The concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original.

By

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I, Khabonina Immaculate Lungile Nkwelo (MaShabangu), do hereby declare that this dissertation is representative of my own work in both conception and execution (except where acknowledgements indicate to the contrary)

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DEDICATION

“I can do all things through Christ who gives me strength.”
-Philippians 4: 13

I dedicate this thesis to my mother and to my husband.
Bongumusa Shabangu and Abonga Nkwelo, this one sincerely is for you. Without you, my world would have crumbled.
The love, strength and encouragement demonstrated, the patience and support you have both anchored me with has been the fuel being my fire, especially when (at many points) it was dim. Giving up was never an option, and thank you for ensuring that.
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“For with God, nothing shall be impossible” – Luke 1: 37

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ABSTRACT

Aim

The aim of this study was to determine the concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English counterpart.

Methodology

This quantitative correlational study compared the isiZulu version of the Bournemouth Questionnaire to its English counterpart, (consisting of three sections: back, neck and musculoskeletal). The study employed a design where subjects were compared to themselves. A sample of 120 volunteers over the age of 18 years, who were literate in both English and isiZulu took part in the study. Whether the participant was symptomatic or asymptomatic was not of concern. Using a randomised list, the participants were administered one of the two versions of the questionnaire to be completed first, the second and alternate questionnaire was administered after an interval of at least 20 minutes.

Results

Of 120 paired questionnaires, 107 completed pairs were returned, resulting in a response rate of 89.2%. Results, using Cronbach-α ($\alpha = 0.05$) with subsequent testing using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity, revealed that the questionnaires, *in toto*, had high levels of correlation. The relationship between the isiZulu and the English questions revealed a positive and high correlation using Kendall's tau-b which was statistically significant ($\tau_b > 0.55$, $p = 0.000$), although there were isolated instances of statistical difference between individual pairs of questions in respect to age, gender, site, primary language and level of education.

Conclusions

The study found that the isiZulu version of the Bournemouth Questionnaire showed concurrent validity with its English counterpart, and recommendations were made for the clinical application of the isiZulu version as a means of refining the interpretation of disjunct question pairs.

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Introduction

1.1 Introduction

Language is simply a basic means of communication (Fairclough 2013). Nelson Mandela advised that *"if you talk to a man in a language he understands, that goes to his head. If you talk to him in his language, that goes to his heart."* Over 10 million people speak isiZulu as their first language in South Africa, and majority of that population lives in Kwa-Zulu Natal (77.8%). Communication skills have been taught to healthcare professionals both informally and formally for decades; communication between a healthcare provider and a patient is more than just an adjunct to healthcare; healthcare is largely information management, therefore a vital component in patient care is communication (Schyve 2007).

There are 11 official spoken and recognised languages in South Africa and the 2011 census revealed that 22.7% of the South African population are isiZulu first language speakers, making it the most commonly spoken language in the country (Bischoff *et al.* 2003). English is not a dominantly spoken language in South Africa, (9.6% of the population) and is the fourth most spoken language. Due to a general increase in population, the indigenous languages have increased significantly although the numbers of English speakers (as an additional language) has also grown (Mesthrie 2002).

Research in health communication shows that communicative competence is of great importance as an aspect of successful health**c**are. All human beings have an equal right to healthcare services and should not be discriminated upon on the basis of language (South Africa. Constitutional Assembly 1996). When language barriers exist between patients and healthcare providers, this proves to be a considerable challenge to the provision of healthcare that is of quality to culturally diverse populations (Bischoff *et al.* 2003). Contrary to constitutional rights, the majority of the South African population will receive below-par healthcare or not receive healthcare at all because of existing language barriers (Pillay 1999; Levin 2006) therefore, making it difficult for

patients to express themselves fully, which limits the ability to extract the relevant and correct information from the patient and to make the most accurate diagnosis (Drennan and Swartz 1999; Jacobs *et al.* 2001; Levin 2006).

'Musculoskeletal disorder' is a term used to describe those conditions in which a part of the musculoskeletal system becomes injured over time. The injury gradually occurs when the body is called upon to stretch further, impact more directly or generally function at a greater level than it is prepared for at the time. This results in trauma to the body in a micro- or macroscopic way over time; this accumulating trauma is what ultimately manifests as overt disorder, which will affect muscle and bone and other areas, which results in further injury and strain (Nicholas 2008).

Low back pain (LBP) is broadly defined as pain that is located in the lower back area which may relate to problems with the lumbar spine, the intervertebral discs, the ligaments around the spine and disc, the spinal cord and nerves, muscles of the lower back, internal organs of the pelvis and abdomen, or the skin covering the lumbar area (Waddell 1998; Dagenais and Haldeman 2011). Second only to the common cold, the symptom of low back pain causes much adversity for the majority of people while 70% of low back pain cases have no cause or biological mechanisms (Borenstein and Calin 2012). Two of the most common causes for regular visits to primary care physicians (including chiropractors) are back- and neck pain (Hogg-Johnson *et al.* 2009). For public health systems, low back pain has been one of the largest problems in Africa since the 20th century and has expanded worldwide (Louw, Morris and Grimmer-Somers 2007; El-Sayed *et al.* 2010). Back pain is a frequently occurring complaint, as it affects 75-85% of all people at some point in their lives (Andersson 1999).

Low back pain, as a manifestation, is complicated by the reality that, in general, it cannot in itself be seen externally, but rather is manifest through its effects or is reported as a subjective observation by the patient (Waddell 1998; Bressler *et al.* 1999). It affects the population unsystematically and is a salient socioeconomic, clinical, public health problem that is an issue in South Africa, Africa and globally (Manchikanti 2000; Louw, Morris and Grimmer-Somers 2007). By any measure, pain is an enormous global health problem. It has been estimated that one in five adults

suffers from pain and that another one in ten adults is diagnosed with chronic pain each year globally (Goldberg and McGee 2011).

Neck pain is the perception of discomfort in the neck area, which occurs as a result of disorders of any of the structures of the neck including the vertebrae and the intervertebral discs, muscles, nerves, blood vessels, oesophagus, larynx, trachea, thyroid gland, lymphatic organs or parathyroid glands. Neck pain arises from various different conditions and is sometimes referred to as cervical pain. Pain exists and can be experienced as one or a combination of the following: acute, chronic, and intermittent. The major sources of pain are rheumatoid arthritis, osteoarthritis, cancer, injury, operations and spinal problems (Goldberg and McGee 2011).

The health of Africans is a global concern. The health outcomes observed in most Western countries compared with those achieved in Africa have been seen as superior, with those seen in Africa having been significantly lower over the past few decades. Africa constitutes 14% of the world's population yet is carries 40% of the global burden of disease (Lopez *et al.* 2006), the most recurring cause of disability being musculoskeletal conditions (World Health Organisation 2003). Loss of function and pain associated with musculoskeletal conditions primarily lead to disability. The four major conditions of musculoskeletal origin leading to disability include rheumatoid arthritis, osteoarthritis, osteoporosis and low back pain (Woolf and Pfleger 2003).

In order to effectively address the healthcare needs of isiZulu-speaking South African patients, in respect to neck, low back pain and musculoskeletal pain, it is imperative to develop and employ culturally- and linguistically-sensitive isiZulu musculoskeletal tools (Miller 2004), which would include pain questionnaires of various types.

It is an implied incumbency on healthcare providers to consult with the patient in a language that is comprehensible to the patient and in a manner that considers the patient's level of literacy (Roter and Hall 2007). It is necessary for clinical information to be accurate and reliable at all times (Walker, Odendaal and Esterhuyse 2006). For effective communication to exist between healthcare provider and patient, language should be comprehensible to both parties, and be sufficiently nuanced to enable

participants to effectively convey their intended message (Schyve 2007). Within this context, all data collection tools would need to be applicable to the specific social, linguistic and cultural contexts they are addressing (Walker, Odendaal and Esterhuyse 2006). Similarly, clinical interventions need to be based on accurate data, which reflects the truth of the clinical situation, and not assumed data (Ally 2006). The successful translation of questionnaires from one language to another would therefore be an important component of this clinical imperative. Miller (2004) mentions that in achieving content validity, the translation of the questionnaire must be culturally-adapted and linguistically-correct. Attention to these important contributors to effective communication, in combination, would contribute positively to levels of efficiency, quality and patient satisfaction (Yeomans 2000), whilst maintaining cultural sensitivity and integrity.

The restoration of functional capacity is a clinical imperative of low back pain management (Exner and Keel 2000), which is to greater or lesser extent is dependent on the integrity and reliability of self-report outcome measures that are applied in the assessment of functional status, such as in daily living or work tasks (Exner and Keel 2000; Mannion *et al.* 2006).

Within the context of healthcare, various questionnaires have been found to be useful in the diagnosis of back pain. According to McDowell (2006), a range of pain measuring methods have been proposed and evolved, from a straight forward approach where pain is defined and measured in terms of the person's subjective response, to somewhat more complex approaches that seek to separate the subjective element within the response from an objective estimate of the underlying pain. Functional capacity is viewed by patients experiencing back pain as a vital outcome in treatment (Exner and Keel 2000; Mannion *et al.* 2006) In order to account for this area of patient focus, a number of self-report outcome measures already exist that are useful when assessing functional status in daily living, leisure activities, household- and work tasks.

1.2 The Questionnaire

The Bournemouth Questionnaire (BQ) was developed by Bolton and Breen in 1990. It is a short, all-inclusive, English multidimensional questionnaire that is answered by the patient and is used to assess clinical outcomes, valid for use in neck, back and musculoskeletal pain. The BQ is a 7-item tool that ultimately covers all of the vital dimensions of body functionality and of pain. Each domain contains a question and a scale from 0-10 quantifying the patient's perception of pain. It consists of questions that are related to anxiety, depression, social disability, and physical disability, fear avoidance behaviour pertaining to work, pain, and the patient's ability to control pain. It is practical in use and has obtained validity, reliability and responsiveness, is easy for patients to fill out and offers simplicity of evaluation to clinicians. This makes it a favourable tool to use in research studies and clinical settings (Bolton and Breen 1999). The maximum score that can be obtained on the questionnaire is 70 points, obtained by totalling the sum of the scores of each of the 7-items.

Translation can pose inherent problems; even if the words were translated accurately, the meaning of the words or phrases may have been unclear as the meaning hinges upon interpretation by others (Scollon and Scollon 1995). When words were taken out of context, they would lose their meaning (Baynham 1995) as the meaning would differ between cultures, even if the same words were used.

Many reliable pain indices and tools exist in the English language to record the degree of disability where musculoskeletal pain is concerned (Mannion *et al.* 2006; McDowell 2006). These are valuable tools in aiding healthcare providers assess the severity of the patients' disability and the progress of treatment if any exists (Exner and Keel 2000). One of the most credible and frequently used indices is the Bournemouth Questionnaire (Bolton and Breen 1999). However, there is very limited to non-existent access to such a scale in the isiZulu language. Self-administered questionnaires are practical for quantifying patients' capabilities and pain evolution, which is why they play an important role in patient evaluation (Rubinstein *et al.* 2005; Nordin *et al.* 2009). A positive outcome of this study (i.e. the isiZulu translation of the Bournemouth Questionnaire is determined to be valid) would contribute to clinical expediency and

may stimulate research in the prevalence or incidence of musculoskeletal pain in the isiZulu-speaking community. Therefore, an initial isiZulu translation of this questionnaire was done by Ms. Sibongile Madi of the Language Practice and Translation and Interpreting Practice Programme, at the Durban University of Technology. That translation was used in the focus group discussion to determine accuracy and clarity, resulting in the final isiZulu version of the Bournemouth Questionnaire.

1.3 Rationale

Primary healthcare should focus on approaching patients in a holistic manner when it comes to addressing illness and disease (Peabody 1990; World Health Organisation 2003). This means the patient should be viewed in terms of a combination of biological, psychological and social factors (including culture) as opposed to biological terms only. Fleming and Towey (2001) defined cultural awareness and sensitivity as 'the knowledge and interpersonal skills that allow providers to understand, appreciate, and work with individuals from cultures other than their own. It involves an awareness and acceptance of cultural differences, self-awareness, knowledge of a patient's culture, and adaptation of skills.'

It is important for chiropractors to use outcome measuring tools to evaluate the success of their treatment intervention in musculoskeletal pain patients (Deyo *et al.* 1998). Therefore, to address the healthcare needs of this chosen community in a manner that is effectual, it is significant and important to develop a culturally and linguistically sensitive isiZulu musculoskeletal Bournemouth Questionnaire.

The main aim of this study is to test concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original. This will be achieved when one tool (isiZulu) produces similar results when compared with the other tool (English) already known to be trustworthy. It is in this respect that this study would serve to fuel research into the field of low back pain, neck pain and musculoskeletal pain as the necessary information could be drawn from the isiZulu speaking population using validated assessment tools.

1.4 Aims and Objectives

The aim of the study was to validate the translated version of the Bournemouth Questionnaire as no isiZulu translation previously existed for these questionnaires.

The objectives of the study were therefore described as follows:

1. To translate the Bournemouth Questionnaires into isiZulu.
2. To critique and analyse the translated version through the use of a focus group in order to establish their face validity.
3. To establish the content validity by giving the translated version and the original version of the questionnaires to ten participants to pilot the study and
4. The establish the concurrent validity of the translated questionnaires.

1.5 Significance

This research would assist in providing the necessary and adequate measurement tools that would be socially and culturally accepted, in order to provide more accurate information to the health care practitioner regarding their patient's degree of neck, back and musculoskeletal pain. This, in turn, could help them make the needed resources available to the target populations, which in this case would be the isiZulu population.

1.6 Potential Limitations

The study assumed that the data on the information sheet was accurate and represented the exact reality of the participant at the time of completion of the questionnaires.

1.7 Outline of Chapters

Chapter One: An introduction to the topic of the study, aims and objectives, rationale, benefits of the study and the study limitations.

Chapter Two: A review of the literature pertinent to this topic so as to facilitate further understanding of the research and the need for the study.

Chapter Three: The methods and materials that were employed in this study, and how the data was statistically analysed.

Chapter Four: The results are provided and interpreted on the data collected.

Chapter Five: An interpretation and discussion of the results and how the results compare with those of other studies where the Bournemouth questionnaire was translated.

Chapter Six: This final chapter draws conclusions from the entire study and provides recommendations for future studies in this field.
The References provide a list of all the academic sources used for this dissertation.
The Appendences include all appropriate, additional material used in this study will be provided in this chapter.

Chapter Two
Review of Related Literature

2.1 Introduction

In this chapter, the nature and types of pain, the impact of pain on individuals and healthcare systems, as well as the value and limitations of patient-reported outcome measurement tools will be discussed. The aim of this chapter is to review the literature pertaining to the importance of the effective utilisation of relevant language in the application of clinical outcome measuring tools. This review will provide a platform for reflecting on the nature of pain, its impact on isiZulu-speaking South Africans, and the determination of the concurrent validity of a specific outcome-measure questionnaire.

2.2 Pain

Pain is a direct or indirect ramification of various diseases indicating tissue damage, that applies a great toll on individuals and society (Kumar 2007). Pain is an individual experience that is multidimensional. The International Association for the Study of Pain (IASP) defines pain as, “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Loeser and Treede 2008). This definition highlights both the physical and the emotional nature of pain that is affected by psychological and social factors such as: site of the injury, nature of injury, age, gender, one’s anxiety, personality, understanding and cultural factors (Godfrey 2005).

2.2.1 The Nature of Pain

Although pain is a highly personal, subjective and individual experience (Guzman *et al.* 2009; Schein, Rogers and Assalia 2010) there are a number of ways in which pain has been categorised. One of these is to separate the nature of pain into acute pain and chronic pain, in which:

- Acute pain is seen as a short-term symptom or warning that is felt immediately following tissue injury, in a localized area, that decreases as healing occurs (Thienhaus, Cole and Weiner 2002; Bond and Simpson 2006); acute and postoperative pains are found to be the most extensive, while acute on chronic pain is the most difficult to treat (Kumar 2007); and

- Chronic pain as a pain that is recurrent or continuous that lasts for a period that is three months or longer, persisting beyond the expected healing time (Merskey 1986; Bond and Simpson 2006). In clinics and hospitals, low back pain is the most common musculoskeletal pain, but it often goes untreated as there are no established procedures to implement resulting in inadequate pain management (Kumar 2007).

There are four major types of back pain (BP): mechanical- and non-mechanical pain, radicular, and inflammatory pain:

- Mechanical pain origin is either in the spine or its' supporting structures, it is therefore often associated with bending and lifting (Wai *et al.* 2010). 90% of back pain episodes are mechanical, often affecting people between 20-55 years of age thus mechanical pain is related to activity, it is commonly acute and relieved by rest (Abdulmonem *et al.* 2014). In the low back, it is found to be asymmetrical, commonly confined to the lumbosacral region of the spine, the buttock or thigh. It does not radiate below the knee (Haslett *et al.* 2002). By contrast, in the neck there is no official definition for acute mechanical neck pain. It has been theorized to occur with or without injury and it has a sudden onset of pain and lasts for a relatively short time, often presenting with pain in the shoulder and arm (Haneline 2004). Mechanical pain excludes pain resulting from cancers, fractures, dislocation, neurological disease, infection, inflammatory arthropathy, or pain that is referred from other anatomical sites outside of the spine (Davidson and Haslett 2002; Haneline 2004; Endean, Palmer and Coggon 2011).

- Non-mechanical pain has minimal deviation with regards to activity and is persistent with regards to intensity (Haslett *et al.* 2002). Sherman *et al.* (2009) stated that pathologies, trauma, or degenerative conditions are commonly the cause of non-

mechanical pain. Bone and joint conditions including neoplastic disorders (such as multiple myelomas) are also not excluded (Haslett *et al.* 2002).

- Radicular pain has a quality that is sharp, lancinating, severe and radiates along the back of the leg with potential to course beyond the knee if it's of low back origin or into the shoulder, arm and hand when it originates in the neck. It is aggravated by coughing and sneezing (Haslett *et al.* 2002; Govind 2004; Moore, Dalley and Agur 2013). Radicular pain often arises as a result of compression of the nerve roots by osteophyte formation, intervertebral disc herniation or disc protrusion (Davidson and Haslett 2002); or any other cause of a space occupying lesion with the vertebral canal or radicular canal of any portion of the spine (Giles 2000).

- Inflammatory pain often occurs prior to the age of 30 and has a gradual onset that is associated with morning and inactivity stiffness, and improves rather than worsens with activity. This includes diseases such cervical spondylitis and rheumatoid arthritis (Haslett *et al.* 2002).

In general, the causes of back pain vary but can be largely attributed to trauma, musculo-ligamentous injuries, degenerative changes, anatomical anomalies (such as scoliosis) and visceral diseases unrelated to the spine (including the aorta, kidneys gastrointestinal tract and pelvic organs) (Deyo *et al.* 1998). Data suggests the importance of screening for red flags to rule out severe causes of BP (Waddell 1998). For example, Chou *et al.* (2007) listed these particular causes of LBP and there proportions in percentages in the musculoskeletal disorder diagnostic category: spinal infection (0.01%), cauda equine syndrome (0.04%), cancer (0.7%), (0.3% - 5%), spinal stenosis (3%), compression fractures (4%), ankylosing spondylitis herniated disc (4%). No strong risk factors have been linked to the first time occurrence of LBP and is therefore considered to be obscure (Balagué *et al.* 2012).

2.2.2 The Incidence and Prevalence of Back Pain

Chou *et al.* (2007) stated that acute low back pain is the most common motivation for primary care physician consultation and absenteeism from work. Although patients

with lighter manual jobs report similar symptoms, patients whose occupation involves heavy manual labour, have been found to report the highest cases of LBP (Waddell, Burton and Main 2003). Everyday activities such as bending and lifting, with little / no evidence of soft tissue damage are the most reported work-related low back injuries leading to unreliable results between the incidence of LBP and work-related risk factors (Waddell, Burton and Main 2003; Wai *et al.* 2010).

