well a patient can raise his or her eyebrows. The results from this action help in determining which part the lesion is in whether in the upper motor neuron or lower motor neuron of facial nerve component. Rehabilitation is suggested by doctors after patient’s treatment, depending on their condition. It is to regain the function of facial nerves and improve both the strength and flexibility of the nerves. The failure in rehabilitation procedures may lead to the continued weakness and inability to function of facial nerves.
The availability of facial rehabilitation is limited, and most individuals with facial movement disorders have been told to await (spontaneous) recovery or told no effective intervention exists. Consequently, individuals with this paralysis will deal with physical, psychological, and social disability daily. The rehabilitation for facial paralysis begins with a thorough clinical evaluation in accessing the degree of paralysis. It is important to measure the facial disability from onset to the various stages of recovery and also to detect changes over time or after treatment. In the past few decades, several internationally accepted systems have been proposed by different researchers, yet most of the existing systems are subjective. This subjective evaluation refers to various facial nerve grading systems, of which the most widely used is the House-Brackmann (HB) system (Dellanoy & Ward, 2010; Dulguerov, Wang, Perneger, Marchal, & Lehmann, 2003). The facial nerve evaluation will vary over many clinicians and it will results in inaccurate assessment of paralysis.

There is no standardized system yet for facial nerve evaluation which has been accepted for world-wide used. Thus, an objective standardized method, which is easy to perform, low cost and fast, and simple can be a useful clinical tool to detect the level of paralysis in patients with facial palsy and monitor their improvement or performance during and after the rehabilitation procedures. In this study, an initial facial assessment method is proposed to assist clinicians in assessing the facial nerve function. Comparisons have been made between two measurement parameters to determine which one is better to be implemented in the assessment system.