

Factors Motivating Emergency Department Attendance Among Patients
with Non-Urgent Musculoskeletal Disorders: a Case Study in Qatar

by

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Thesis submitted in partial fulfillment of
the requirements for the degree of
Master of Science in the Duke Global Health Institute
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ABSTRACT

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Abstract

Background: The rise in the prevalence of musculoskeletal disorders (MSDs) places a high burden on healthcare services, especially in the emergency departments (EDs) of hospitals in Western and European countries. MSD-related complaints are one of the most common complaints in such EDs where 10-40% of cases are non-urgent and could be treated in a primary health care center (PHCC) instead. Findings on factors driving patients to attend the ED instead of a PHCC are known to vary in different parts of the world ranging from socio-economical factors to cultural preference; however, most studies have been based primarily on western, industrialized countries and findings are not generalizable to rapidly developing countries which exhibit the same phenomenon such as Qatar. This study aims to extend prior research and examine factors driving patients with non-urgent MSDs to attend the ED in the demographically diverse country of Qatar. **Study design:** Purposive sampling was used to recruit patients with musculoskeletal complaints age 18 years and older in the “See ‘N Treat” and “Male Fast Track” areas at the ED of Hamad General Hospital (HGH). Patients with non-urgent MSDs were interviewed about main reasons for attending the HGH ED instead of a PHCC. An applied thematic approach was used to analyze data to determine themes and trends among patient responses. **Results:** 97 patients were interviewed; 70% were men and 30% were women. 70% of patients interviewed were non-Qatari. The median age of all patients was 35.5 years old (IQR, 27-44.2). The main reasons given for attending an ED were: seeking immediate relief from feeling severe pain (63%), perceived severity of the condition as an emergency and believing ED use is appropriate (29%), and referral from other health facilities (9%). The main reasons for attending the ED of HGH particularly were: preference/convenience (49%), access (15%), lack of knowledge (15%), and influence by employer (15%). **Conclusion:** The majority of patients preferred attending the ED of HGH for the higher quality of services in comparison to other local PHCCs. Low quality MSD management in PHCCs for patients who experience recurrent pain is

often a driving factor as well where it was more feasible for them to access services at the ED of HGH instead of a PHCC. A significant portion of non-Qatari patients attended the ED due to lack of knowledge of other services and misadvice from their employers. Such external factors leading to increased burden on the ED of HGH could be addressed by increasing access to alternative centers. Mandating employers to inform employees of the existence of PHCCs and provide them with health services could also reduce the burden of non-urgent ED use. Enforcement of established protocols and strategies on MSD management could also improve the quality of service in PHCCs and contribute to MSD prevention, thus lowering the burden on the healthcare system.

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1. Introduction

Musculoskeletal disorders (MSDs) are injuries or disorders affecting the musculoskeletal system (muscles, nerves, tendons, joints, or cartilage) causing long-term pain and physical disability (“Musculoskeletal Disorders,” 2012; Woolf & Pfleger, 2003). They could result from physical risk factors such as exposure to force from lifting heavy objects or exertion by typing repetitively for an extended period of time (“Musculoskeletal Disorders,” 2012; World Health Organization (WHO), 2009). Other risk factors include: occupational risks, high body mass index (BMI), and physical inactivity (“Musculoskeletal Disorders,” 2012). MSDs, such as arthritis and back pain, are the second most common cause of disability world-wide after mental health and behavior disorders (Yelin & Weinstein, 2012; Vos et al., 2012). They make up 2% of disability adjusted life years (DALYs) globally (Woolf & Erwin, 2012) and cause physical disability in four to five percent of the adult population in the United States, Canada, and Western Europe (Woolf & Pfleger, 2003; Yelin & Weinstein, 2012). In the Arab world, back and neck pain MSDs are the leading causes of physical disability (Mokdad et al., 2014). MSD symptoms, such as musculoskeletal pain, are recurrent where they are resolved and re-experienced again in the future (Mcbeth & Jones, 2007; Woolf & Pflger, 2010). Recurrent musculoskeletal pain is common in chronic conditions, such as rheumatoid arthritis, osteoporosis, and intermediate acute conditions (which can evolve into a chronic state) (WHO, 2003; Woolf & Pfleger 2003). Musculoskeletal pain is prevalent in one out of four people in countries both less and more developed than the United States (Woolf & Akesson, 2001). It is also one of the most motivating reasons for patients to visit physicians in many Western countries, thereby placing a high economic burden on the healthcare system (Woolf & Akesson, 2001; Woolf & Pfleger, 2003). In the United States, the economic burden of MSDs rose by 67% between 1996 and 2011, and made up 5.7% of gross domestic product (GDP) (\$873.8 billion out of total GDP of \$15.2 trillion) in 2011 (Yelin et al., 2013). During 2008-2009 in Australia, MSDs made up 8.7% of the country’s

healthcare expenditure—a total of \$5,690 million, placing them at the fourth most expensive health condition (AIHW, 2014). In many Western and European countries, patients with MSDs are more likely to use primary health care centers (PHCCs) than emergency departments (EDs); however, EDs suffer a higher economic burden from assessment and treatment of MSDs (Woolf & Akesson, 2001; Woolf & Pflieger 2003; MacKay et al., 2010).