Andersson (1999) found low back pain to be more commonly occurring in white people than in black people and in females than in males. He also stated that males have a higher risk of reoccurring low back pain between the ages 25-45 years (occupation dependent). Various classifications of low back pain exist, which may contribute to the inconsistent prevalence rates. In a study done by Balagué *et al.* (2012) it was found that low back pain necessitating sick leave had a prevalence of 8% and low back pain lasting a minimum of one day had a prevalence of rate of 45%. In an incidence and prevalence study conducted in South Africa by Louw, Morris and Grimmer-Somers (2007), on 355 ABSA and Unibank employees, the results showed the six-month prevalence of low back pain as 41%, the lifetime incidence as 63% and the point prevalence as 9.6%.

2.2.3 The Incidence and Prevalence of Neck Pain

Hoy *et al.* (2010) stated that neck pain is becoming more common throughout the world, it is the second most common musculoskeletal condition after low back pain (Ferrari and Russell 2003). Most people can anticipate a neck pain experience of some degree during their life (Hogg-Johnson *et al.* 2009). According to Ferrari and Russell (2003) neck pain occurs in 80% of the population at some time, with 10% of the population complaining of neck pain for a minimum of one week per month at any given time. Neck pain is most common among females (Ariëns *et al.* 2001; Fejer, Kyvik and Hartvigsen 2006), this may be due to work tasks that have been found to be specific to females: increased mental demands and low control, high repetitiveness and static loads on the muscles of the neck being the most common mechanisms of injury (Larsson, Søgaard and Rosendal 2007).

The one-year incidence of neck pain was found to range from 10.4% to 21.3% (Hoy *et al.* 2010). The greatest incidence of neck pain in office workers was found at, six months, to be 44.4%. In the general public, the one year prevalence was found to be at a high of 40% (Ariëns *et al.* 2001). In a neck pain study conducted by Fejer, Kyvik and Hartvigsen (2006), adult point prevalence was found to range between 5.9% and 22.2%, the mean prevalence was 7.8%, a one year prevalence ranging from 16.7% to 75.1% and a mean prevalence of 37.2%; and a lifetime prevalence ranging between 14.2% and 71% with an average of 48.5%.

2.2.4 The Incidence and Prevalence of Musculoskeletal Pain

Musculoskeletal pain is described as impairment of bodily structures such as limbs and the back, this includes tendons, muscles, vessels and cartilage (Ha *et al.* 2009). Recent studies suggest that musculoskeletal symptoms arise from excessive usage of bones, muscles and ligaments (Abdulmonem *et al.* 2014). In a Finnish mini Health, Survey distributed by Cole *et al.* (2001), results showed that 20% of people older than the age 30 reported musculoskeletal disorders as their primary source of disability. It was also found that one in every 20 Canadian adults attributed their physical disability to musculoskeletal disorders.

According to a study done by Cassou *et al.* (2002) the prevalence of musculoskeletal disorders is directly proportional to the advancement of ones' age. In a study done by Urwin *et al.* (1998) in the urban areas of the UK it was found that one third of the population aged over 75 years old had a significant musculoskeletal problem, and the prevalence of those with the inability to execute distinctive activities associated with movement rose from 3.1% in those aged less than 60 years old, to 50% in those aged above 65 years old. It was also estimated that 15% of general practitioner consultations are for musculoskeletal problems (Urwin *et al.* 1998). The gradient of increase was observed to be steeper in females than in males, while the highest prevalence was in females aged 75 years and above for knee pain (35%).

2.3 Factors Affecting the Reporting of Pain

2.3.1 Pain Threshold, Tolerances and Genetic Influence Among Racial and Ethnic Groups

According to the biopsychosocial model of pain, pain perception is a dynamic interaction between biological, psychological and sociocultural factors that are unique to the individual. Difference in nociceptive processing, is one of the biological factors thought to bare great influence in pain perception (Fillingim 2005).

Several laboratory studies investigating experimental pain, documented racial and ethnical differences in pain perception and responses (Cano, Mayo and Ventimiglia 2006). The perception of heat pain in African American and non-Hispanic white participants was explored with findings that no difference in heat pain intensity and heat pain threshold existed between the two groups, however, the African American participants displayed lower heat pain tolerances and higher ratings for heat pain unpleasantness then the white participants (Sheffield *et al.* 2000). In another study of multiple experimental pain stimuli, done by Campbell, Edwards and Fillingim (2005) African American and non-Hispanic white subjects were exposed to heat, pressure, ischaemic, and cold pressor pain tasks and the study results indicated significantly lower pain tolerances for heat pain, ischaemic pain, and cold pressor pain in African American subjects in comparison, although there was no differences in pain threshold measures between the two groups.

Research conducted regarding the mechanisms underlying group differences in experimental pain sensitivity may be related to racial- and ethnic-differences in endogenous pain modulation, by central pain-inhibitory mechanisms and descending inhibition of pain signals (Mechlin *et al.* 2005; Campbell *et al.* 2008a, 2008b). In the same study by Campbell *et al.* (2008a) African American and non-Hispanic white participants received electrical pain stimulation prior to, during and post an ischaemic arm pain procedure. The results showed the ischaemic arm condition produced greater reductions in subjective, verbal pain ratings of white subjects as compared with African Americans. The researchers concluded that there are differences in endogenous pain inhibition between African Americans and non-Hispanic white

participants. Additional research is said to be needed in the investigation of ethnic and racial disparities in pain perception and response between representative samples of both healthy individuals and those experiencing painful conditions (Anderson, Green and Payne 2009). The findings from the studies cited above suggest a greater sensitivity to experimental pain stimuli exists in African-Americans compared to Caucasians [*viz;* (Campbell, Edwards and Fillingim 2005; Campbell *et al.* 2008a, 2008b)].

Pain Perception may be influenced by whether one was raised in a cultural environment where the expression of pain was encouraged and recognised, or downplayed and deemed inappropriate (Bates, Edwards and Anderson 1993). A study by Shoben and Borland (1954) found that children's dental-care fears and attitudes were directly influenced by those of their immediate family members; One can learn appropriate emotional expressions, attitudes, expectations, through the observations of others who have a similar identity to oneself (Bates, Edwards and Anderson 1993).

The role of genetic factors in human pain perception has also been explored (Anderson, Green and Payne 2009). Polymorphisms present in specific genes aid in the explanation of variability in self-reported pain. A study found genetic influences on variability in pain sensitivity associated with ethnicity, when 500 healthy African American, European American, Asian American and Hispanic participants were exposed to painful cold and thermal stimuli. To examine polymorphisms in the genes that modulate nociceptive transduction, opioid analgesia, and neurotransmitter metabolism; genotyping was performed. It was concluded that among these ethnic groups, there was a significant variant in the allele frequency for these gene loci. Gender, ethnicity and temperament contribute to an individual's variation in cold pain and thermal by interaction with single nucleotide polymorphisms. It is important to acknowledge the extreme complexities of the biologic correlates of race and ethnicity and that many non-biological factors also contribute to health status differences among racial and ethnic groups. One concern about studies focusing on genetic factors regarding disparities is the fostering of misconceptions, though there are studies that have stated that there are genetic variants that exist that are unique to specific racial and ethnic groups (Anderson, Green and Payne 2009).

2.3.2 Attitudes and Beliefs toward Pain

Several patient-related barriers to pain assessments have been identified; whether they are experiencing acute or chronic pain, there are attitudes, beliefs and coping strategies applied by patients that affect their pain outcomes (Cleeland 1991; Ward *et al.* 1993; Meghani and Keane 2007). It has been found that patients with chronic conditions often do not want to distract their physicians from the illness being treated, be labelled as complainers and are afraid that pain means their illness is worsening (Anderson, Green and Payne 2009). Results from several studies suggest that African American patients frequently report their belief that pain is inevitable, and describe their submission to stoicism (Meghani and Houldin 2007; Im 2008).

Anderson, Green and Payne (2009) stated that African Americans are frequently concerned with experiencing intolerable side effects, becoming addicted to, and developing a tolerance toward analgesics therefore prefer to take them only when their pain is severe. Furthermore, it was found that African Americans were more likely to believe that a patients' race and gender influence access to pain care, and that they should have been referred to a higher physician sooner (Green, Baker and Ndao-Brumblay 2004). There are significant differences among racial and ethnic groups with regards to coping with pain: In a study by (Tan *et al.* 2005) it was found that African American patients with chronic pain were more likely than non-Hispanic white patients to use external coping methods that were associated with increased depression and disability; a number of studies found that African Americans with chronic pain had a higher tendency to report pain using religious coping methods such as prayer (Edwards *et al.* 2005; Cano, Mayo and Ventimiglia 2006). People who have had similar learning experiences are more likely to show similar pain perception and response patterns to one another (Anderson, Green and Payne 2009).

2.3.3 Healthcare Provider and Healthcare Systems

Race and ethnicity are significant variables that affect pain assessment, more especially in the instance of language barriers. Research results have found that physicians often underestimate the severity of a minority of patients' pain (Cleeland 1991; Anderson *et al.* 2000) therefore are less likely to administer analgesics to patients. A vignette study found a relationship between physician gender and patient race; male physicians provided more pain relief to white patients, while female physicians provided more pain relief to black patients for back pain and kidney stone pain (Weisse *et al.* 2001) Several studies found that healthcare providers are ill-equipped to manage pain after reporting that their education on pain assessments and treatment is a neglected topic in their training (Anderson, Green and Payne 2009). Therefore, culturally competent care for an increasingly diverse society is compromised (Green, Wheeler and LaPorte 2003; Miner *et al.* 2006).

2.3.4 Gender, Pain and Education

Many painful conditions are more widespread in females than in males including migraine and tension-type headache, temporomandibular (TMJ) disorders, irritable bowel syndrome and fibromyalgia (Hurley and Adams 2008).

Women are reported to have a lower threshold to pain, are more sensitive to experimentally induced pain and to have a lower tolerance to painful stimuli (Fillingim, Edwards and Powell 1999; Fillingim *et al.* 2009). The difference in pain sensitivity among the two genders may be due to psychological factors such as anxiety, depression, fear of pain and catastrophizing (Tashani, Alabas and Johnson 2010; Forsythe *et al.* 2011) and biological factors such as body size, blood pressure and gonadal hormones (Riley III *et al.* 1999; Tashani, Alabas and Johnson 2010). One of the psychosocial factors that influence pain sensitivity response is gender role (Bernardes, Keogh and Lima 2008). This signifies the socially- and culturally-constructed meanings that describe how men and women should conduct themselves in specific circumstances with reference to feminine and masculine roles acquired throughout life (Myers, Riley III and Robinson 2003). In a traditional setting,

forbearance is highly related to males while sensitivity is related more to females (Robinson *et al.* 2001). In a previous review, a study concluded that women had a higher occurrence of musculoskeletal pain than men. In an extensive study done across 6 continents, 17 countries, and a total sample size of 85 052 adults it was concluded that females had greater prevalence of any chronic pain condition (45%) than men (31%), and females had a greater prevalence of associated depression with chronic pain than males.

Evidence supports hormonal contribution as a factor in many clinical pain conditions. Prepubescent boys and girls have roughly equivalent prevalence of migraine headaches, however, the lifetime prevalence increases up to 18% for females and 6% in males after puberty, suggesting a hormonal association between female sex and migraine headaches. For TMJ disorders a similar prevalence was noted with negligible difference between boys and girls, and a higher prevalence in females after puberty (Fillingim *et al.* 2009). In experimental pain studies, no effects due to the female menstrual cycle have been reported on heat pain perception, pressure pain threshold, ischaemic pain and on electrical pain thresholds while another study did report lower heat pain threshold on the abdomen only, during the ovulatory phase of menstruation.

There is a standardized measure developed by Robinson and colleagues called the Gender Role Expectation of Pain Questionnaire (GREP) that quantifies sex-related stereotypic attributions of pain endurance, sensitivity, and willingness to report pain (Wandner *et al.* 2012). Studies conducted using the GREP have established that both males and females perceive themselves as less sensitive to pain and less willing to report on pain than the opposite sex. Females report back on themselves as less able to endure pain, more willing to report pain and more sensitive to pain than males (Robinson *et al.* 2001; Defrin, Shramm and Eli 2009), while men report back on themselves as being more or less relatively similar to females when it comes to pain endurance.

Educational attainment largely governs health-related behaviour, attitudes and outcomes and may be closely related to income. In a study done by Cano, Mayo and Ventimiglia (2006) education was found to have a significantly negative correlation

with pain variables. It was deduced that higher levels of education were related to less disability and pain. It was also stated that communication skills, ability and knowledge about how health and treatment information is searched for and reading ability may be relate to education. Patients without access to educational resources were found to use more prayer and hoping and ignoring strategies, while patients with higher levels of education may have more experience in using pain strategies that involve multifaceted understanding regarding pain sensations and have better information or better access to information. Education is often a strong determinant of social class, and education and social class have shown to have an effect on musculoskeletal conditions (Leboeuf-Yde *et al.* 2002).

2.4 Patient-Reported Outcome Measures and Questionnaires

An essential component of scientific research is the measurement of clinical outcomes. These measurements can be done in the social, natural or health sciences (Mokkink *et al.* 2010a). Among the most challenging of subjective health measurements, is the measurement of pain as pain is influenced by the social, personal and environmental constructs that the patient associates with their pain.

Patient-reported outcome measures are questionnaires that are validated and standardized that are administered to patients to measure their subjective perceptions of their wellbeing and functionality, and adding perspectives on treatment or care outcomes (increasingly used in clinical trials) to determine the impact of healthcare interventions on quality of life (Beaton *et al.* 2000; Dawson *et al.* 2010). Since back pain has a significant effect on patients and society at large (Dworkin *et al.* 2008) it is essential that outcomes are measured in an appropriate manner such that they are meaningful and relevant, more especially to the patient, and reflect the nature of the patients' pain (Bolton and Breen 1999). For the efficacy of future treatment protocols and healthcare regimes to be put in place, the way in which patient-reported outcomes are measured is a vital factor (Bolton and Breen 1999). Patient-reported outcome questionnaires are a vital aspect to the patient evaluation and they are beneficial for quantifying the patients' functional capabilities and the evolution of their pain perception (Rubinstein *et al.* 2005; Nordin *et al.* 2009). Finding patient-reported

outcome measures suitable for use in research trials in conditions such as back and musculoskeletal pain has always proven to be problematic, as no direct measures of back pain exist (Cherkin *et al.* 1996; Bolton and Breen 1999). Although there are complications regarding back pain specifically and pain in general, there is agreement regarding the way that back pain outcomes should be measured (Bolton and Breen 1999).

In the interest of health services research, questionnaires are the more commonly used form of research (Mathers, Fox and Hunn 2009). Questionnaires are used to allow for the collection of information in a standardized manner, once gathered from the representative sample of the stated population; the results are interpreted for application in a wider population: this is essential to evaluate the effectiveness of treatment or care (Rattray and Jones 2007). The objective of questionnaires is to collect information in the most valid and reliable manner (Boynton and Greenhalgh 2004). In the instance where parallels are drawn between pain and the health of an individual, the simplest way to quantify approximate levels of severity is to request a numerical estimation from the patient. Patients rate their health or pain by responding to specific individual questions, which are rated i.e. from 0 to 10 according to the level of severity or difficulty, where 0 means “no pain” and 10 means “worst pain possible” (Bolton and Breen 1999; Young *et al.* 2010). Among the list, the Verbal Rating Scales (VRS) had been used effectively, providing valuable information regarding pain and analgesia (McDowell 2006) and the Numerical Rating Scales (NRS) which accesses pain intensity and measures symptoms (Bolton and Breen 1999). Respondents are required to rate their pain by using a single number on the scale. These are then analysed and tallied to produce an overall score that would signify an underlying phenomenon such as anxiety or “perceived level of pain”. The results are focused at the occurrence of change in the patients’ general health or pain as represented by change in the patient-reported outcomes measure score following an intervention (Dawson *et al.* 2010).

A variety of pain scales exist, measuring both quantitative and qualitative characteristics of pain (Melzack 1975; Jensen and Karoly 1992) however, these measures do not encompass all of the important parameters of the back pain

experience comprehensively (i.e. psychological dimensions stemming from the pain phenomenon) and are seen to be inconvenient, restricted and lengthy (Bolton and Breen 1999; McDowell 2006). When evaluating treatment in back pain patients, there are a battery of measuring tools/ questionnaires available to choose from. Many of these are multi-dimensional, but generic and non-specific, such as the Sickness Impact Profile (SIP) and the Short-Form 36 (SF-36). The 24-item Roland Morris as well as the 10-item Revised Oswestry questionnaires were the preferred instruments used as the outcome measures in studies of low back pain (Deyo *et al.* 1998), however they lack questions on psychological aspects with regards to fear avoidance, anxiety and depression (Larsen and Leboeuf-Yde 2005). Another measuring tool such as the Brief Pain Inventory (BPI) was developed to measure both pain intensity and pain interference; the tool had many advantages but did not measure the quality of pain. None of the existing questionnaires were found to be comprehensive, condition specific or relevant for the back pain experience. Instead, they have been found to be lengthy and inefficient (Bolton and Breen 1999).

2.5 The Bournemouth Questionnaire

The BQ was developed, tested and proved to be reliable, valid and responsive to change. It is found to be short and easy to fill out by the patient, and easy to evaluate by the healthcare professional (Blum-Fowler *et al.* 2013), developed for use in routine practice settings in back, neck and musculoskeletal pain patients (Irgens *et al.* 2013). The questionnaire is based on the biopsychosocial model (Bolton and Breen 1999), in that musculoskeletal pain is a complex and multicomponent entity and is widely used in the clinical setting of Chiropractors including research (Irgens *et al.* 2013). Each item gets scored with an 11-point numerical rating scale from 0 to 10 (Bolton and Breen 1999; Larsen and Leboeuf-Yde 2005; Longo *et al.* 2010).

The BQ has been tested for homogeneity (i.e. consistency of all items in the questionnaire using Cronbach-α coefficient), reliability (i.e. test re-test reliability using intraclass correlation coefficient), validity (i.e. external construct validity using Pearson correlation coefficient) and responsiveness (i.e. internal longitudinal construct validity, the ability to detect clinically important changes over time) in back pain patients both

with and without leg pain and found to be useful from these perspectives (Bolton and Breen 1999). Bolton and Breen (1999) created a back pain measure that is comprehensive, multidimensional and useful in the documentation of clinical outcome measures in clinical trials and in the routine clinical setting, and fit-for purpose in ambulatory back pain patients – typically seen attending Chiropractic clinics. In the context of the Chiropractic clinical setting, Chiropractors primarily treat using spinal adjustments or manipulation to deliver a therapeutic stimulus to the joint complex (Bergmann and Peterson 2010). This specific treatment results in restoration of range of motion (Dagenais and Haldeman 2011) and minimization joint inflammation and irritation (Leach 2004) in elderly it may also remove nerve entrapment (Dougherty *et al.* 2012).

2.6 The Validation of Questionnaires

It is important for the researcher to view the differences between reliability and validity (Boynton and Greenhalgh 2004). The reliability of a questionnaire indicates the quality of the questionnaire in measuring what it is set out to measure (Kimberlin and Winterstein 2008) and the validity of the questionnaire arises from the internal and external consistency and indicates the relevance of the questionnaire in a clinical setting (Kimberlin and Winterstein 2008). In other words, validity refers to the process used to employ the tool in use. The validity of a questionnaire determines whether the research is effective in measuring what it is intended to measure, and whether the research results are honest (Golafshani 2003). Writers, have identified four different types of validity. This study focuses on determining three of those four types of validity; the face, content and concurrent validity of the isiZulu version of the Bournemouth Questionnaire:

2.6.1 Face Validity

Face validity determines the degree to which the questionnaire is an acceptable reflection of the construct or parameters to be measured (Mokkink *et al.* 2010b). In the translation of questionnaires, face validity would be used to indicate whether the translation seems to be a good translation of the original questionnaire. Face validity is therefore an estimate of whether a tool appears to measure a certain clinical construct; it does not guarantee that the test indeed measures phenomena in that domain.

In this study, to determine if the translation was adequate, the face validity of the isiZulu Bournemouth Questionnaire was determined through a focus group discussion. The original English and the isiZulu versions of the questionnaires were given to each focus group participant to scrutinize.

2.6.2 Content Validity

Content validity refers to the degree to which the content of a questionnaire is an acceptable reflection of the construct to be measured (Mokkink *et al.* 2010b), *viz.* how much a measure covers the range of meanings included within the concept. By judging the comprehensiveness and relevance, content validity is determined (Mokkink *et al.* 2010b).

There is no precise statistical quantity for content validity. Rather, content validity represents a finding regarding the degree to which a questionnaire / tool provides an accurate sample of a particular behaviour or construct (for this study, behaviour and experience related to back, neck and musculoskeletal pain). This is manifested by the focus group deliberating over the questionnaire and determining that it contains all the relevant social, personal and clinical constructs and that these are appropriately and accurately measured by the questions in the questionnaire (Morgan 1997). To achieve cross-cultural adaptation and maintain content validity, the translation needs to be both linguistically and culturally correct (Beaton *et al.* 2000).

2.6.3 Concurrent Validity

Concurrent validity is determined by how well the items of the translated / culturally adapted questionnaire performs against the performance of the items of the original (already known to have the relevant psychometric properties) version of the questionnaire, already known to be trustworthy (Schellingerhout *et al.* 2011).
The gold standard test for high concurrent validity of a tool (the questionnaire) requires a close fit between the measures it produces when compared with the original tool that is already known to be valid (Mannion *et al.* 2006; Schellingerhout *et al.* 2011). To establish concurrent validity, one is determining the degree to which a tool reflects reality. This undertaking is essential in order to certify that future research applying the particular tool is accurate (Bernard and Bernard 2012).

Some face and construct validity parameters may be lost in a translation due to the questions themselves not being understood, not being culturally applicable or being contextually inappropriate for the patient; concurrent validity is designed to detect these “errors” between the original questionnaire that has been validated and the newer translated version of the same questionnaire. It is therefore mandatory that the translation be validated so as to achieve an effective and useful questionnaire and to allow data comparison (Wiesinger *et al.* 1999).

2.7 Cross-Cultural Adaptation and Translation of Questionnaires

Chia-Ting and Parham (2002) found that cultural and linguistic difference hinder the translation process from one language to another. When words are taken out of context they lose their meaning, thus, the meaning will differ between various cultures even if the same words are used as words carry cultural meaning. Translations pose intrinsic complications: although words are translated accurately, the meaning of a combination of words or a phrase may be uncertain. This is due to the fact that meaning is determined by the interpretation of others, in addition to being determined by words or phrases (Baynham 1995; Scollon and Scollon 1995).

There are important considerations to bear in mind in translations used for healthcare provision. Test items should consist of simple sentences to avoid ambiguity (Bracken and Barona 1991). For example, in the isiZulu language, there is no differentiation between singular pronouns (he, she, it) pertaining to people. This poses a problem when translating English into isiZulu and it is therefore advisable to avoid these pronouns. Such factors make the exporting of measurement tools from one language to another highly susceptible to translation issues. If the translation of a questionnaire from its original cultural context is done by simple translation, it is unlikely to be successful because of language and cultural differences. In other words, a direct translation of a questionnaire from one language to another does not permit its use in clinical trials. Such modifications may be due to the target language not possessing words equivalent to the source language, as well as variations in grammar and syntax (Chia-Ting and Parham 2002). Another important consideration is that older people, especially in the isiZulu language, have different associations with certain words such as “anxiety” or “pain” whereas younger people may not associate the same stresses with a particular word. In contrast, the older people may be less likely to articulate “pain” as something that is severe, whereas the younger (more likely to be more sensitized to the English norms of what pain stands for) may associate that with the isiZulu word now (therefore understanding it has greater depth).

There is a rapid increase in the number of multi-cultural and multi-national research projects that need to be adapted for health status measures for use in other languages other than the source language. According to (Cook *et al.* 2006) as an alternative to creating a new questionnaire, the translation of an existing questionnaire allows for the comparison of different populations. This allows information to be exchanged across linguistic and cultural barriers further allowing researchers to observe functional status across a wide variety of people. If a language and culturally adapted questionnaire is not developed and used to document information, the reporting of information tends to be significantly different between population groups (Walker, Odendaal and Esterhuyse 2006).

According to Guillemin, Bombardier and Beaton (1993). There are five different scenarios presented on the scale, these are measured against what changes will result culturally, linguistically and in the country of use.

The five scenarios are:

1. Use in the same population, no change in culture, language, or country from source. Here the score is zero, as no adaptation is needed.

2. Use in established immigrants in source country. In this situation only cultural adaptation needs to be performed.
3. Use in other country, same language. Once again, only cultural adaptation is needed.
4. Use in new immigrants, non-English-speaking, but in same source country. Here both translation and cultural adaptation should be performed.
5. Use in another country and another language. Once again, both translation and cultural adaptation need to be performed. In the context of this study, this fifth scenario would be the most relevant. The isiZulu-speaking South Africans fall into this last scenario which encompasses that both the language and the culture are different to that of the source country of the questionnaire (being that it was originally developed in Europe).

There are four equivalences that need to be followed when translating and adapting quality of life questionnaires to culturally diverse scenarios:

1. Semantic equivalence: found in the meaning of the words, therefore, in the sentence construction, grammatical-syntax alterations are at times necessary as each language presents different problems. This often occurs during the translation of long passages. A study conducted by Mkoka *et al.* (2003) supports this; an English questionnaire was translated into isiXhosa which resulted in difficulty with the direct translation or certain words. A translation needs to convey the same meaning and produce similar responses as the original questionnaire to declare semantic

equivalence. Violation was a possibility in this study, as English and isiZulu have very different grammar, structure and syntax.

2. Idiomatic equivalence: cannot be achieved when researchers employ direct translation, due to loss of meaning leading to mistranslation. One needs to be familiar with the real meaning of the idiom(s) used to keep idiomatic equivalence. For example, an idiom for preserve is ‘hang in there’. If one has no cultural understanding, the interpretation will be lost. Fortunately, this was a non-issue during the translation for this study.

3. Experiential equivalence: the emotional effect of the original questionnaire must be effective and carried out in the translation. This is based on ones’ level of cultural knowledge. The translators need to identify the actual meaning in a sentence, given the context. This was achieved in this study.

4. Conceptual equivalence: when two languages have the same word but the word has different meanings in a situation. If the word is directly translated from English to a target language but the concept in which the original word is understood may be lost. For example, ‘love’ in English means ‘love’ but is also interchangeable with ‘like’ in isiZulu.

Within the above discussion, a case is made that there is no space for literal translation (Guillemin, Bombardier and Beaton 1993). To translate a questionnaire literally is insufficient; the questionnaire needs to be adapted in a culturally understandable and relevant form while still keeping to the meaning and intension of the original source (Sperber 2004). There is a need for measures that have been specifically developed to be used in non-English-speaking countries because cultural groups vary in disease expression and their use of various health care systems (Guillemin, Bombardier and Beaton 1993).

Chapter Three
Methodology

3.1 Introduction

This chapter deals with the research methodology used, the collection of data as well as the process of statistical analysis. The primary data were the data collected from the questionnaires/ participant responses and the results acquired once the statistical analysis was complete. Secondary data was the data acquired from internet, literature, books and journals to compare the outcome of the results in the research study where original validity testing it concerned with respect to outcome measure tools.

3.2 Background of the Study

The Bournemouth Questionnaire (with its three sections) (Appendices H1-H3) were translated by an isiZulu linguist into the isiZulu language (Appendix H4a). The questionnaire (Appendix H4a) was then assessed by a focus group as a tool for data collection relating to the isiZulu-speaking patients who visit the Health Sciences Clinic at Durban University of Technology (Chiropractic, Homeopathy and Somatology) Addington Hospital and University of Kwa-Zulu Natal Clinics (Howard, Nelson Mandela and Westville campuses). This then yielded the isiZulu BQ (Appendices H4b-H6).

3.2.1 Study Design

This was a quantitative correlational study comparing the isiZulu version of the Bournemouth Questionnaire to its English counterpart, (consisting of three sections). The study employed a design where subjects were compared to themselves. To limit bias, half of the main sample completed the isiZulu version first, while the other half of the sample completed the English version first. For the main study, bilingual (speakers of both English and isiZulu) participants with self-reported neck, low back or musculoskeletal pain and participants who were asymptomatic were requested to complete the English and the isiZulu questionnaires at two separate times.

3.3 Focus Group

A focus group was established for the purpose of assessing the isiZulu translation (Appendix H4a) for face validity (whether the tool seems to be measuring the intended parameters). Eight bilingual (i.e. speakers of both English and isiZulu) focus group participants with a variety of expertise (ranging from a chiropractor, general practitioner, lay persons [in non-medical professions], health science students, and a linguist) were recruited by means of direct consultation, to comment on the accuracy of meaning in the translation. The number of focus group participants was efficient as the recommendation was six to twelve participants. These members met on one occasion facilitated by the researcher and the research co-supervisor.

Before the focus group commenced, each focus group participant was required to read the letter of information (Appendix A) and keep the document (optional), sign and return the letter of informed consent (Appendix B), confidentiality (Appendix D), the code of conduct (Appendix C) as well as an attendance register. The researcher ensured that all responses were recorded and collected accurately. During the focus group meeting, each participant was then given a copy of the original BQ questionnaire (Appendix H1-H3) and the translated isiZulu questionnaire (Appendix H4a) so that they could scrutinise and comment on the accuracy or inaccuracy of the isiZulu questions and whether the isiZulu questions reflected the basic meaning of the English questions. The questions were discussed in sequential order (from 1-7). Where there were inconsistencies found or changes proposed, a unanimous vote was taken to instate the changes. At the end of the discussions, the focus group participants were given an opportunity to scrutinize the entirety of the questionnaires once more, to add any further comments or changes to the translation in general. This was done to establish the content validity thereof (content validity refers to how much the tool covers the range of meaning included within the concept). The focus group participants made no further comments and a general consensus of agreement was reached. Thus, the isiZulu BQ (Appendix H4b) was finalised. The entire proceedings of the meetings were audio recorded for reference purposes.

3.4 Pilot Study

The pilot study was a preliminary or trial run of the larger study that was conducted. This was done in preparation for the main study to determine the feasibility of the research tool (Trochim and Donnelly 2001) and the content validity (how much the tool covers the range of meaning included within the concept). The aim of the pilot study was to determine if the sample population could relate to the questionnaire and if any further discrepancies or errors could be brought to the fore (Fink 2012). After the focus group participants had finalised the isiZulu versions of the questionnaires, both the isiZulu and English versions were then given to ten bilingual pilot study participants who commented on and scrutinised the translated questionnaires. Doing such pre-tested the translated version in the target language (Schellingerhout *et al.* 2011) and established the content validity of the isiZulu questionnaire.

3.4.1 Inclusion Criteria for The Pilot Study

- Ten potential pilot study participants meeting the same inclusion criteria as for the main study.

3.4.2 Exclusion Criteria for The Pilot Study

- Any potential pilot study participant unwilling to sign the required documents for the pilot group, indicating that they are voluntarily participating.

3.5 Main Study

The aim of the main study was to assess the isiZulu version of the Bournemouth Questionnaire to determine its concurrent validity.

3.5.1 Advertising

No advertising was utilised in this study. A purposive, stratified sampling technique was used, by direct approach.

3.5.2 Recruitment and Participants

Permission to conduct this study was obtained from the Provincial Health Department and the Department of Health (Appendix E1) and the clinic manager/ superintendent of the listed clinics (Appendix E2), and the Institutional Research Ethics Committee *[REC 131-15]* at the Durban University of Technology (Appendix E2). Permission was granted for recruitment of all the requested clinics, *viz.* DUT Health Science Clinic, Addington Hospital, and University of KwaZulu-Natal (UKZN) pain clinics. The sites were identified by convenient sampling due to proximity and accessibility to the researcher.

3.5.3 Population and Sampling

This was limited to participants that were eighteen years or older and were bilingual (English and isiZulu). The participants were recruited via purposive, stratified sampling (Tongco 2007). Participants each received a passage that was written in isiZulu (Appendix I). They were required to read the passage and verbally explain its meaning in English to the researcher. This was done to determine the participants' literacy and understanding of isiZulu, and furthermore to deduce whether the subjects could then continue into the main study as participants. In this study 120 paired questionnaires were distributed to 120 participants. Of those 107 paired questionnaires were valid and used for statistical analysis. The participants needed to answer both the English and the isiZulu questionnaires (each consisting of three sections) regardless of whether they were symptomatic or asymptomatic.

3.5.4 Participant Inclusion Criteria

- Participants had to be able to read and understand both English and isiZulu.
- Participants had to be 18 years or older.
- Participants had to be capable of verbally expressing whether they were symptomatic or asymptomatic with regards to pain.
- Participants had to be capable of reading the letter of information (Appendix F) and signing the informed consent (Appendix G).

- Participants had to be capable of reading the isiZulu passage (Appendix I) and verbally translating it to the researcher.

3.5.5 Questionnaire Inclusion Criteria

- Both English and isiZulu questionnaires were to be completed in full.

3.5.6 Participant Exclusion Criteria

- Participants whom were Illiterate or not fluent in both isiZulu and English (unable to read and understand the letter of information (Appendix F)/ letter of informed consent (Appendix G).
- Participants whom were unable to understand and translate the isiZulu passage (Appendix I).
- Participants whom had participated in the face validation of the isiZulu BQ ie: focus group or pilot study participants.

3.5.7 Questionnaire Exclusion Criteria

- Incomplete questionnaires
- Unpaired returns

3.6 Procedure for the Study

After the participants had been selected, the questionnaires were then administered using a randomisation list. The list was used to determine the order in which the questionnaires would be administered to each participant. Although still numbered numerically (one to seven), the order of the isiZulu questionnaires was scrambled. The randomisation list and the isiZulu questionnaire scrambling was applied to all participants to minimise memory recall bias, the alternate questionnaires were distributed after the participant had been through a case history or after 20-60 minutes.

3.7 Data Analysis

Upon data capture, the selection process for the questionnaires was based on the paired questionnaires being returned and based on the amount of data omitted from the questionnaires. Any unanswered questions made the questionnaire invalid. This procedure increased the stability and consistency of the information gathered from the questionnaires and this minimised human reactivity, which would have caused biased results. They were then sent off for data capturing. The required minimum response rate was calculated to be 70%. The descriptive statistics were analysed using the SPSS version 23 package. The data generated was represented by means of bar graphs and tables for visual understanding and communication.

3.8 Validity

In the initial stages of the study, the focus was on determining the face validity of the isiZulu translation of the original BQ during the focus group discussion. Next, was to be determined was the content validity. This was done by the ten pilot study participants who could comment on and critique the translated version of the questionnaire with the original version.

Lastly, the concurrent validity was established by comparing the translated isiZulu questionnaire with their original English counterpart. This was done to determine whether the isiZulu version of the questionnaire could be used in a clinical setting. Concurrent validity could be claimed if there was significant correlation between the isiZulu and the English versions of the questionnaires. The level of significance was set at 5% or at $\alpha = 5$.

3.9 Ethical Considerations

All potential participants who qualified for the main study were invited to participate in the main study. They each had the right to confidentiality, privacy and anonymity at all times. The focus group participants also had the right to privacy, confidentiality and anonymity at all times. Those that took part in the focus group and pilot studies were

asked to complete a separate informed consent form. The researcher ensured that each participant was treated with human dignity, and no participant was harmed during the study. All participants in the study had the freedom to choose to withdraw from the study at any stage. Each main study participants' name was replaced by a code, to make the association of their details to their names inaccessible to the researcher once the data had been captured. Any participant could, at any time ask the researcher or supervisors any questions pertaining to the study, so that they could attain peace of mind if need be.

Chapter Four
Results

4.1 Introduction

This chapter presents the results obtained from the questionnaires in this study. The questionnaires were the primary tools used to collect the data, by way of distribution to patients with back, neck and musculoskeletal pain. The data collected from the responses was analysed with SPSS version 23.0. The results present the descriptive statistics in the form of graphs or tables for the quantitative data that was collected. Inferential techniques include the use of correlations and Chi square tests to check consistency and reliability of the translated questionnaires; which are interpreted using the *p*-values less than 0.05%.

4.2 Research Instrument

The research questionnaires consisted of three sections which measured back, neck and musculoskeletal pain respectively (Appendix H1-H3 and H4b-H6), with the level of measurement at nominal or an ordinal level. Each section was consisted of seven questions, the participants could answer each section by selecting a number between 0 and 10 where “0” is “no pain” and “10” is “worst pain possible. Participants were required to complete both an English and an IsiZulu version of each of the questionnaires with 57 participants (53.3%) receiving the English questionnaires to respond to first and 50 participants (46.7%) receiving the IsiZulu questionnaires first.

4.2.1 Research Abbreviations Table for The Chapter

AH	Addington Hospital		
DUT	Durban University of Technology		
Eng	English		
E1-B-Q1	English 1 Back Question 1	Z1-B-Q1	isiZulu 1 Back Question 1
E1-B-Q2	English 1 Back Question 2	Z1-B-Q2	isiZulu 1 Back Question 2
E1-B-Q3	English 1 Back Question 3	Z1-B-Q3	isiZulu 1 Back Question 3

E1-B-Q4	English 1 Back Question 4	Z1-B-Q4	isiZulu 1 Back Question 4
E1-B-Q5	English 1 Back Question 5	Z1-B-Q5	isiZulu 1 Back Question 5
E1-B-Q6	English 1 Back Question 6	Z1-B-Q6	isiZulu 1 Back Question 6
E1-B-Q7	English 1 Back Question 7	Z1-B-Q7	isiZulu 1 Back Question 7
E2-N-Q1	English 2 Neck Question 1	Z2-N-Q1	isiZulu 2 Neck Question 1
E2-N-Q2	English 2 Neck Question 2	Z2-N-Q2	isiZulu 2 Neck Question 2
E2-N-Q3	English 2 Neck Question 3	Z2-N-Q3	isiZulu 2 Neck Question 3
E2-N-Q4	English 2 Neck Question 4	Z2-N-Q4	isiZulu 2 Neck Question 4
E2-N-Q5	English 2 Neck Question 5	Z2-N-Q5	isiZulu 2 Neck Question 5
E2-N-Q6	English 2 Neck Question 6	Z2-N-Q6	isiZulu 2 Neck Question 6
E2-N-Q7	English 2 Neck Question 7	Z2-N-Q7	isiZulu 2 Neck Question 7
E3-MSK-Q1	English 3 MSK Question 1	Z3-MSK -Q1	isiZulu 3 MSK Question 1
E3-MSK-Q2	English 3 MSK Question 2	Z3-MSK -Q2	isiZulu 3 MSK Question 2
E3-MSK-Q3	English 3 MSK Question 3	Z3-MSK -Q3	isiZulu 3 MSK Question 3
E3-MSK-Q4	English 3 MSK Question 4	Z3-MSK -Q4	isiZulu 3 MSK Question 4
E3-MSK-Q5	English 3 MSK Question 5	Z3-MSK -Q5	isiZulu 3 MSK Question 5
E3-MSK-Q6	English 3 MSK Question 6	Z3-MSK -Q6	isiZulu 3 MSK Question 6
E3-MSK-Q7	English 3 MSK Question 7	Z3-MSK -Q7	isiZulu 3 MSK Question 7
MSK	Musculoskeletal		
UKZN-H	University of Kwa-Zulu Natal-Howard campus		
UKZN-M	University of Kwa-Zulu Natal-Nelson Mandela campus		
UKZN-W	University of Kwa-Zulu Natal-Westville campus		

4.3 Questionnaires and The Sample

The number of questionnaires distributed was 240 (120 pairs= 120 participants) and the total number returned was 239 (119 pairs + one single). One participant returned only one of the paired questionnaire forms, and was excluded from analysis on this basis. Similarly, 12 paired questionnaires were returned incomplete, and were excluded from analysis. The total number of questionnaires analysed was 214 (107 pairs out of the total of 120 pairs). The response rate was therefore calculated to be 89,2%, which was in excess of the required minimum response rate of 70% (in line with the methodology (Section 3.8)).