1.1 Emergency Department utilization by patients with MSDs

The second most common complaints in the ED are MSD-related and make up 10%-57% of consultations in countries such as the United States, Australia, Canada, and the Netherlands (MacKay et al., 2010; Nagree et al, 2013; McCaig & Nawar, 2003; van Charante et al., 2007). The most common types of MSD complaints vary, ranging from trauma-related conditions (dislocations and fractures), to chronic conditions (arthritis and soft tissue disorders). For example, in an ED in the Netherlands, trauma-related conditions were the most common MSD-related presentations, whereas in an ED in Brazil, low back pain was one of the most prevalent musculoskeletal-related complaints (Giesen et al., 2006; Fiahlo et al., 2013). Many studies characterizing patients in the ED with MSDs and other conditions determined that the majority of patients have semi-urgent to non-urgent conditions that would be more appropriate for treatment in PHCCs (Hoot & Aronsky, 2008; Durand et al., 2011; Mclean et al., 1999; Nagree et al., 2013; McCaig & Nawar, 2003). MSDs and injuries related to the musculoskeletal system make up 10-40% of non-urgent conditions (Gaeiski et al., 2008; Chmiel et al., 2011). Thus, in addition to the economic burden, the attendance of patients with non-urgent conditions to the ED can contribute to the misuse of ED resources, delays in treatment, poor quality health service delivery by over-worked staff, and medical error; this could ultimately lead to increased mortality (Higginson, 2012; Hoot, 2008; MacKay et al., 2010). Reducing the burden on EDs could possibly be achieved by encouraging patients with non-urgent conditions to attend PHCCs instead. Given the evidence that some patients with MSDs are choosing the ED over PHCCs, it is

necessary to understand the factors motivating patients with non-urgent conditions to attend the ED instead of PHCCs.

1.2 Patients with non-urgent conditions in the Emergency Department

According to literature from Western and European countries, there are a multitude of reasons for patients with non-urgent conditions to attend the ED such as minimal access to primary care services, convenience, and perceived severity of the condition (Uscher-Pines et al., 2013; Hoot, 2008). Various characteristics, like gender and health status, and factors, like health system and access, influence non-urgent ED use. However, the importance of such characteristics and factors influencing non-urgent ED use varies across studies. A systematic review of studies in the United States found that among articles examining insurance as a main characteristic driving non-urgent ED use; two studies determined uninsured patients are less likely to utilize the ED, while two other studies determined uninsured patients are more likely to utilize the ED. Further, another five studies did not determine an association (Uscher-Pines et al., 2013). The systematic review also reported that among other studies focusing on access (ability to attend a health facility in a timely manner) as a main factor driving non-urgent ED use, four studies determined an association between poor access and non-urgent ED use, and one study found no association (Uscher-Pines et al., 2013).

Characteristics and factors motivating the presentation of patients with non-urgent conditions in the ED also vary across countries. A study in the United States comparing utilization of the ED by patients with non-urgent conditions versus the utilization of a family practice center found that females and married individuals have a higher rate of ED utilization, and that insurance was a major predictor of the type of health facility attended (Schwartz et al., 1995). A study in Switzerland, also comparing utilization of general practitioners by patients with non-urgent conditions versus the ED, found a higher rate of female's attending their general practitioners rather than the ED. Insurance-related factors, which were found to significantly

influence non-urgent ED use in other countries, were neglected in this study by the researcher since there is no gate-keeping system in Switzerland (Chmiel et al., 2011). Thus, variation in trends and factors influencing attendance is attributed to differences in study design, population, and setting (Uscher-Pines et al., 2013; Morris et al., 2011). Findings from previous studies are not generalizable to other settings exhibiting the same phenomenon, especially in countries or regions that have differences in the healthcare system, demographic structure, and health status, as in the case of the State of Qatar (hereafter Qatar).