4.3.1 The Site

From the five chosen data collection sites, Figure 1 shows the number of responses from each site.

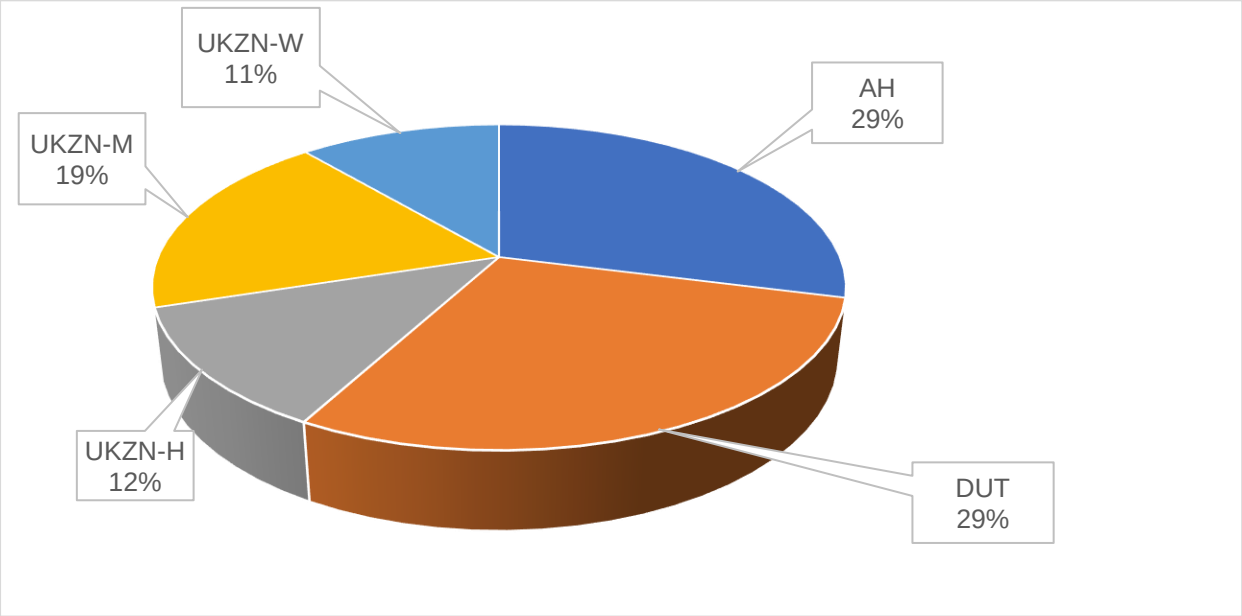

Figure 1 Site Frequency

AH and DUT each made up 29.0% with responses from 31 participants at each data collection point. UKZN-H had 13 responses, UKZN-M had 20 responses, and UKZN-W had 12 responses which made up 12.1%, 18.7% and 11.2% respectively for each of these data collection sites.

4.4 Demographic Data

4.4.1 Gender

Figure 2 shows that the sample group consisted of 41 males and 66 female participants. Thus, the overall broad ratio was 2:3 (38.0%: 62.0%) respectively.

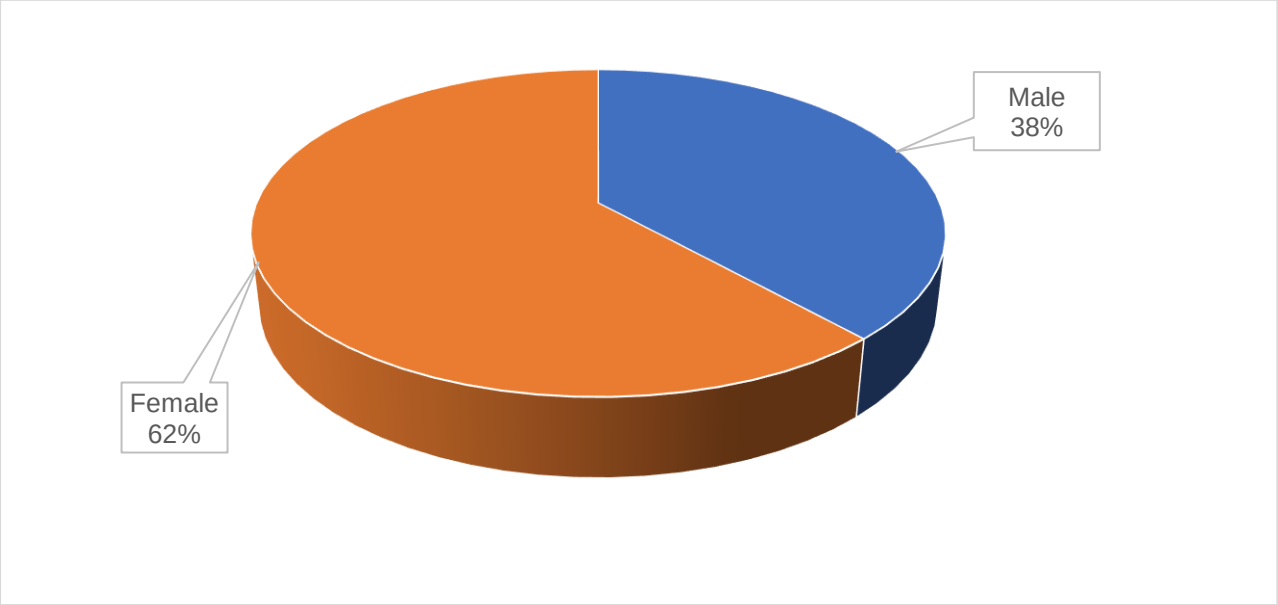

Figure 2 Gender Distributions of Participants

4.4.2 Age

Based on the data collection sites, most of the sample comprised of university students, resulting in a mean age of the participants was 25.92 (SD=9.455). Notwithstanding this, the age range was varied with the youngest participants at 18 years of age and the oldest at 66 years of age. This is shown in Figure 3.

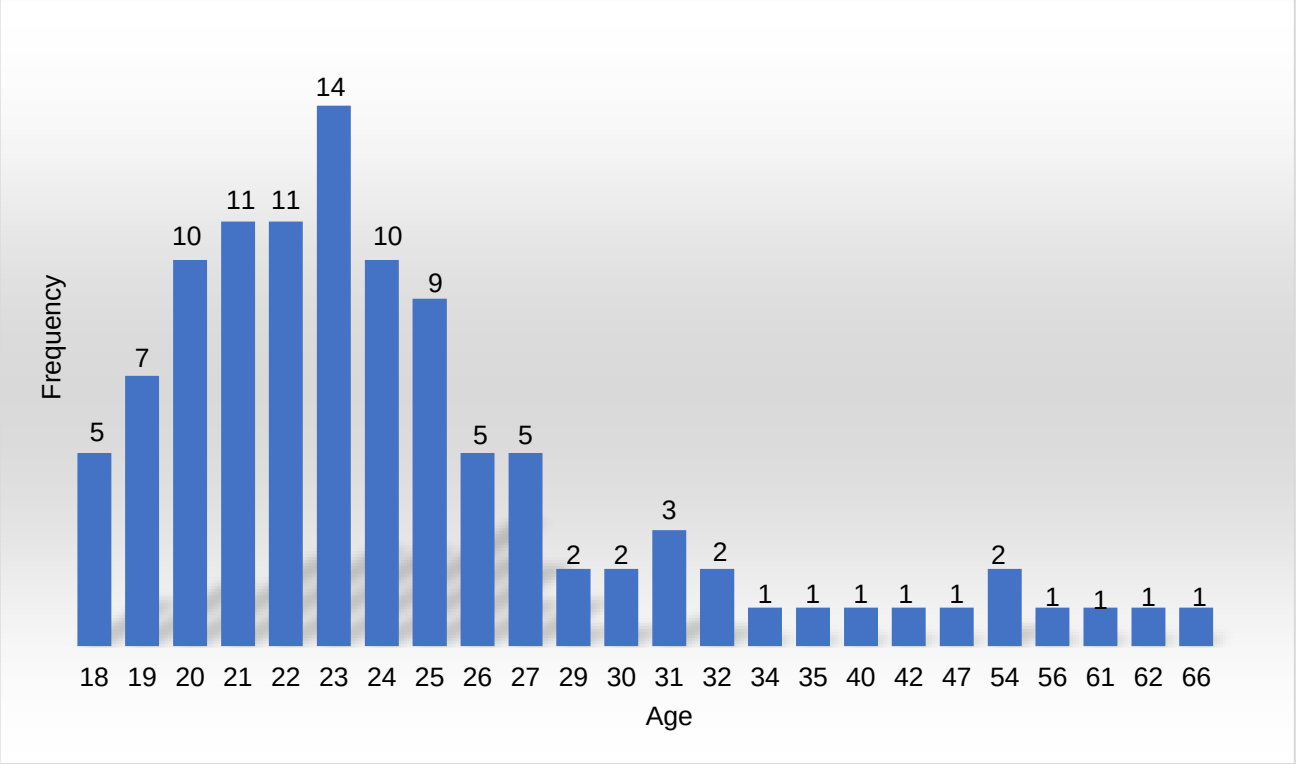

Figure 3 Age Distribution of Participants

Figure 4 indicates the primary language of the participants. The isiZulu response rate is understandably higher as bilingual isiZulu-speaking people were targeted.

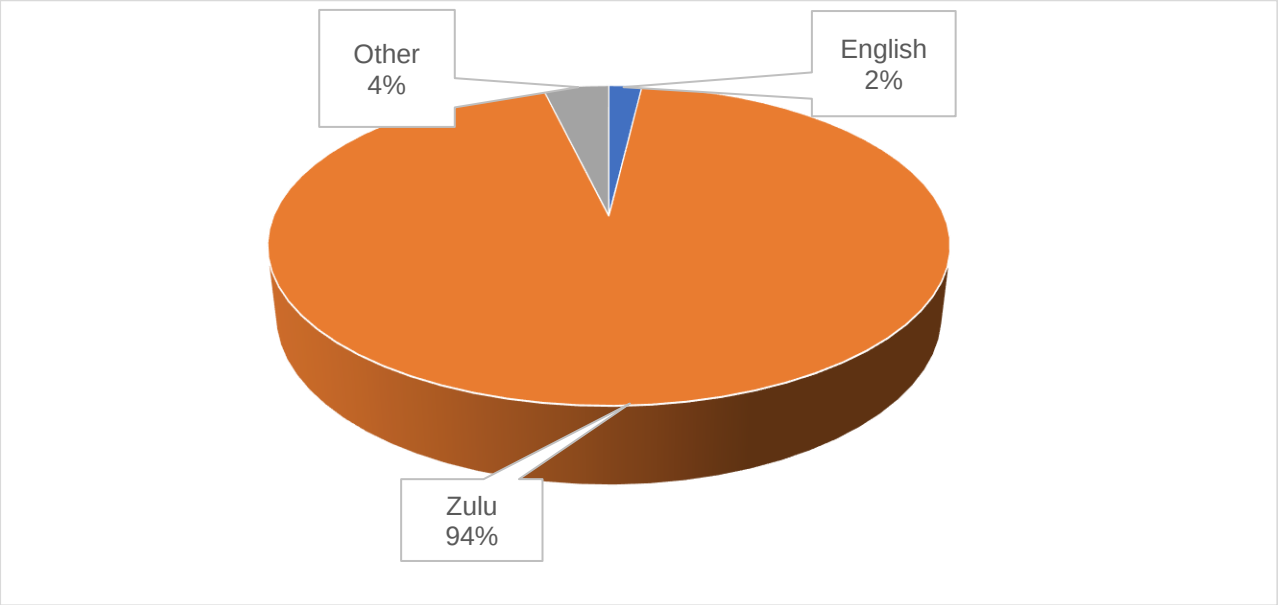

Figure 4 Primary Language of Participants

4.4.3 Level of Education

Nearly half of the participants had no more than a school qualification, the other half were reasonably well educated (a qualification higher than a Matric/ National Senior Certificate), this is represented in Figure 5.

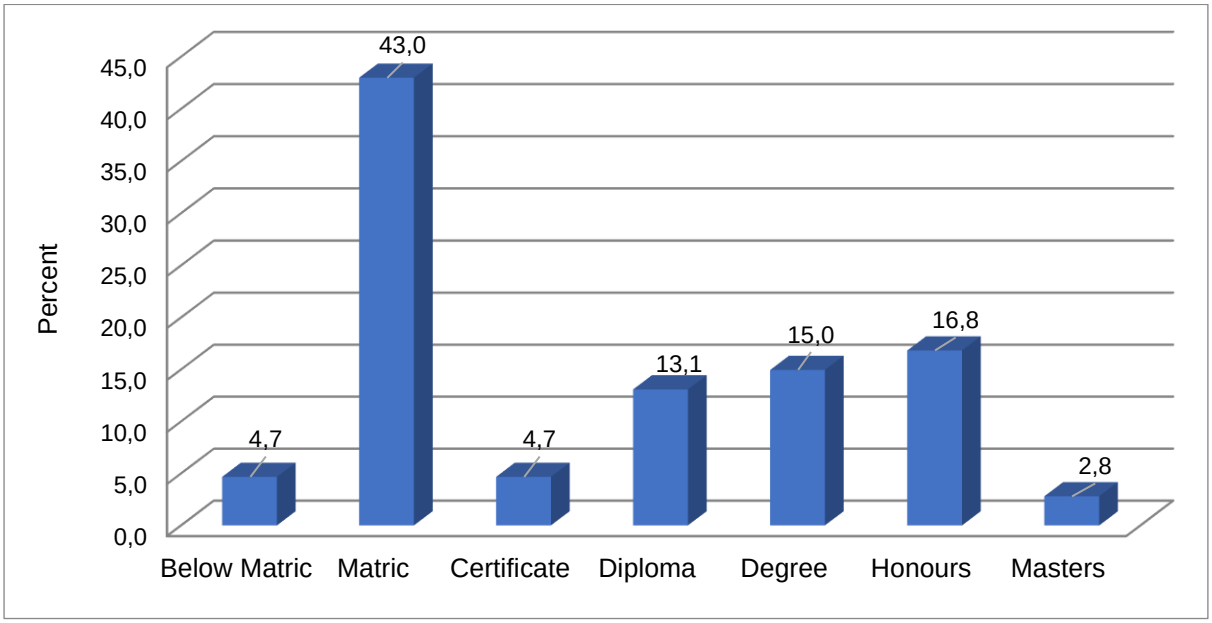

Figure 5 Educational Levels of Participants

4.5 Objectives of The Study:

The objectives of this study were threefold:

1. To produce an accurate isiZulu translation of the English Bournemouth Questionnaire. The procedure for the development of the translated isiZulu questionnaire is outlined (see Section 3.1 and Appendix H1-H6).

2. To determine the face and content validity of the isiZulu questionnaire by analysis using a focus group. The procedure for the development of the translated isiZulu questionnaire is outlined (see Section 3.3 and Appendix H1-H4a).

3. To determine the concurrent validity of the isiZulu questionnaire against the English counterpart. This is presented in the Data Analysis below (Section 4.6).

4.6 Data Analysis

4.6.1 Reliability Statistics

The two most important aspects of precision are reliability and validity (Field 2009). Reliability is computed by taking several measurements on the same subjects (Nunnally 1978). A reliability coefficient of 0.70 or higher is considered as “acceptable” (Helmstadter 1964; Nunnally 1978).

The Cronbach-α score for all the items that constituted the English and the isiZulu questionnaires are presented.

Table 1 Validation and Reliability of the English and isiZulu Questionnaires using Cronbach-α.

Section in questionnaire	*Questionnaire*	*Number of Items*	*Cronbach-α*
Back	English	7 of 7	0.902
	IsiZulu	7 of 7	0.887
Neck	English	7 of 7	0.926
	IsiZulu	7 of 7	0.888
MSK	English	7 of 7	0.924
	IsiZulu	7 of 7	0.917

Table 1 shows the validity and reliability scores for all sections exceed the recommended Cronbach-α value of 0.700 (70%) (Helmstadter 1964; Nunnally 1978).

4.7 Analysis of the English and isiZulu Questions

For the analysis of the questions, factor analysis is used as a statistical technique whose main goal is data reduction (Field 2009). A typical use of factor analysis is in survey research where a researcher wishes to represent a number of questions with a small number of hypothetical factors (Floyd and Widaman 1995). Each question, by

itself, would be an inadequate measure of attitude towards environmental policy (for example) , but together they may provide a better measure of the attitudes (Field 2009). Factor analysis can be used to establish whether the seven questions (in each section of the questionnaire) do in fact, measure the same thing. If so, they can then be combined to create a new variable, a factor score variable that contains a score for each respondent on the factor.

The tables (2-5) below reflect the results of Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity.

- The requirement is that KMO Measure of Sampling Adequacy should be greater than 0.50, high values (those close to 1.0) generally indicate that a factor analysis is useful for this data (Hutcheson and Sofroniou 1999). If the values were less than 0.5, this would have indicated that more data needed to be collected.

Table 2 KMO Classification Table of Results

KMO Value	*Degree of Common Variance*
0.90 to 1.00	Marvellous
0.80 to 0.89	Meritorious
0.70 to 0.79	Middling
0.60 to 0.69	Mediocre
0.50 to 0.59	Miserable
0.00 to 0.49	Don’t Factor

- The requirement for Bartlett's Test of Sphericity should be less than 0.05 to be significant (Armstrong and Soelberg 1968).

It is noted in Tables 3-5 that the variables that constituted each of the questionnaires for both languages loaded well along a single component (dimension or theme). This

was expected, as the translation of the questions was centred on a central theme/ concept. In addition, all questions were required to be answered on the English and isiZulu questionnaires for them to be included in the analysis (see Section 3.5.5).

Table 3 KMO Factor Analysis of the Bournemouth Questionnaires – Back

Back – English	Component
	1
E1-B-Q1	0.801
E1-B-Q2	0.852
E1-B-Q3	0.862
E1-B-Q4	0.698
E1-B-Q5	0.697
E1-B-Q6	0.897
E1-B-Q7	0.768

Back – IsiZulu	Component
	1
Z1-B-Q1	0.865
Z1-B-Q2	0.861
Z1-B-Q3	0.776
Z1-B-Q4	0.720
Z1-B-Q5	0.677
Z1-B-Q6	0.807
Z1-B-Q7	0.705

Table 4 KMO Factor Analysis of the Bournemouth Questionnaires – Neck

Neck – English	Component
	1
E2-N-Q1	0.890
E2-N-Q2	0.878
E2-N-Q3	0.861
E2-N-Q4	0.707
E2-N-Q5	0.764
E2-N-Q6	0.928
E2-N-Q7	0.798

Neck - IsiZulu	Component
	1
Z2-N-Q1	0.864
Z2-N-Q2	0.754
Z2-N-Q3	0.893
Z2-N-Q4	0.787
Z2-N-Q5	0.637
Z2-N-Q6	0.835
Z2-N-Q7	0.659

Table 5 KMO Factor Analysis of the Bournemouth Questionnaires – Musculoskeletal

MSK - English	Component
	1
E3-M-Q1	0.859
E3-M-Q2	0.893
E3-M-Q3	0.820
E3-M-Q4	0.783
E3-M-Q5	0.812
E3-M-Q6	0.838
E3-M-Q7	0.797

MSK - IsiZulu	Component
	1
Z3-M-Q1	0.866
Z3-M-Q2	0.904
Z3-M-Q3	0.812
Z3-M-Q4	0.809
Z3-M-Q5	0.714
Z3-M-Q6	0.864
Z3-M-Q7	0.744

All the questions within the three sub-sections of the two questionnaires are appropriate, valid, reliable and have a relationship with the content that is measured, Table 3-5.

All the significant values were 0.000 for the Bartlett's Test of Sphericity represented in Table 6.

Table 6 Combined KMO and Bartlett's Test of Sphericity

	KMO and Bartlett's Test			
	KMO of Sampling Adequacy	***Bartlett's Test of Sphericity***		
		Approx. Chi-Square	***df***	***Sig.***
English Back	0.884	452.768	21	0.000
isiZulu Back	0.851	384.480	21	0.000
English Neck	0.883	592.111	21	0.000
isiZulu Neck	0.870	432.231	21	0.000
English MSK	0.889	524.426	21	0.000
isiZulu MSK	0.877	515.291	21	0.000

4.8 Section Analysis

The sections below follow and analyses the scoring patterns of the participants per question per section (Back, Neck or MSK). The results are first presented using summarized descriptive statistics (section 4.8.1.2) for the questions that constitute each section. Results are then further analysed according to the discordance and concordance between the English and isiZulu questions per section of the respective questionnaires.

In the first instance, this was done with the Wilcoxon (a non-parametric test) section 4.8.1.3, 4.8.2.2 and 4.8.3.2, due to the total number of questions per section being less than 10 (there were only seven questions per questionnaire). The Wilcoxon Test was used to determine whether the difference in the scoring patterns were significant between the English and isiZulu language questionnaires.

Secondly, the bivariate correlation was also performed on the ordinal data. The results are found in the flowing sections: 4.8.1.4, 4.8.2.3, and 4.8.3.2. Kendall's tau-b (τ_b) correlation coefficient (Kendall's tau-b) is a non-parametric measure of the strength

and direction of association that exists between two variables measured on an ordinal scale (Howell 2012).

- Positive values indicate a directly proportional relationship between the variables and a negative value indicates an inverse relationship. All significant relationships are indicated by a * or **.

A Kendall's tau-b correlation was run to determine the relationship between English questions and their corresponding IsiZulu translated questions. There was generally, a strong, positive correlation between the variables, which was statistically significant ($\tau_b > 0.55$, $p = 0.000$).

4.8.1 Back Pain Section of the English and isiZulu Questionnaires

4.8.1.1 Questionnaire Rating Scale

In the descriptive statistics in the following section, each question had a ranking from 0-10 (“0” being the best as it signifies “no pain” / “no interference” / “not at all anxious”/ “not at all depressed” / “make it no worse” / “I can control it completely” and “10” being the worst as it signifies the “worst pain possible” / “completely unable to carryout everyday activities” / “completely unable to participate in any social or recreational activity” / ‘extremely anxious’ / “extremely depressed” / “make it very much worse” / “I have no control whatsoever’) in response to the questions asked related to pain, activity and the emotional effects.
(Appendices H1-H6)

4.8.1.2 Descriptive statistics

Presented are the standard deviation values (descriptive statistics) for the English and isiZulu questionnaires for the back section. Figure 6 indicates the mean responses per question. Questions 1, 2, 3, and 5 show a higher IsiZulu mean per question in the context of pain, while Questions 4, 6 and 7 shows that the inverse is true. In addition, some means are much higher than others as in Question 1 and Question 5.

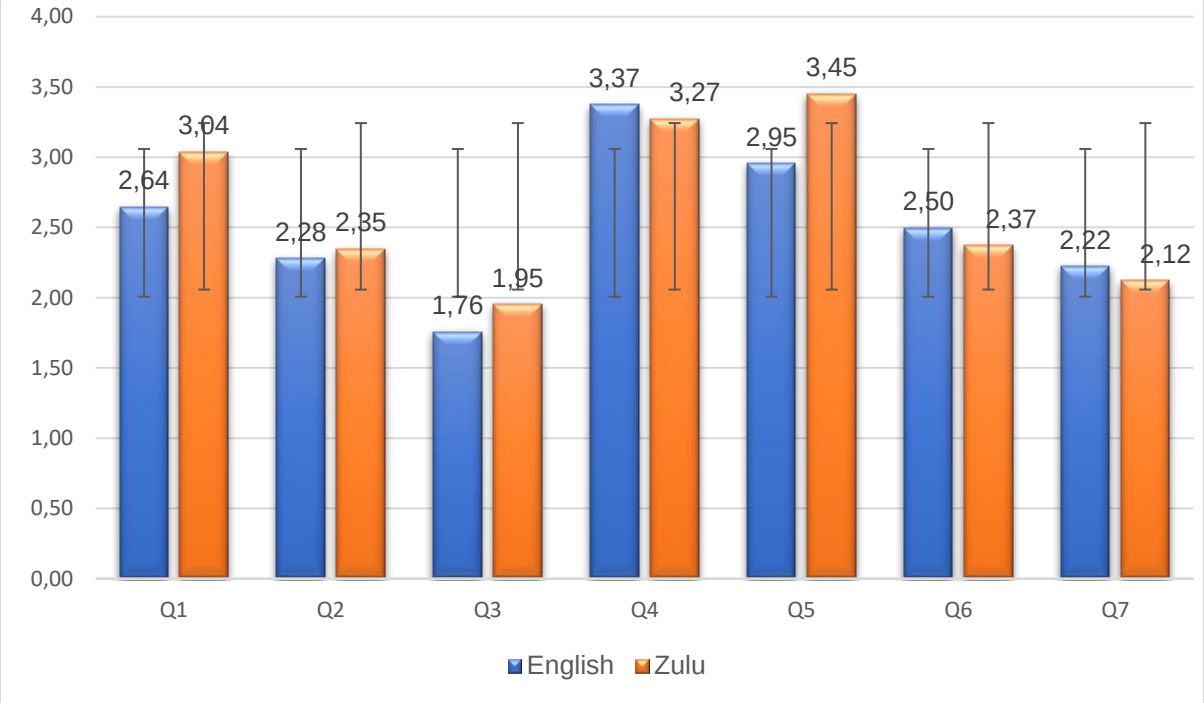

Figure 6 Means and Standard Deviation Values (Back)

4.8.1.3 Wilcoxon Test-Back

To determine whether the difference in the scoring patterns were significant between the English and the isiZulu questionnaires per corresponding question, a Wilcoxon test was done (this could be done as the data was non-parametric). The results are shown in Table 7:

Table 7 Wilcoxon Test Statistics-Back

	Z1-B-Q1 - E1-B-Q1	***Z1-B-Q2 - E1-B-Q2***	***Z1-B-Q3 - E1-B-Q3***	***Z1-B-Q4 - E1-B-Q4***	***Z1-B-Q5 - E1-B-Q5***	***Z1-B-Q6 - E1-B-Q6***	***Z1-B-Q7 - E1-B-Q7***
Z	-1.523[b]	-.541[b]	-.905[b]	-.162[b]	-2.078[b]	-.253[c]	-.191[c]
Asymp. Sig. (2-tailed)	.128	.589	.365	.871	**.038**	.800	.848

a. Wilcoxon Signed Ranks Test ; b. Based on negative ranks ; c. Based on positive ranks

Only Question 5 (which read as 0.038) showed a significant difference between the means of the English and the isiZulu questions. The results shown in Table 7 indicate that the scoring patterns were similar across all questions except for Question 5 (p = 0.038) where the isiZulu score was significantly higher than the English score.

4.8.1.4 Correlations-Back

The correlations supported by Kendall's tau_b in Table 8 are strongly positive (high), showing a statistically significant relationship (*p = 0.000*) between each English question and its corresponding isiZulu question.

Table 8: Kendall's tau_b Correlations (Back)

Kendall's tau_b			***E1-B-Q1***
	Z1-B-Q1	Correlation Coefficient	.713
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q2
	Z1-B-Q2	Correlation Coefficient	.706
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q3
	Z1-B-Q3	Correlation Coefficient	.624
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q4
	Z1-B-Q4	Correlation Coefficient	.558
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q5
	Z1-B-Q5	Correlation Coefficient	.629
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q6
	Z1-B-Q6	Correlation Coefficient	.705
		Sig. (2-tailed)	.000
		N	107
			E1-B-Q7
	Z1-B-Q7	Correlation Coefficient	.654
		Sig. (2-tailed)	.000
		N	107

4.8.2 Neck Pain Section of the English and isiZulu Questionnaires

4.8.2.1 Descriptive statistics

The mean and standard deviation (descriptive statistics) for the English and isiZulu questionnaires for the neck section. Figure 7 indicates the mean responses per question. Questions 2, 3, 5, 6 and 7 show a higher isiZulu mean in the context of pain, while Questions 1, and 4 shows that the inverse is true with the English means being higher. In addition, it is noted that some means are much higher than others as in Question 2,3,5 and Question 7.

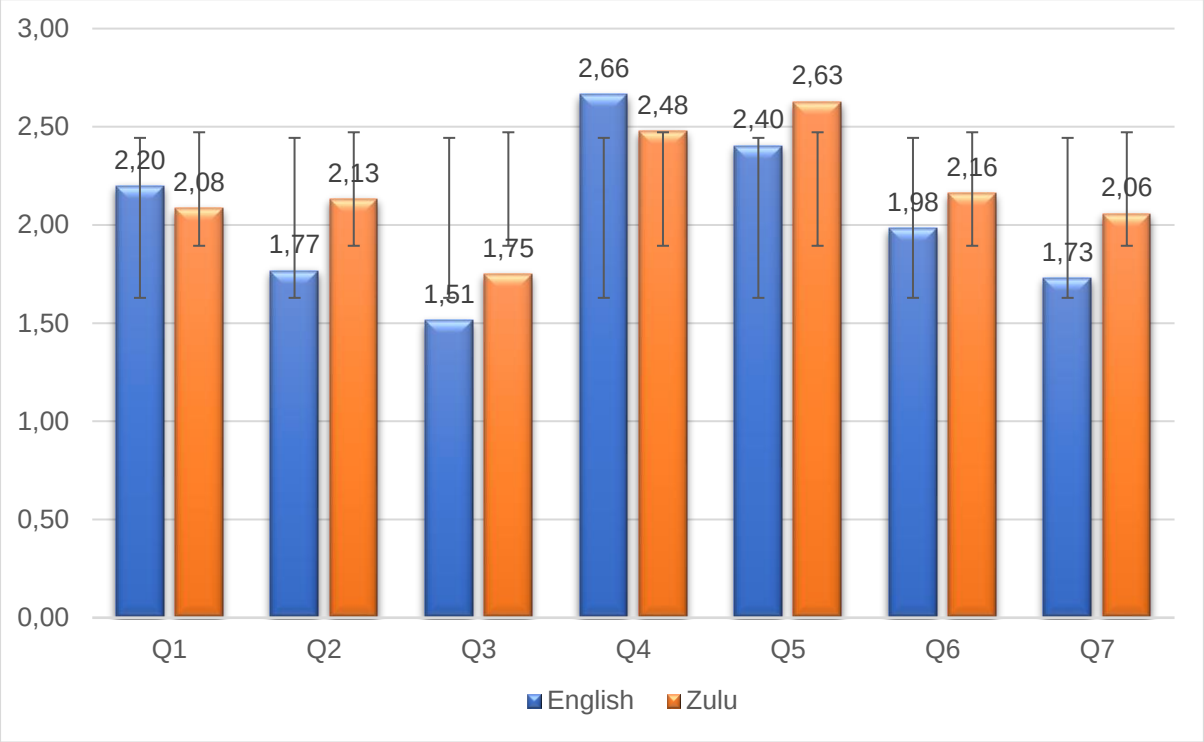

Figure 7 Means and Standard Deviation Values (Neck)

4.8.2.2 Wilcoxon Test-Neck

The results indicate that the scoring patterns were similar across all questions (p > 0.05). No significant differences between the corresponding questions were found. The results are shown in Table 9.

Table 9 Wilcoxon Test Statistics-Neck

	Z2-N-Q1 - E2-N-Q1	***Z2-N-Q2 - E2-N-Q2***	***Z2-N-Q3 - E2-N-Q3***	***Z2-N-Q4 - E2-N-Q4***	***Z2-N-Q5 - E2-N-Q5***	***Z2-N-Q6 - E2-N-Q6***	***Z2-N-Q7 - E2-N-Q7***
Z	-.571[b]	-1.653[c]	-1.356[c]	-.981[b]	-1.107[c]	-.736[c]	-1.195[c]
Asymp. Sig. (2-tailed)	.568	.098	.175	.326	.268	.462	.232

a. Wilcoxon Signed Ranks Test ; b. Based on positive ranks ; c. Based on negative ranks.

4.8.2.3 Correlations -Neck

Similarly, to the back (Table 8), the correlations between each English and isiZulu questions are strongly positive showing a significant relationship (*p = 0.000*) for all correlations between each English question and its corresponding isiZulu question.

Table 10 Kendall's tau_b Correlations (Neck)

Kendall's tau_b			***E2-N-Q1***
	Z2-N-Q1	Correlation Coefficient	.747
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q2
	Z2-N-Q2	Correlation Coefficient	.633
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q3
	Z2-N-Q3	Correlation Coefficient	.688
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q4
	Z2-N-Q4	Correlation Coefficient	.505
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q5
	Z2-N-Q5	Correlation Coefficient	.625
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q6
	Z2-N-Q6	Correlation Coefficient	.675
		Sig. (2-tailed)	.000
		N	107
			E2-N-Q7
	Z2-N-Q7	Correlation Coefficient	.659
		Sig. (2-tailed)	.000
		N	107

**. Correlation is significant at the 0.01 level (2-tailed).

4.8.3 Musculoskeletal Pain Section of the English and isiZulu Questionnaires

4.8.3.1 Descriptive statistics

The mean and standard deviation (descriptive statistics) for the English and isiZulu questionnaires for the musculoskeletal section. The Figure 4.8 below indicates the mean responses per question. Questions 2, 3, 4, 5 and 6 show a higher IsiZulu mean per question in the context of pain, while Questions 7 only, shows that the inverse is true. And Question 1 shows a mean that is equal in both languages.

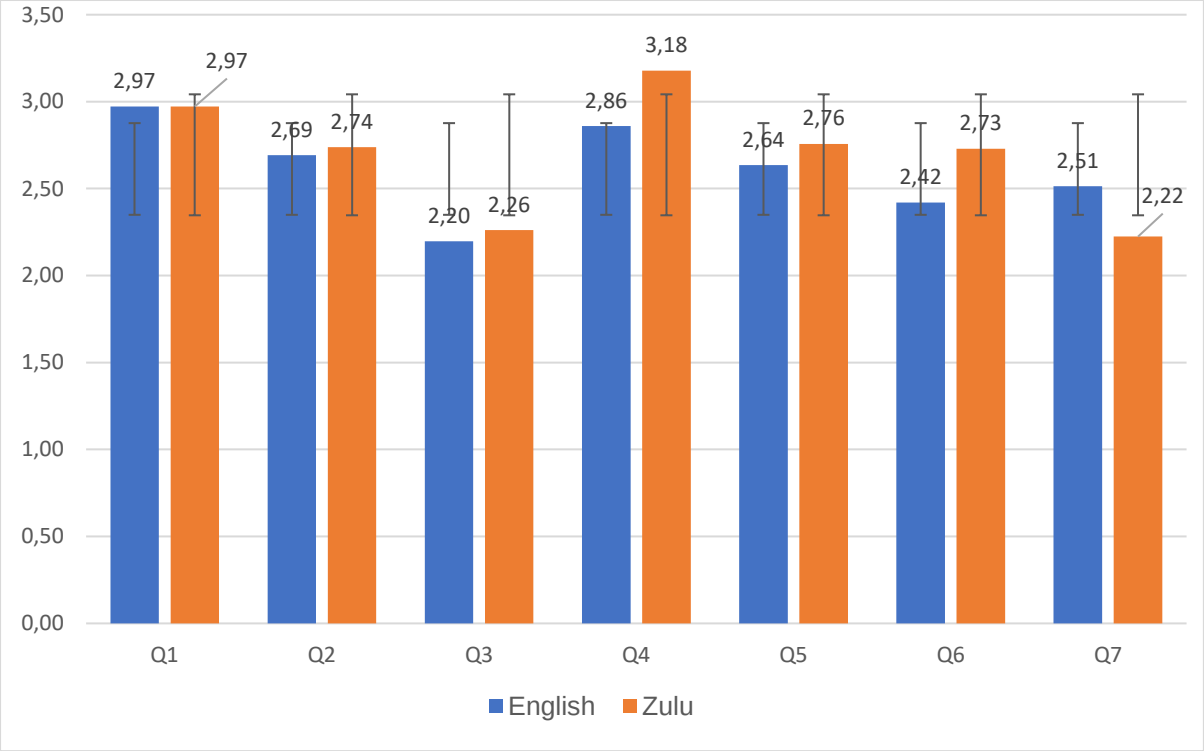

Figure 8 Means and Standard Deviation Values (Musculoskeletal)

4.8.3.2 Wilcoxon Test-Musculoskeletal

The results indicate that the scoring patterns were again similar across all statements ($p > 0.05$). No significant difference between the corresponding questions was noted here either. The results are shown in Table 11.

Table 11 Wilcoxon Test Statistics-Musculoskeletal

	Z3-M-Q1 - E3-M-Q1	Z3-M-Q2 - E3-M-Q2	Z3-M-Q3 - E3-M-Q3	Z3-M-Q4 - E3-M-Q4	Z3-M-Q5 - E3-M-Q5	Z3-M-Q6 - E3-M-Q6	Z3-M-Q7 - E3-M-Q7
Z	-.466[b]	-.404[c]	-.191[c]	-.751[c]	-.700[c]	-1.333[c]	-1.398[b]
Asymp. Sig. (2-tailed)	.641	.686	.849	.453	.484	.183	.162

a. Wilcoxon Signed Ranks Test ; b. Based on positive ranks ; c. Based on negative ranks

4.8.3.3 Correlation-Musculoskeletal

As in the Back and Neck sections, the correlations between each English and isiZulu question are high showing a significant relationship (p = 0.000) for all correlations.

Table 12 Kendall's tau-b Correlations -Musculoskeletal

Kendall's tau_b			***E3-M-Q1***
	Z3-M-Q1	Correlation Coefficient	.661**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q2
	Z3-M-Q2	Correlation Coefficient	.719**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q3
	Z3-M-Q3	Correlation Coefficient	.638**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q4
	Z3-M-Q4	Correlation Coefficient	.503**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q5
	Z3-M-Q5	Correlation Coefficient	.570**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q6
	Z3-M-Q6	Correlation Coefficient	.605**
		Sig. (2-tailed)	.000
		N	107
			E3-M-Q7
	Z3-M-Q7	Correlation Coefficient	.755**
		Sig. (2-tailed)	.000
		N	107

The correlations above are high showing a significant relationship *(p = 0.000)* for all correlations.