1.3 Qatar

Qatar has experienced a large population increase over the past few decades because of rapid economic growth and social and cultural developmental initiatives, such as hosting the 2022 World Cup. To fulfill the shortage in human resources needed for the developmental initiatives (most are construction-related projects), Qatar recruited migrant workers from countries such as Nepal and India. (Supreme Council of Health, 2011; WHO, 2009). Non-Qatari nationals, including professionals and low-skilled migrant workers (most of whom are socioeconomically disadvantaged), make up more than 70% of the total population and about 85% of the workforce (WHO, 2009; Labor Force Report, 2011). The increase in construction-related projects places Qatar's population, especially migrant workers, at a higher occupational risk for developing MSDs (Woolf & Pflieger, 2003; WHO Scientific Group, 2003; Mokdad et al., 2014; Bener et al., 2013). Non-fatal injuries, such as injuries from falls and road traffic injury (RTI), are major contributors to long-term disability and development of MSDs (Woolf & Akesson, 2001; Woolf & Pflieger, 2003; WHO Scientific Group, 2003). In a study characterizing the trends of injury in Qatar's trauma centers, trauma from falls was found to be the second major factor contributing to injuries after RTIs. About 11% of patients were non-Qatari single males who experienced work-related injuries from falls that ultimately cause neck and back injuries (Bener et al., 2012). Injuries from RTIs (fatal and non-fatal) also account for a great burden of disease and lost years

of healthy life in 13.7% of men (Bener et al., 2013). In addition to injuries and occupational risks, the overall population in Qatar has a high prevalence of musculoskeletal-related risks, such as high BMI and dietary risks, which attribute to 8.8% of DALYs and 2.4% of DALYs to MSDs respectively (GDB, 2010). The prevalence of MSDs in Qatar is expected to rise with increasing age and changing lifestyle factors, such as obesity and physical inactivity, which will subsequently lead to a rise in the health burden (Woolf & Erwin, 2012). In turn, the burden on healthcare facilities from these conditions is also expected to rise.

To keep up with the population increase, Qatar has taken many initiatives to improve its healthcare infrastructure (Bener & Mazroei, 2010; Supreme Council of Health, 2011). The Supreme Council of Health (SCH), a governmental institution mandated to overlook the quality of healthcare delivery in Qatar, worked towards increasing the number of PHCCs, tertiary hospitals, and specialists throughout various parts of the country. For example, PHCCs were increased so that six to eight PHCCs are now available in each geographical region of Qatar amounting to 21 centers in all regions of Qatar. In order to ensure the effectiveness and affordability of health care services at PHCCs and hospitals, the SCH has established mandatory coverage to all citizens of Qatar (Qatari nationals) through a Social Health Insurance scheme mainly financed by the government. Residents in Qatar (Qatari and non-Qatari nationals) are also able to access healthcare services under the Social Health Insurance scheme by purchasing a government-issued card at a cost of QAR 100 per year (\$28 per year) or by paying a co-pay of QAR 30 (\$8.24) (“Qatar Health System”; Read et al., 2014). Despite changes in infrastructure and the healthcare system, the ED of a major tertiary hospital, Hamad General Hospital (HGH), in Doha still experiences a high attendance rate by patients with non-urgent conditions (Saifelddeen et al., 2012). Health services in the ED at HGH are free of charge, and it is one of the busiest hospitals reaching about 33,000 consultations a month. About 80% of HGH’s ED patients are considered patients with non-urgent conditions (Saifelddeen et al., 2012). According to a HGH

ED Statistics report (2012), 10% of patients presented with the complaint “pain related to musculoskeletal pain,” and 5% presented with the complaint “fall” (p. 21). One qualitative study investigating non-urgent ED attendance at HGH’s ED found that female patients with non-urgent conditions mainly attended the ED due to lack of access or dissatisfaction with other services (Read et al., 2014). This study investigated factors influencing patients with non-urgent conditions; however, it only considered females. Since decision-making processes and behavior of patients’ attendance to health facilities varies according to gender (van Charante et al., 2007; van Uden et al., 2006; Chmiel et al., 2011), the findings from the Read et al. (2014) study are not generalizable to all patients of the ED at HGH.

While existing literature reveals the causes and consequences of the presence of patients with non-urgent conditions in the ED, very few studies characterize and investigate the reasons for the high utilization of the ED by patients with MSDs in particular. Furthermore, most studies focus on a certain population or a certain MSD in the ED of a particular country making the results of these studies not generalizable. Many other countries do not have the unique demographic structure, high exposure to occupational risks or the increased burden on EDs that Qatar does.

Accordingly, the aim of this study is to determine the factors motivating patients with non-urgent MSDs to attend the ED of HGH in Qatar (instead of a PHCC) and to explore patients’ previous utilization of and experiences in other facilities for the same or similar MSDs. This study will reveal non-urgent MSD patients’ perspectives on ED use appropriateness, as well as possible barriers in accessing other services. Ultimately, this study will inform concerned policy-makers of unmet needs of patients and provide insight into prioritizing issues within the current healthcare system.