4.8.4 Summary of Analysis

Out of 21 pairs (the sum of all the questions across the three sections), 20 pairs showed no significant differences. In addition, the correlation values were all high and strongly positive. This is directly related proportionality; implying that the answers to the questions from both the questionnaires were following the same pattern therefore they were being answered in the same/ similar manner [e.g.: the respondents either all answered closer to the upper end of the scale (10) or closer to the lower end of the scale (0)]. Participants indicate that the scoring patterns on both the questionnaires are similar.

All but one pair showed a non-significant difference between each corresponding question (Question 5 in the Back section of the English and isiZulu questionnaires, where the isiZulu mean was significantly higher than the English).

4.9 The Chi Square Testing

The traditional approach to reporting a result requires a statement of statistical significance. A *p*-value is generated from a test statistic (Willemse 2009). A significant result is indicated with "$p < 0.05$" (Field 2009; Willemse 2009). These values are highlighted in Table 13, 14 and 15 with an underling only or grey shading.

A Chi square test was performed to determine whether there was a statistically significant relationship between the demographic variables i.e.: the site (data collection point)/ gender / age / primary language or education level and each of the questions in the questionnaire (rows versus columns). The null hypothesis stated that there is no association between the demographic variable being tested and the question. The alternate hypothesis indicates that there is an association.

Tables 13-15 summarize the results of the Chi Square Tests for each of the three sections in the English and the isiZulu questionnaires. This is followed by a summary

of the tables, noting only the significant factors that were associated following the application of the Chi square testing.

Table 13 Chi Square Results for the Back Section of the English and isiZulu Questionnaires

BACK										
	Site		Age		Gender		Primary Language		Education Level	
Questions	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu
Q1: Over the past few days, on average, how would you rate your back pain, on a scale where '0' is 'no pain' and '10' is the worst pain possible?	0.587	**0.045**	**0.035**	0.162	0.251	0.578	0.929	0.713	**0.035**	**0.028**
Q2: Over the past few days, on average, how has your back pain interfered with your daily activities (housework, washing, dressing, lifting walking, driving, climbing stairs, getting in/out of bed/chair, sleeping), on a scale of where '0' is 'no interference' and '10' is 'completely unable to carry on with normal daily activities?	0.297	0.626	0.234	**0.000**	0.077	0.415	0.920	0.956	0.258	0.264
Q3: Over the past few days, on average, how much has your back pain interfered with your normal social routine including recreational social and family activities, on a scale of where '0' is 'no interference and '10' is 'completely unable to participate in any social and recreational activity'?	0.181	0.317	**0.000**	**0.000**	0.302	0.531	0.438	0.900	0.093	0.064
Q4: Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale of where '0' is 'not at all anxious' and '10' is 'extremely anxious'?	0.702	0.434	0.704	0.683	0.958	0.382	0.958	0.438	0.091	0.666
Q5: Over the past few days, how depressed (down in the dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not depressed at all' and '10' is 'extremely depressed'?	0.910	0.089	0.285	0.402	0.260	**0.007**	0.977	0.952	0.323	0.569
Q6: Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your back pain, on a scale of where '0' is 'make it no worse' and '10' is 'make it very much worse'?	0.301	0.090	**0.014**	**0.002**	0.199	0.335	0.768	0.363	**0.006**	0.266
Q7: Over the past few days, on average, how much have you been able to control (help/reduce) and cope with your back pain on your own, on a scale where '0' is 'I can control it completely' or '10' is 'I have no control whatsoever'?	0.297	0.446	**0.000**	0.203	0.940	0.813	0.534	0.584	0.377	0.447

Table 14 Chi Square Results for the Neck Section of the English and isiZulu Questionnaires

NECK										
	Site		Age		Gender		Primary Language		Education Level	
Questions	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu
Q1: Over the past few days, on average, how would you rate your neck pain, on a scale where '0' is 'no pain' and '10' is the worst pain possible?	0.866	0.832	0.165	**0.020**	0.081	0.900	**0.001**	**0.000**	0.328	**0.029**
Q2: Over the past few days, on average, how has your neck pain interfered with your daily activities (housework, washing, dressing, lifting walking, driving, climbing stairs, getting in/out of bed/chair, sleeping), on a scale of where '0' is 'no interference' and '10' is 'completely unable to carry on with normal daily activities?	0.588	0.359	**0.017**	**0.000**	0.077	0.415	**0.001**	**0.000**	0.258	0.264
Q3: Over the past few days, on average, how much has your neck pain interfered with your normal social routine including recreational social and family activities, on a scale of where '0' is 'no interference and '10' is 'completely unable to participate in any social and recreational activity'?	0.298	0.516	**0.002**	**0.000**	0.710	0.326	**0.000**	0.130	0.138	**0.038**
Q4: Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale of where '0' is 'not at all anxious' and '10' is 'extremely anxious'?	0.779	0.407	0.099	0.271	0.586	0.196	**0.026**	0.515	0.400	0.736
Q5: Over the past few days, how depressed (down in the dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not depressed at all' and '10' is 'extremely depressed'?	0.320	0.330	**0.013**	0.522	0.500	0.440	0.605	0.593	0.376	0.878
Q6: Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your neck pain, on a scale of where '0' is 'make it no worse' and '10' is 'make it very much worse'?	0.994	0.079	**0.001**	**0.001**	0.339	0.128	**0.045**	0.227	0.166	0.127
Q7: Over the past few days, on average, how much have you been able to control (help/reduce) and cope with your neck pain on your own, on a scale where '0' is 'I can control it completely' or '10' is 'I have no control whatsoever'?	0.851	0.335	**0.000**	**0.001**	0.360	0.976	**0.001**	**0.005**	0.495	**0.035**

Table 15 Chi Square Results for the Musculoskeletal Section of the English and isiZulu Questionnaires

MUSCULOSKELETAL										
	Site		Age		Gender		Primary Language		Education Level	
Questions	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu	Eng	isiZulu
Q1: Over the past few days, on average, how would you rate your pain, on a scale where '0' is 'no pain' and '10' is the worst pain possible?	0.499	0.059	**0.027**	**0.000**	0.334	0.947	0.975	0.365	**0.032**	0.109
Q2: Over the past few days, on average, how has your pain interfered with your daily activities (housework, washing, dressing, lifting walking, driving, climbing stairs, getting in/out of bed/chair, sleeping), on a scale of where '0' is 'no interference' and '10' is 'completely unable to carry on with normal daily activities'?	0.078	0.495	0.059	0.131	0.124	0.571	0.679	0.982	0.240	0.353
Q3: Over the past few days, on average, how much has your pain interfered with your normal social routine including recreational social and family activities, on a scale of where '0' is 'no interference and '10' is 'completely unable to participate in any social and recreational activity'?	0.097	0.406	**0.003**	**0.019**	0.333	0.985	1.000	0.996	0.145	0.425
Q4: Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale of where '0' is 'not at all anxious' and '10' is 'extremely anxious'?	0.654	0.158	**0.049**	0.197	0.969	0.461	0.832	0.841	0.314	0.302
Q5: Over the past few days, how depressed (down in the dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not depressed at all' and '10' is 'extremely depressed'?	0.355	0.398	0.186	0.449	0.718	0.601	0.940	0.984	0.300	0.932
Q6: Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your pain, on a scale of where '0' is 'make it no worse' and '10' is 'make it very much worse'?	0.088	0.524	**0.002**	**0.000**	0.647	0.425	0.492	0.966	0.144	**0.007**
Q7: Over the past few days, on average, how much have you been able to control (help/reduce) and cope with your pain on your own, on a scale where '0' is 'I can control it completely' or '10' is 'I have no control whatsoever'?	0.153	0.639	**0.007**	**0.002**	0.444	0.265	0.842	0.609	0.289	0.220

Tables 16-18 summarize the back, neck and musculoskeletal questionnaires respectively and notes only the significant factors from each of the associated questions following the application of the Chi square testing.

Table 16 Chi Square Summary: Back

		QUESTION NUMBER (BACK)						
		1	2	3	4	5	6	7
DEPENDENT VA LIRABLE	SITE							
	AGE							
	GENDER							
	PRIMARY LANGUAGE							
	EDUCATION LEVEL							

Red= isiZulu questionnaire Yellow=English questionnaire Green=both questionnaires

Table 17 Chi Square Summary: Neck

		QUESTION NUMBER (NECK)						
		1	2	3	4	5	6	7
DEPENDENT VALIRABLE	SITE							
	AGE							
	GENDER							
	PRIMARY LANGUAGE							
	EDUCATION LEVEL							

Red= isiZulu questionnaire Yellow=English questionnaire Green=both questionnaires

Table 18 Chi Square Summary: Musculoskeletal

		QUESTION NUMBER (Musculoskeletal)						
		1	2	3	4	5	6	7
DEPENDENT VALIRABLE	SITE							
	AGE							
	GENDER							
	PRIMARY LANGUAGE							
	EDUCATION LEVEL							

Red= isiZulu questionnaire Yellow=English questionnaire Green=both questionnaires

In the back questionnaire, it would seem the age was the most problematic variable, while site, gender and level of education produced minor problems. Compared to the neck questionnaire where, age and primary language seemed to cause significant problems and level of education produced minor problems. Lastly, in the musculoskeletal questionnaire the age again caused the most significant problems and level of education produced minor problems.

4.10 Summary of Results

Demographically, there was a total of 120 paired questionnaires distributed for the study (equivalent to 120 participants) after 13 incomplete and/ or invalid questionnaires had to be excluded from analysis, 107 paired questionnaires were analysed. The response rate was 89.2%. The age range was from 18-66 years, with predominantly female participants. The participants seem to mostly have come from lower education spheres, therefore, majority of them came from hospital based environments.

The Cronbach-α reflected a high degree of acceptable, internally consistent scoring for all three sections of the English and isiZulu questionnaires, although slightly less apparent in the isiZulu questionnaires compared to the English. Similarly, KMO and

Bartlett’s Test of Sphericity seemed to support the Cronbach-α as all the questions in each of the questionnaires were related significantly to the internal construct.

The Wilcoxon Test was comparing each of the questionnaires in terms of the individual questions, the scoring patterns were all similar across all statements, except, Question 5 was found to be significantly different (the isiZulu score was significantly higher than the English score). The Kendall's tau-b measure showed a strong positive correlation between the two questionnaires. There was a significant relationship ($p = 0.000$) for all correlations.

Following the application of the Chi-Square Test, the relationship between the demographic variables and each of the questions showed that each of the demographic variables had a significant or minor influence but age seemed to have the most impact over majority of the questions, and therefore may have influence on the outcome of the questionnaires. The significances of these results (as a collective) are discussed further in next chapter.

Chapter Five
Discussion

5.1 Introduction

In this chapter, the results, as described in the previous chapter are discussed related to the understanding of a range of factors elaborated in Chapter 2 of this dissertation. In particular, the discussion will elucidate strengths and challenges in respect to the projected application of the isiZulu Bournemouth Questionnaire within isiZulu-speaking communities, most notably less-literate and/or –urbanised communities.

5.2 Questionnaires and The Sample

A total of 120 participants filled out the paired English and isiZulu Bournemouth Questionnaires (BQ). There were 107 paired questionnaires complete, valid and used for statistical analysis. The response rate was favourable at 89.2%. With only 13 (10.8%) excluded questionnaires, there was limited bias. The data collection procedure was rigorous and reliable and therefore allowed the researcher to generalize the results discussed.

5.3 The Sites

Addington Hospital (AH) is a government hospital in South Beach, Durban. The hospital welcomes patients with no income, low income, patients without medical aid, on government pension as well as social grant dependents. Hospitals tend to have many older people. The highest percentage of participants came from both AH and Durban University of Technology (DUT) with 31 participants, making up 29% of the total. University-goers tend to be between the ages of 18-25; In a recent study done by Basdav, Haffejee and Puckree (2016) to determine headaches among university students in South Africa, the mean age for participants was 21 years with 52.9% between the ages of 20-25 although there are a few outliers that tend to be younger or older. The three other sites had significantly lower responses/participants [19%; 12%; and 11%].

5.4 Demographic data

5.4.1 Age

In this sample, the participants in this study ranged from 18 to 66 years of age. The largest age category was that of 20 to 29 years of age, with 77 participants falling into his group (72% of the total population). The mean age of the participants was 25.92 years (refer to Figure 2), which was expected because the participants were mostly younger university goers (four out of the five data collection sites were educational institutions). Given the fact that this is of a younger population, the participants are likely to conform less with more traditional norms: the older participants are more likely to speak more of the traditional isiZulu language, whereas the younger participants are more likely to speak a more anglicized isiZulu. Therefore, the level of understanding of the language is going to vary the bigger the age range of the sample, since there is a big age range in this study there is a possibility that there may be a problem in the understanding of the questionnaires.

5.4.2 Gender

The study found that there was a preponderance of female participants (62% female: 38% male) Figure 2. According to Matthew and Garrison (2007) first time medical school applicants to American colleges were female since 2002. Females are more likely to participate in pain reporting and are therefore more likely to be at hospital settings. Epidemiological studies state that many painful conditions are more widespread in females. Females were found to be more likely to report more pain experiences and negative responses to pain compared to men (Berkley 1997; Holdcroft and Berkley 2005; Hurley and Adams 2008).

5.4.3 Education

In the study, the level of education was classified as either without a matric qualification/ below matric, a matric, certificate, diploma, degree, honours or masters. The percentage of participants with a matric qualification only was the greatest (43.0%). The next largest level of education was honours (16.8%), followed next by participants with degrees (15.0%), diplomas (13.1%), the quantity of participants

without a matric and those with a certificate were equal (4.7% each), while the least number of participants had the highest qualification being masters (2.8%). Ones level of education has been found to be of significance in the influence of musculoskeletal pain. Studies have been conducted producing results showing a higher education level was related to less pain and less disability in patients (Leboeuf-Yde *et al.* 2002; Cano, Mayo and Ventimiglia 2006). In the researchers' opinion, the less educated one is, the less likely one would be able to articulate in multiple ways regarding ones' state of pain. Thus, the more educated individuals would be able to articulate more effectively and eloquently as it is assumed they would have more knowledge and therefore more vocabulary available to them.

Since the researcher was targeting a specific language proficiency profile, the researcher was not able to achieve the appropriate age, gender or education profile. The number and type of bilingual participants in this study does not necessarily reflect the general populous. By the inclusion criteria, the target population happened to be people who were going to hospital and some who may have been in first or second year university, reflecting that their highest qualification would have been less than or equal to matric.

Of age, gender and education; from the characteristics of the sample for this study, It could be expected (based on the diversity) that age and level of education are the two factors most likely to have influenced the outcome of the study.

5.5 Data Analysis

5.5.1 Reliability Statistics

The Cronbach-α score for all the items that constituted the two language questionnaires exceeded the recommended value of 0.700 (70%) indicating a high degree of acceptable, consistent scoring across all three sections on the English and isiZulu questionnaires (ranging between 0.887 to 0.926 / 88.7% to 92.6%). These questions are equivalent (broadly).

The isiZulu questionnaire (in all three sections) is not as internally consistent as the English counterpart, as the Cronbach-α values are lower in all instances in the isiZulu questionnaire (Table 1). If the isiZulu questions were internally consistent, the Cronbach-α values should have been the same. On the face value of the Cronbach-α results, there is a suggestion that all the questions are consistent and acceptable based on the values being high. However, the error of variance (random error) (Tavakol and Dennick 2011) is greater for the isiZulu questionnaire than it is for the English questionnaire. Although there is consistency (the questionnaire structure is good) and there is construct validity, content validity has not yet been proved. The questionnaire structure is correct but it doesn't tell us if what is measured is constant between the two languages.

Although there is inherent consistency, this means that the questionnaire structure is good and has construct validity, but it does not necessarily look at content validity. The next section looks at the individual questions to test whether they collectively measure the same thing.

5.6 Analysis of the English and isiZulu Questions

5.6.1 Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity

This statistical test looked at whether there was sampling adequacy, and whether there was a degree of overall commonality. Section 4.7 stated that KMO is required to be greater than 0.50, the closer it is to the measurement of 1.0 the more indicative that it is useful for the data. Table 2 further described values between 0.70 to 0.79 as middling and values 0.60 to 0.69 as mediocre.

At focus group level, there was difficulty in translating Questions 3, 4, 5 and 7. The challenge was one of finding appropriate isiZulu words that could accurately reflect the original English words/descriptions. It is noteworthy, therefore, that these particular questions are reflected against "middling"  and "mediocre"  KMO scores.

The following questions in the back questionnaires:

E1-B-Q4, E1-B-Q5 and Z1-B-Q5

E1-B-Q7, Z1-B-Q3 and Z1-B-Q4

The following questions in the neck questionnaires:

Z2-N-Q5 and Z2-N-Q7

E2-N-Q4, E2-N-Q5, E2-N-Q7 and Z2-N-Q2 and Z2-N-Q4

The following questions in the musculoskeletal questionnaires:

E3-M-Q4, E3-M-Q7, and Z3-M-Q5 and Z3-M-Q7

However, if these discrepancies were associated with semantics or linguistics a further study that more broadly conducts a qualitative study trying to understand people's perception of these different words using the same questionnaires. Furthermore, to investigate whether we need more age specific questionnaires for different groups i.e. taking the same questionnaires to an older population and younger population specifically, to males or female specifically, and educated vs non-educated specifically.

5.7 Section Analysis

In chapter four, it was noted that the only anomalous Wilcoxon Test score was in respect to Question 5 in the back questionnaire, reflecting that the score for the isiZulu version was particularly higher than the English equivalent (p = 0.038).

The researcher found that in translating what are relatively 'light-hearted' terms in English, very detailed options are created in the isiZulu language. The likelihood of one identifying with the options presented in the isiZulu version is broader than it would be in the English original version. In the English questionnaire, Question 5 reads*, "Over the past few days, how depressed (down-in-the-dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling on a scale where '0' is 'not at all depressed' and '10' is 'extremely depressed'?"* here the word "depressed" is then broken down into its synonyms (explaining and expressing the same thing), however

when read in the isiZulu questionnaire *“Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe uzizwe uphatheke kabi kangakanani (ukuba nomoya ophansi, ukubona izinto ngendlela embi kuphela, uhlezi uzizwa ukhathele) uma u ‘0’ esho ukuthi ‘awuphathekile kabi neze’ no ‘10’ esho ukuthi ‘uphatheke kabi ngokwedlulele’?”* the translated phrase for ‘depressed’ then reads as though it is followed by a list of options of how one could be feeling, instead of reading as a list of synonyms as originally intended. In the isiZulu questionnaire, it seems that the reader chose a phrase they identify the most with to score the question rather than taking the phrases as saying the same thing in a slightly different manner. Therefore, the isiZulu questionnaire resulted in higher scores for this question as the identification with the question was greater.

Taking “down-in-the-dumps” as opposed to its isiZulu equivalent semantic translation of “ukuba nomoya ophansi” can be broad when reading the isiZulu question in isolation, as there are more meanings to the isiZulu phrase. There are subtle nuances that come through when reading it for the first time, bearing in mind; 50% of the sample did encounter the isiZulu version first and may have tapped into the subtler meanings/ options. Although the questions are mutually intelligible, and the focus group agreed on the equivalence of the meaning between the two questionnaires, when looking at the literal meaning of each question, it is recognizable that in English, the various options presented in brackets are more synonymous then their equivalent isiZulu translations. Effectively, the person reading the questionnaire has more difference (options) to be able to answer ‘yes’ on in the isiZulu questionnaire, which would contribute to the artificial elevation of the score.

Furthermore, Question 5 is one of two questions (Question 4 and Question 5) where ‘pain’ is no longer mentioned in the question at all. “Over the past few days…” is not read as being in consequence to being in pain. It is possible that when the reader engaged with these two questions (regarding anxiety and depression respectively) the reader contextualises the question to their life in general and the focus is shifted from pain as the question is less specific.

In looking at translation as a representation versus looking at the literal meaning there may be a loss of meaning as in the following example: “my spirit”: my enthusiasm, energy (as referred to in Question 5) is very different to its isiZulu translation of “umoya”: the thing that keeps me going, my very existence depends on my spirit, my animated principle. This is more of an African world view then it is a typically English world view as the western world view doesn’t associate themselves as strongly with the spiritual realm. The word “spirit” is much subtler, it has been translated relatedly as a semantic translation but the literal meaning reveals further depth.

5.8 Correlations

5.8.1 Chi Squared Test

The relationship between the demographic variables and each of the questions was illustrated in Chapter 4 where the significant factors were highlighted: The red indicated significance in the isiZulu questionnaire only, the yellow indicated significance in the English questionnaire only while the green then indicate a paired significance in both the English and the isiZulu questionnaires.

It appeared that age was the most problematic variable with respect to five (back and musculoskeletal) or six (neck) out of the total of seven questions while site, gender and level of education produced minor problems in at least one question. The age variable affected how people answered the question and created different responses.

Age was a noted as being an important factor in discrepancies between English and isiZulu responses. Possible explanations for these differences would relate to more traditional conceptualizations of pain as opposed to more modern conceptualizations of pain in first language / mother tongue isiZulu speakers. This may be affected by social context, expectations around pain, gender, site etc.

Education doesn’t seem to be a problem although majority of the participants in the study did not poses more than a matric qualification. Fundamentally, the population at the AH site differed from the socioeconomic status and expectation. These factors collectively may have contributed to a perceived difference that related to site.

From the overall figures discussed, the isiZulu translation shows to be an effective translation of the English original although there were specific questions that proved problematic from the focus group level to the target population. The researchers' interpretation of why these seemed to affect many of the questions comes from a recognition that a younger generation will fundamentally have a different conceptualization of pain, therefore the response might well be different. However, amongst English-speaking (western) people the conceptualization of pain might be more standard; that older English-speaking people will see pain similarly to younger English-speaking people. Due to having a more rural living isiZulu population becoming a more urbanized population, age becomes more of a determinant as the isiZulu (rural) population previously lived in different social contexts. Whereas, all English-speaking people have a similar conceptualization of pain due to being urbanized for hundreds of years. There is more uniformity in the English understanding of pain and less uniformity in the isiZulu conceptualization of pain although the words may be the same. There is a transition in linguistic meaning that comes with urbanization; a loss either of the language or a loss of the meaning that is inherent in the language.

It is evident that the Chi Square results are largely equivalent although the researcher has recognised that there are factors in respect to site, age, gender, primary language and levels of education that can influence how individual (specific) questions may have distortions.

Chapter Six
Conclusion and Recommendations

6.1 Conclusion

The aim of this study was to determine the concurrent validity between an isiZulu translation of the Bournemouth Questionnaire and the validated English original as until now, no such isiZulu translation of the questionnaire has existed. The aim was not to construct or develop a new pain scale.

The translation of the original Bournemouth Questionnaire (BQ) into isiZulu was achieved in a professional manner. This was critiqued and scrutinized by a focus group which established the translated versions of the Bournemouth Questionnaires' face validity. Content validity of the translated version was established via a pilot study consisting of 10 bilingual participants who analysed and critiqued it prior to its implementation in the main study. The translated isiZulu BQ was put through thorough statistical evaluations to establish the internal reliability and concurrent validity of the translated questionnaire.

The results revealed that an isiZulu translation of the Bournemouth Questionnaire is functionally equivalent to the English version. It was noted that differences did exist with respect to specific questions (i.e. Questions 3,4,5 and 7) that may not be deemed to have equal relevance across the populations and language range and may, after an appropriate period of real-world application, need to be withdrawn or reviewed.

Populations and language are in a state of perpetual change. This study was conducted within a cultural and social context which is assumed to be different to that of the English original. It should therefore be reviewed as the sample size of this study was relatively small, and the relevance of each question that comprises the Bournemouth Pain Questionnaire should be re-evaluated for its specific usefulness, within the context of mother tongue isiZulu-speaking South Africans.

Results indicated that the English and the isiZulu Bournemouth Questionnaire had a significant level of reliability (a reliability coefficient of α>.070 is considered as acceptable). The isiZulu results were as follows: Back; α=0.887, Neck; α=0.888 and Musculoskeletal; α=0.917) and corresponded with its English counterpart. Both the English and isiZulu BQ indicated significant levels of concurrent validity, although the English seemed to have a higher level. This could have been attributed to the participants' pain levels or that the BQ was relatable in a different way in each of the two languages. The original English BQ was translated successfully (although specific questions proved problematic) and may be used within the isiZulu population as an alternative to the English version. This will then give health practitioners a better quantification of a non-English-speaking patient's pain which in turn will help the patient receive the best possible treatment by the chiropractor and or other health professionals.

It would seem that the findings of this study support the suggestions of Guillemin, Bombardier and Beaton (1993) which stated that if the original country and culture of a particular questionnaire differ to that of where the questionnaire will be used, the translation and cultural adaptation of the questionnaire is indicated.

6.2 Recommendations

Based on the above, it was found that the isiZulu Bournemouth Questionnaires is an acceptable translation the English counterpart, however, several challenges were encountered in the process:

- Several students and lay people of various age groups were requested to participate, it was mostly first and second years students as well as the younger lay people that were eager to complete the questionnaires. Furthermore, the target questionnaire was predominantly for a younger population and not an older one as none of the focus group members could be classified as elderly. It is recommended that in future studies of this nature, the researcher/s should seek to include a more representative focus group (i.e. the age range of the membership of this study: 20-45 vs that of the target population: 18-66).

- The two language questionnaires were found to be broadly equivalent, however similar future research is recommended to be conducted in a field study implemented across thousands of participants so that it can be ascertained, more conclusively whether differences at the level of individual questions, such as have been identified in this study, represent clinical significance and/or whether such questions may need to be reformatted or removed from a translation.

- In this study, the time lapse of 20-60 minutes in the distribution of questionnaires appeared to be adequate. Future researchers may wish to review this interval to decrease the risk of memory bias, although an unduly protracted interval may affect the appreciation of pain, or other clinical parameter, which may undergo change over the interval period.

- It is further recommended that bias may be reduced at the point of questionnaire completion if a research administrative assistant were employed at this stage of future studies.

- The researcher, in this study, noted that the Bournemouth Questionnaire lacks clarity in respect to whether reference to anxiety and depression is specifically related to pain, or whether this is of a more general nature, and participants often asked for clarification. This was particularly unclear to isiZulu speakers and may reflect a socio-cultural consideration. It is recommended that such factors are considered in the development of translated questionnaires.

- A limitation of this study was the need for participants be bilingual. Predictably, isiZulu mother tongue speakers were the primary respondents, although their actual level of English fluency was not determined. Differences in response may relate quite simply to divergent fluencies in the respective languages.

- Further cultural adaptation of Question 3,4,5 and 7 is recommended. A focus group would be required to discuss how the isiZulu translation could more accurately reflect the originally English words/ terms. The implementation of

the above would improve the reliability and validity of a translated isiZulu Bournemouth Questionnaire.

- The researcher contends that he concurrent validity of an isiZulu translation of the Bournemouth Questionnaire could be further developed, through application in real clinical contexts.

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Appendices

APPENDIX A: Letter of information - Focus Group

Letter of Information

Dear Participant

Firstly, I would like to thank you for your involvement in my study.

Title of the research study: The concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original.

Principle Researcher: Khabonina IL Shabangu, B. Tech: Chiropractic

Supervisor: Professor Ashley Ross, D. Tech: Homeopathy
Co-supervisor: Dr Nombeko Mshunqane, PhD: Physiology

Introduction and Purpose of the Study: Due to the effect that neck, back and musculoskeletal pain has on people's lives, there is a need for early diagnosis and assessment of patients. In the isiZulu population, there is no validated assessment tool to date that measures the degree of the disability caused by the above-mentioned areas of concern. The purpose of this study is to validate an isiZulu translation of the original Bournemouth Questionnaire.

Inclusion criteria:

- Eight participants
- Fluent and literate in English and isiZulu
- Three lay participants with/ history musculoskeletal pain
- Two with medical professions (chiropractor and medical doctor)
- One chiropractic student, one chiropractic intern
- One translator
- Completion of all the required forms for the focus group (Letter of Information and Informed consent, Code of conduct, Confidentiality Statement).

Exclusion criteria:

- Participants who are unable to attend the focus group
- Participants who are unwilling to sign the required documents

Outline of the procedure:

Following a telephonic conversation, we will have scheduled a meeting in advance. The course of the meeting should last an estimated 2 hours. This will occur in either the Faculty or Chiropractic boardroom. Should you agree to partake in the meeting, you will now be asked to sign the letter of information and informed consent. The procedure of the meeting will now be explained.

Role of participant:

Participants of this study are expected to abide by the code of conduct (Appendix). It is the role of the participant to make comments and suggestions with regards to the study. Every comment will be discussed thoroughly by the researcher, supervisor and participants until such time all participants are satisfied.

For you to be included in this study, you need to meet the following criteria:

- Must be 18 years or older.
- Must be able to read and sign the Letter of information and Informed consent.
- Must be fluent and literate in both English and Zulu.

Benefits, risks and costs:

This study would be able to contribute the necessary information to stimulate research in the area of the prevalence and incidence of back, neck or musculoskeletal pain in the Zulu-speaking community. Results of the study will be available in the form a dissertation on the DUT library. There are no risks, costs or remuneration associated with your participation in this study.

Reasons/s why the participant may withdraw from the study:

You as the participant may withdraw from the focus group at any time.

Confidentiality:

All participants must abide by the confidentiality statement (Appendix C).

Persons to contact in the event of any problems or queries:
Researcher: Ms Khabonina Shabangu (079 731 8020)
Supervisor: Prof Ashley Ross (0313732542)
Institutional Research Ethics administrator: 031 373 2900.
Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvc@dut.ac.za

APPENDIX B: Letter of Informed Consent - focus group

LETTER OF INFORMED CONSENT

Statement of Agreement to Participants in the Research Study:

- I hereby confirm that I have been informed by the researcher, Khabonina Shabangu, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details, will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____ _____ _____

Full Name of Participant **Date** **Signature**

I, Khabonina Shabangu herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Khabonina Shabangu__ _____ _____

Full Name of Researcher **Date** **Signature**

_____ _____ _____

Full Name of Witness **Date** **Signature**

APPENDIX C: Code of conduct – Focus Group

Code of Conduct during meetings

Behaviour during meetings:
It is expected of all the members of the focus group, the researcher and supervisor to adhere to the basic rules and regulations of a focus group meeting.
Any comments may be raised during the procedure should a participant feel the need to address any of the focus group members or the researcher and supervisor of the study
Every participant of the meeting must:

- Act appropriately and treat all participants of the meeting with respect.
- Make no derogatory comments either through speech or action.
- Act in a manner that is unbiased and fair.
- Be open and honest about any action or comments and give a reason for them.
- Be clear and honest when giving a personal view of any part of the meeting or questionnaire.
- Participants should not interrupt a member during his or her addressing of the group.

Declaration of interest:
Should any of the participants have a financial, personal or other material interest in the outcome of the study, it is expected that this standing will be raised to the researcher and/or supervisor.

Confidentiality:
In conjunction with the letter of information and informed consent and confidentiality agreement, it is noted that all information discussed during the focus group meeting will be kept confidential.

Breach of code of conduct:
Any participant not adhering to the above speculated rules may be asked to leave the focus group meeting with no discrimination for future attendance to meetings as such.

Please print in block letters:

Focus group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

APPENDIX D - Confidentiality Statement - Focus Group

IMPORTANT NOTICE: This form is to be read and filled in by every member participating in the focus group, before the focus group meeting convenes.

CONFIDENTIALITY STATEMENT: Focus group

1. All information contained in the research documents and any information discussed during the focus group meeting must be kept private and confidential. This is especially binding to any information that may identify any of the participants in the focus group.

2. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.

3. The information from this focus group will be made public in terms of a dissertation/thesis and/or journal publication, which will in no way identify any of the participants involved in this focus group.

4. The returned questionnaires will be coded and kept anonymous in the research process.

5. The focus group may be either voice or video recorded, as a transcript of the proceedings will need to be made. The data will be stored securely under password protection.

6. All data generated from this focus group (including the recording) will be kept for 15 years in a secure location at Durban University of Technology and thereafter will be destroyed.

Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

Please print in block letters:

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

APPENDIX E1: Request for Permission to conduct study – Department of Health and Provincial.

To whom it may concern,

I, Khabonina Immaculate Lungile Shabangu, am a Master's student at the Durban University of Technology (DUT), Department of Chiropractic and Somatology. I am kindly requesting your permission to conduct the study mentioned below at Addington, UKZN, and INkosi Albert Luthuli Pain Clinics.

Title of research topic: The concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original.

There would be minimal to no disruption posed to the normal day to day running of the clinics. Please note that no names of any patients or any identifiable data will be recorded or presented in the dissertation or any publications that may arise from this study. Permission to conduct the study will also be obtained from:

- The medical manager/superintendent of DUT Health Science Clinic, Addington, UKZN, and INkosi Albert Luthuli pain clinics.
- The Durban University of Technology's (DUT) Institutional Research Ethics Committee (IREC) before any data collection commences and DUT Health Science Clinics.

Please complete the section below should you agree to my requests.

Thanking you in anticipation,

K. Shabangu

I, ……., do hereby grant Miss Khabonina Immaculate Lungile Shabangu permission to conduct the study at Addington Pain Clinic.

Signature: **Date:**

_____ _____

APPENDIX E2: Request for Permission for EACH Clinic (Management)

To _____ / whom it may concern

My name is Khabonina Shabangu. I am currently a Chiropractic Master student at Durban University of Technology completing my Masters dissertation.

The title of the research study is *"The concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original."*

The purpose of my study is to determine the concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English counterpart**.** In order to accomplish this, I require bilingual (English and isiZulu) participants to complete these questionnaires. Due to the effect that neck, back and musculoskeletal pain has on people's lives, there is a need for early diagnosis and assessment of patients. In the isiZulu population, there is no validated assessment tool to date that measures the degree of the disability caused by the above mentioned areas of concern. I would appreciate the opportunity and permission from _____ (name of clinic\ institute) to conduct my study by recruiting participants from this premises.

I would require two sessions with each participant of approximately 35 minutes. The first session would be where I give a brief explanation and go through the letter of information and participants fill in the first questionnaire. After roughly 1hour the second session would be needed to complete the second questionnaire. There should be minimal to no interference on the normal running of the clinic.

These questionnaires are anonymous and no personal/identifying information will be recorded. All information that is obtained will be treated as strictly confidential.

_____ (name clinic\ institute) may at any stage withdraw consent and permission for the study to be conducted at their premises.

Please feel free to contact me (Khabonina Shabangu) on 079 731 8020, my supervisor Professor Ashley Ross on 0313732542, or my co-supervisor Dr Nombeko Mshunqane on 3013732400 at any stage if you require further information.

I, _____ hereby give permission for the researcher (Khabonina Shabangu) to make effective use of _____ (name of clinic\ institute) as a platform to conduct this study.

_____ _____ _____

Signature Name Date

APPENDIX F: Letter of information – Participants (Pilot and Main study)

LETTER OF INFORMATION

Dear Participant

Firstly I would like to thank you for your involvement in my study.

Title of the research study: The concurrent validity of an isiZulu Bournemouth Questionnaire in comparison to its English original.

Principle Researcher: Khabonina IL Shabangu, B. Tech: Chiropractic
Supervisor: Professor Ashley Ross, D. Tech: Homeopathy
Co-supervisor: Dr Nombeko Mshunqane, PhD: Physiotherapy

Introduction and Purpose of the Study: Due to the effect that neck, back and musculoskeletal pain has on people's lives, there is a need for early diagnosis and assessment of patients. In the isiZulu population, there is no validated assessment tool to date that measures the degree of the disability caused by the above mentioned areas of concern. The purpose of this study is to validate an isiZulu translation of the original Bournemouth Questionnaire.

Outline of the Procedures:
For you to be included in this study you need to meet the following requirements:

- You must be literate in both English and isiZulu languages.
- You must be willing to sign both the Letter of Information and Informed Consent Form.
- You must be 18 years or older.
- You must complete all questionnaires in full.

Time duration: two sessions of approximately 35 minutes each, with a time interval between sessions of 20-1 hour minutes eg: case history or lecture period.

Benefits, risks and costs: This study would contribute the necessary information to stimulate research in the area of the prevalence or incidence of neck, back and musculoskeletal pain in the isiZulu-speaking community. Results of this study will be available in the form of a dissertation in the DUT Library. There are no risks, costs or remuneration associated with regards to your participation in this study
Reasons/s why participants may be withdrawn from the study: You, as the participant may withdraw from the study at any time.
Confidentiality: The questionnaires are anonymous and no person/ identifying information will be recorded. All information that is obtained will be treated as strictly confidential. The usage of the data collected in this study will be used solely as outlined above.

Persons to contact in the event of any problems or queries:
Researcher: Ms Khabonina Shabangu (079 731 8020)
Supervisor: Prof Ashley Ross (0313732542)
Institutional Research Ethics administrator: 031 373 2900.
Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvc@dut.ac.za

APPENDIX G: Letter of Informed Consent – Participants (Pilot and Main study)

LETTER OF INFORMED CONSENT

Statement of Agreement to Participate in the Research Study:

I hereby confirm that I have been informed by the researcher, Khabonina Shabangu, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,

I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.

I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.

In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.

I may, at any stage, without prejudice, withdraw my consent and participation in the study.

I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____ _____ _____

Full Name of Participant **Date** **Signature**

I, Khabonina Shabangu herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Khabonina Shabangu__ _____ _____

Full Name of Researcher **Date** **Signature**

_____ _____ _____

Full Name of Witness **Date** **Signature**

APPENDIX H1: Bournemouth Questionnaire (English) – Back

Put a CROSS in ONE box for EACH of the following statements that best describes your neck and how it is affecting NOW. Please read each question carefully before answering.

Q1 Over the past few days, on average, how would you rate your back pain on a scale where '0' is 'no pain' and '10' is 'worst pain possible'?

No pain 0 1 2 3 4 5 6 7 8 9 10

Q2 Over the past few days, on average, how has your back pain interfered with your daily activities (housework, washing, dressing, lifting, walking, driving, climbing stairs, getting in/out of bed/chair, sleeping) on a scale where '0' is 'no interference' and '10' is 'completely unable to carry on with normal daily activities'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q3 Over the past few days, on average, how much has your back pain interfered with your normal social routine including recreational, social and family activities, on a scale where '0' is 'no interference' and '10' is 'completely unable to participate in any social and recreational activity'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q4 Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale where '0' is 'not at all anxious' and '10' is 'extremely anxious'?

Not at all anxious 0 1 2 3 4 5 6 7 8 9 10

Q5 Over the past few days, how depressed (down-in-the-dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not at all depressed' and '10' is 'extremely depressed'?

Not at all depressed 0 1 2 3 4 5 6 7 8 9 10

Q6 Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your back pain, on a scale where '0' is 'make it no worse' and '10 is 'make it very much worse'?

Make it no worse 0 1 2 3 4 5 6 7 8 9 10

Q7 Over the past few days, on average, how much have you been able to control (help/reduce) and cope with your back pain on your own, on a scale where '0' is 'I can control it completely' and '10' is 'I have no control whatsoever'?

I have complete control over my pain 0 1 2 3 4 5 6 7 8 9 10

THANK YOU VERY MUCH FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

APPENDIX H2: Bournemouth Questionnaire (English) - Neck

Put a CROSS in ONE box for EACH of the following statements that best describes your neck pain and how it is affecting you NOW. Please read each question carefully before answering.

Q1 Over the past few days, on average, how would you rate your neck pain on a scale where '0' is 'no pain' and '10' is 'worst pain possible'?

No pain 0 1 2 3 4 5 6 7 8 9 10

Q2 Over the past few days, on average, how has your neck pain interfered with your daily activities (housework, washing, dressing, lifting, reading, driving, sleeping) on a scale where '0' is 'no interference' and '10' is 'completely unable to carry on with normal day-to-day activities'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q3 Over the past few days, on average, how much has your neck pain interfered with your normal social routine including recreational, social and family activities, on a scale where '0' is 'no interference' and '10' is 'completely unable to participate in any social and recreational activity'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q4 Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale where '0' is 'not at all anxious' and '10' is 'extremely anxious'?

Not at all anxious 0 1 2 3 4 5 6 7 8 9 10

Q5 Over the past few days, how depressed (down-in-the-dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not at all depressed' and '10' is 'extremely depressed'?

Not at all depressed 0 1 2 3 4 5 6 7 8 9 10

Q6 Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your neck pain, on a scale where '0' is 'make it no worse' and '10 is 'make it very much worse'?

Make it no worse 0 1 2 3 4 5 6 7 8 9 10

Q7 Over the past few days, on average, how much have you been able to control (help/reduce) and cope your neck pain on your own, on a scale where '0' is 'I can control it completely' and '10' is 'I have no control whatsoever'?

I have complete control over my pain 0 1 2 3 4 5 6 7 8 9 10

THANK YOU VERY MUCH FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

APPENDIX H3: Bournemouth Questionnaire (English) – Musculoskeletal

Put a CROSS in ONE box for EACH of the following statements that best describes your painful complaint and how it is affecting you NOW. Please read each question carefully before answering.

Q1 Over the past few days, on average, how would you rate your pain on a scale where '0' is 'no pain' and '10' is 'worst pain possible'?

No pain 0 1 2 3 4 5 6 7 8 9 10

Q2 Over the past few days, on average, how has your complaint interfered with your daily activities (housework, washing, dressing, lifting, walking, reading, driving, climbing stairs, getting in/out of bed/chair, sleeping) on a scale where '0' is 'no interference' and '10' is 'completely unable to carry on with normal daily activities'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q3 Over the past few days, on average, how much has your painful complaint interfered with your normal social routine including recreational, social and family activities, on a scale where '0' is 'no interference' and '10' is 'completely unable to participate in any social and recreational activity'?

No interference 0 1 2 3 4 5 6 7 8 9 10

Q4 Over the past few days, on average, how anxious (uptight, tense, irritable, difficulty in relaxing/concentrating) have you been feeling, on a scale where '0' is 'not at all anxious' and '10' is 'extremely anxious'?

Not at all anxious 0 1 2 3 4 5 6 7 8 9 10

Q5 Over the past few days, how depressed (down-in-the-dumps, sad, in low spirits, pessimistic, lethargic) have you been feeling, on a scale where '0' is 'not at all depressed' and '10' is 'extremely depressed'?

Not at all depressed 0 1 2 3 4 5 6 7 8 9 10

Q6 Over the past few days, how do you think your work (both inside the home and/or employed work) have affected your painful complaint, on a scale where '0' is 'make it no worse' and '10 is 'make it very much worse'?

Make it no worse 0 1 2 3 4 5 6 7 8 9 10

Q7 Over the past few days, on average, how much have you been able to control (help/reduce) and cope with your pain on your own, on a scale where '0' is 'I can control it completely' and '10' is 'I have no control whatsoever'?

I have complete control over my pain 0 1 2 3 4 5 6 7 8 9 10

THANK YOU VERY MUCH FOR YOUR TIME IN COMPLETING THIS QUESTION

APPENDIX H4a: Bournemouth Questionnaire – isiZulu (Pre-focus group) (Translated and verified by translator)

Faka uphawu ebhokisini elilodwa kuzozonke ezitatimende ezilandelayo, ukuchaza kabanzi ubuhlungu obuzwayo nokuthi bukukhinyabeza kangakanani njengamanje. Ngicela ufunde ngokuqikelela umbuzo ngamunye ngaphambi kokuthi uwuphendule.

Umbuzo 1: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, izinhlungu zomgogodla wakho ungazinika siphi isibalo uma u '0' usho ukuthi 'awunabo ubuhlungu' no '10' usho ukuthi 'ubuhlungu budlulele'?
Ubuhlungu abukho 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 2: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ubuhlungu bomgogodla buyiphazamise kangakanani indlela yokwenza ejwayelekile imisebenzi yakho yansuku zonke (imisebenzi yasendlini, ukuhlanza izimpahla, ukugqoka, ukuphakamisa izinto ezisindayo, ukuhamba ngezinyawo, ukushayela imoto, ukwenyuka izitebhisi, ukungena nokuphuma embhedeni/esihlalweni, ukulala) uma u '0' usho ukuthi 'awuphazamiseki' no '10' usho ukuthi 'awukwazi ukuqhubeka nokwenza imisebenzi ejwayelekile yansuku zonke'?
Akukho ukuthikamezeka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 3: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ngabe ubuhlungu bomgogodla buyiphazamise kangakanani indlela yokwenza okujwayelekile ukubala kukho imidlalo nokuxhumana nomndeni kanye nabanye abantu uma u '0' usho ukuthi 'awuphazamiseki' no '10' usho ukuthi 'awukwazi neze ukuba yinxenye'?
Akukho ukuphazamiseka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 4: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ubuzizwa wethuke kangakanani (awuhlalisekile kahle, uzizwa ungakhululekile, uzithola ungakwazi nokubekezela, ukuthola kunzima ukuphumula/ ukugxila entweni oyenzayo) uma o '0' usho ukuthi 'awethukile neze' no '10' usho ukuthi 'uthukile ngokwedlulele'?
Angithukile neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 5: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ngabe uzizwe unengcindezi engakanani (uphatheke kabi, ukuba nomoya ophansi, ukubona izinto ngendlela embi kuphela, uhlezi uzizwa ukhathele) uma u '0' usho ukuthi 'awuzizwa unengcindezi neze' no '10' usho ukuthi 'unengcindezi ngokwedlulele'?
Anginayo ingcindezi 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 6: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ucabanga ukuthi umsebenzi wakho (owasekhaya/ emsebenzini) uthikameza kangakanani ubuhlungu bomgogodla wakho uma u '0' usho ukuthi 'ubuhlungu obungashintshi no '10' usho 'ubuhlungu obungaphezulu kokujwayelekile'?
Abukho ubungcono **0 1 2 3 4 5 6 7 8 9 10**

Umbuzo 7: Ezinsukwini ezimbalwa ezedlule, ngokulinganisa kwakho, ukwazile yini ukuvimba/ ukulwa nezinhlungu (ukuzisiza/ ukunciphisa) nokumelana nobuhlungu bomgogodla ngokwakho uma u '0' usho ukuthi 'uyakwazi ukuzibamba' no '10' osho ukuthi 'angikwazi ukuzibamba neze'.
Ngiyakwazi ukulwa nezinhlungu ngokwami **0 1 2 3 4 5 6 7 8 9 10**

NGIYABONGA KAKHULU UKUTHI UTHATHE ISIKHATHI SAKHO UPHENDULA LEMIBUZO

APPENDIX H4b: Final Bournemouth Questionnaire (isiZulu Back – Final (After Focus Group.)

Bournemouth Questionnaire (IMIBUZO NGOBUHLUNGU BOMHLANE)

Faka uphawu ebhokisini elilodwa kulezi zitatimende ezilandelayo ukuchaza kabanzi ubuhlungu obuzwayo nokuthi bukukhinyabeza kangakanani njengamanje. Ngicela ufunde ngokuqikelela umbuzo ngamunye ngaphambi kokuthi uwuphendule.

Umbuzo 1: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, izinhlungu zomhlane wakho ungazinika siphi isibalo uma u'0' esho ukuthi 'awunabo ubuhlungu' no '10' esho ukuthi 'ubuhlungu budlulele'?
Ubuhlungu abukho 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 2: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ubuhlungu bomhlane buyiphazamise kangakanani indlela yokwenza imisebenzi yakho yansuku zonke (imisebenzi yasendlini, ukuhlanza izimpahla, ukugqoka, ukuphakamisa izinto ezisindayo, ukuhamba ngezinyawo, ukushayela imoto, ukwenyuka izitebhisi, ukungena nokuphuma embhedeni/esihlalweni, ukulala) uma u '0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi 'awukwazi ukuqhubeka nokwenza imisebenzi ejwayelekile yansuku zonke'?
Akukho ukuthikamezeka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 3: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe ubuhlungu bomhlane buyiphazamise kangakanani indlela ozihlanganisa ngayo nabanye abantu kufaka ukuzithokozisa, ukwenza izinto ezikuhlanganisa nabanye abantu nomndeni, uma u'0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi awukwazi ukubamba iqhaza kulokhu'?
Akukho ukuphazamiseka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 4: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ubuzizwa ukhathazeke kangakanani (uzizwa ungakhululekile emoyeni, uba nenhliziyo encane, uzithola ungakwazi nokubekezela, ukuthola kunzima ukuphumula/ ukugxila entweni oyenzayo) uma '0' esho ukuthi 'awukhathazekile neze' no '10' esho ukuthi 'ukhathazeke ngokwedlulele'?
Awukhathazekile neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 5: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe uzizwe uphatheke kabi kangakanani (ukuba nomoya ophansi, ukubona izinto ngendlela embi kuphela, uhlezi uzizwa ukhathele) uma u '0' esho ukuthi 'awuphathekile kabi neze' no '10' esho ukuthi 'uphatheke kabi ngokwedlulele'?
Awuphathekile kabi neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 6: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ucabanga ukuthi umsebenzi wakho (owasekhaya/ emsebenzini) ubuthinte kangakanani ubuhlungu bomhlane wakho uma u '0' esho ukuthi 'ubuhlungu abushintshi' no '10' esho ukuthi 'ubuhlungu okwedlulele'?
Ubuhlungu abushintshi **0 1 2 3 4 5 6 7 8 9 10**

Umbuzo 7: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ukwazile yini ukulawula izinhlungu (ukuzisiza/ ukuzehlisa) nokubekezelela izinhlungu zomhlane ngokwakho uma u '0' esho ukuthi 'Ngiyakwazi ukuzilawula' no '10' esho ukuthi 'angikwazi ukuzilawula neze'.
Ngiyakwazi ukulawula izinhlungu ngokwami **0 1 2 3 4 5 6 7 8 9 10**

NGIYABONGA KAKHULU UKUTHI UTHATHE ISIKHATHI SAKHO UPHENDULA LEMIBUZO

APPENDIX H5: Final Bournemouth Questionnaire (isiZulu Neck) – Final (After Focus Group)

Bournemouth Questionnaire (IMIBUZO NGOBUHLUNGU BOMQALA)

Faka uphawu ebhokisini elilodwa kulezi zitatimende ezilandelayo ukuchaza kabanzi ubuhlungu obuzwayo nokuthi bukukhinyabeza kangakanani njengamanje. Ngicela ufunde ngokuqikelela umbuzo ngamunye ngaphambi kokuthi uwuphendule.

Umbuzo 1: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, izinhlungu zomqala wakho ungazinika siphi isibalo uma u'0' esho ukuthi 'awunabo ubuhlungu' no '10' esho ukuthi 'ubuhlungu budlulele'?
Ubuhlungu abukho 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 2: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, isifo sakho sikuphazamise kangakanani indlela yokwenza imisebenzi yakho yansuku zonke (imisebenzi yasendlini, ukuhlanza izimpahla, ukugqoka, ukuphakamisa izinto ezisindayo, ukuhamba ngezinyawo, ukushayela imoto, ukwenyuka izitebhisi, ukungena nokuphuma embhedeni/esihlalweni, ukulala) uma u '0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi 'awukwazi ukuqhubeka nokwenza imisebenzi ejwayelekile yansuku zonke'?
Akukho ukuthikamezeka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 3: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe ubuhlungu bomqala buyiphazamise kangakanani indlela ozihlanganisa ngayo nabanye abantu kufaka ukuzithokozisa, ukwenza izinto ezikuhlanganisa nabanye abantu nomndeni, uma u'0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi awukwazi ukubamba iqhaza kulokhu'?
Akukho ukuphazamiseka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 4: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ubuzizwa ukhathazeke kangakanani (uzizwa ungakhululekile emoyeni, uba nenhliziyo encane, uzithola ungakwazi nokubekezela, ukuthola kunzima ukuphumula/ ukugxila entweni oyenzayo) uma '0' esho ukuthi 'awukhathazekile neze' no '10' esho ukuthi 'ukhathazeke ngokwedlulele'?
Awukhathazekile neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 5: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe uzizwe uphatheke kabi kangakanani (ukuba nomoya ophansi, ukubona izinto ngendlela embi kuphela, uhlezi uzizwa ukhathele) uma u '0' esho ukuthi 'awuphathekile kabi neze' no '10' esho ukuthi 'uphatheke kabi ngokwedlulele'?
Awuphathekile kabi neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 6: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ucabanga ukuthi umsebenzi wakho (owasekhaya/ emsebenzini) ubuthinte kangakanani ubuhlungu bomqala wakho uma u '0' esho ukuthi 'ubuhlungu abushintshi' no '10' esho ukuthi 'ubuhlungu okwedlulele '?
Ubuhlungu abushintshi **0 1 2 3 4 5 6 7 8 9 10**

Umbuzo 7: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ukwazile yini ukulawula izinhlungu (ukuzisiza/ ukuzehlisa) nokubekezelela izinhlungu zomqala ngokwakho uma u '0' esho ukuthi 'Ngiyakwazi ukuzilawula' no '10' esho ukuthi 'angikwazi ukuzilawula neze'.
Ngiyakwazi ukulawula izinhlungu ngokwami **0 1 2 3 4 5 6 7 8 9 10**

NGIYABONGA KAKHULU UKUTHI UTHATHE ISIKHATHI SAKHO UPHENDULA LEMIBUZO

APPENDIX H6: Final Bournemouth Questionnaire (isiZulu MSK) – Final (After Focus Group)

Bournemouth Questionnaire (IMIBUZO NGOBUHLUNGU BEZICUBU, IMISIPHA NAMALUNGA)

Faka uphawu ebhokisini elilodwa kulezi zitatimende ezilandelayo ukuchaza kabanzi ubuhlungu obuzwayo nokuthi bukukhinyabeza kangakanani njengamanje. Ngicela ufunde ngokuqikelela umbuzo ngamunye ngaphambi kokuthi uwuphendule.

Umbuzo 1: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, izinhlungu zakho ungazinika siphi isibalo uma u'0' esho ukuthi 'awunabo ubuhlungu' no '10' esho ukuthi 'ubuhlungu budlulele'?
Ubuhlungu abukho 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 2: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, isifo sakho siyiphazamise kangakanani indlela yokwenza imisebenzi yakho yansuku zonke (imisebenzi yasendlini, ukuhlanza izimpahla, ukugqoka, ukuphakamisa izinto ezisindayo, ukuhamba ngezinyawo, ukushayela imoto, ukwenyuka izitebhisi, ukungena nokuphuma embhedeni/esihlalweni, ukulala) uma u '0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi 'awukwazi ukuqhubeka nokwenza imisebenzi ejwayelekile yansuku zonke'?
Akukho ukuthikamezeka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 3: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe izinhlungu okhala ngazo ziyiphazamise kangakanani indlela ozihlanganisa ngayo nabanye abantu kufaka ukuzithokozisa, ukwenza izinto ezikuhlanganisa nabanye abantu nomndeni, uma u'0' esho ukuthi 'awuphazamiseki' no '10' esho ukuthi awukwazi ukubamba iqhaza kulokhu'?
Akukho ukuphazamiseka 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 4: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ubuzizwa ukhathazeke kangakanani (uzizwa ungakhululekile emoyeni, uba nenhliziyo encane, uzithola ungakwazi nokubekezela, ukuthola kunzima ukuphumula/ ukugxila entweni oyenzayo) uma '0' esho ukuthi 'awukhathazekile neze' no '10' esho ukuthi 'ukhathazeke ngokwedlulele'?
Awukhathazekile neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 5: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ngabe uzizwe uphatheke kabi kangakanani (ukuba nomoya ophansi, ukubona izinto ngendlela embi kuphela, uhlezi uzizwa ukhathele) uma u '0' esho ukuthi 'awuphathekile kabi neze' no '10' esho ukuthi 'uphatheke kabi ngokwedlulele'?
Awuphathekile kabi neze 0 1 2 3 4 5 6 7 8 9 10

Umbuzo 6: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ucabanga ukuthi umsebenzi wakho (owasekhaya/ emsebenzini) uzithinte kangakanani izihlungu okhala ngazo uma u '0' esho ukuthi 'ubuhlungu abushintshi' no '10' esho ukuthi 'ubuhlungu okwedlulele'?
Ubuhlungu abushintshi **0 1 2 3 4 5 6 7 8 9 10**

Umbuzo 7: Ezinsukwini ezimbalwa ezedlule, ngokujwayelekile, ukwazile yini ukulawula (ukuzisiza/ ukuzehlisa) nokubekezelela izinhlungu zakho ngokwakho uma u '0' esho ukuthi 'Ngiyakwazi ukuzilawula' no '10' esho ukuthi 'angikwazi ukuzilawula neze'.
Ngiyakwazi ukulawula izinhlungu ngokwami **0 1 2 3 4 5 6 7 8 9 10**

NGIYABONGA KAKHULU UKUTHI UTHATHE ISIKHATHI SAKHO UPHENDULA LEMIBUZO

APPENDIX I: To determine the literacy and understanding of the participant (to be translated into isiZulu)

Interpret the passage:

Odokotela beChiropractic balapha amalungu omzimba basebenzisa izandla zabo ukwelapha izifo zamathambo, izicubu zomzimba namalungu omzimba.

Ziningi-ke izizathu ezidala ukuthi umuntu afune ukunakekelwa ngokwelashwa udokotela weChiropractic okufaka:

-Ubuhlungu bomhlane

-Ubuhlungu bomqala

-Ukuphathwa yikhanda

-izinyelo

-Ukulimala emsebenzini

-Isifo samathambo

-Ukunganyakazi ngendlela efanele kweqolo, ihlombe, umqala nezingalo nezinyawo

-Impilo nje jikelele nokuphila kahle

APPENDIX J: Pilot study

Pre-test evaluation

For each of the following questions, please mark one box ONLY

1. What is your opinion on the cover letter? (Please mark one box only)

1.1 Very clear ☐
1.2 Clear ☐
1.3 Adequate ☐
1.4 Unclear ☐
1.5 Needs revising ☐

2. How would you describe the instructions accompanying each of the questions?

2.1 Very clear ☐
2.2 Clear ☐
2.3 Adequate ☐
2.4 Unclear ☐
2.5 Needs revising ☐

3. What is your opinion on the wording of the questionnaire?

3.1 The meaning of **all questions** is absolutely clear ☐
3.2 The meaning of **most** questions is clear ☐
3.3 There is too much medical jargon ☐
3.4 The questionnaire needs to be revised as it is entirely unclear ☐
3.5 Only the following questions need to be revised _____

4. Do you think the questions asked sufficiently address the effect of pain in one's life?

4.1 Yes ☐
4.2 No ☐

5. Do you think the questionnaire is too long?

5.1 Yes ☐
5.2 No ☐

If you had any difficulty answering any question/s, please write the number/s of the question/s in the space provided below with a suggestion on how the question/s can be improved:

_____
_____
_____
_____
_____

Thank you for your most valuable time helping me with my research project. Please be reminded that the topics discussed are strictly confidential.