1.4 Study Aims

- 1) Determine factors motivating patients with non-urgent MSDs to attend the ED of HGH in Qatar instead of PHCCs.
- 2) Explore experience and treatment of patients who had previous musculoskeletal problems in health facilities in Qatar other than the ED of HGH.

2. Methods

2.1 Setting

HGH is the biggest tertiary hospital of Hamad Medical Corporation (HMC), the principal public health provider in Qatar (“Hamad Medical Corporation”). The ED at HGH averages about 1,600 patients daily (ED Statistics, 2012). About 71% of the patients in the ED are male and 81% are non-Qatari (ED Statistics, 2012). As shown in Figure 1, the physical structure of the ED is divided into two sections: female and children, and male. Each section is further divided into several “areas.” These “areas” are designed and equipped to address patients according to the severity of their conditions. The female “See ‘n Treat” (hereafter SnT) is an area designated for both Qatari and non-Qatari females and children with less critical conditions. For males with less critical conditions, there is a male SnT designated for non-Qatari males, and a Male Fast Track (MFT) designated for Qatari males and citizens of other countries of the Gulf Corporation Council (GCC). In 2012, about 89% of patients were seen in the SnT (both female and male), and 10% were seen in the MFT (ED Statistics, 2012). The low number of patients seen in the MFT is reflective of the low proportion of male patients from Qatar and the GCC who are treated in the ED of HGH compared to male patients from other countries. Also, 79% of patients treated in the ED were discharged from the SnT and MFT areas, while another nine percent were referred to a PHCC or the outpatient department (OPD) (ED Statistics, 2012).

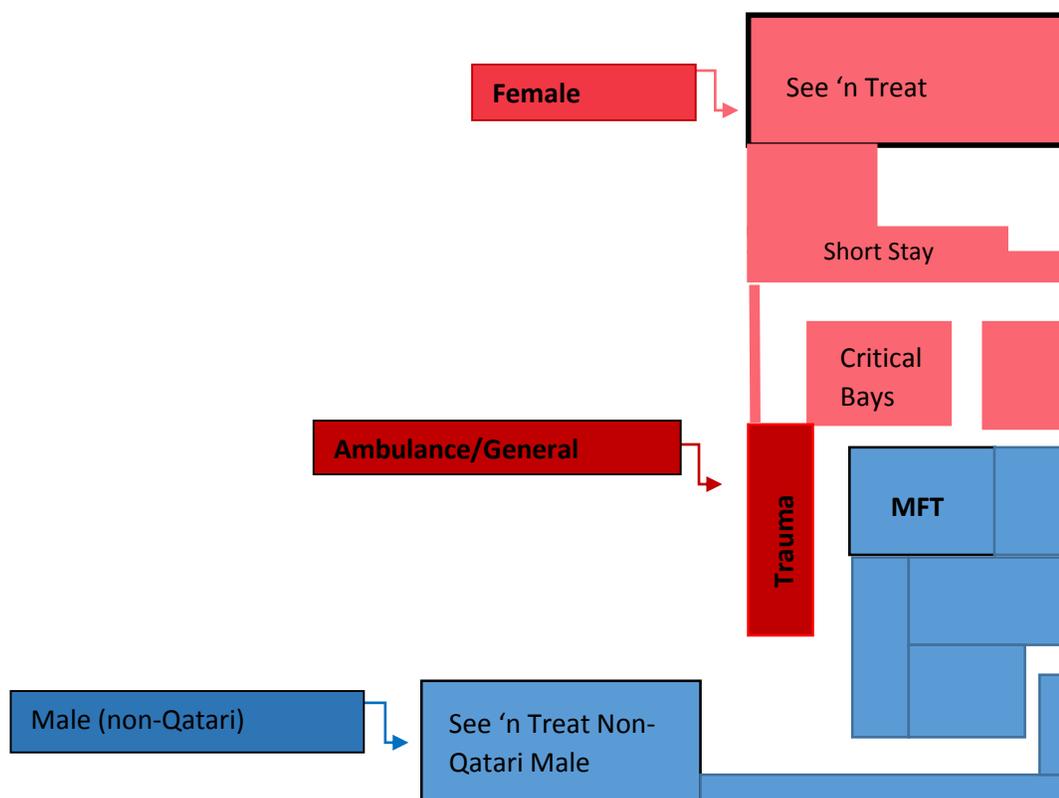


Figure 1: Representation of the different “areas” in HGH’s ED. The blue area represents the male section, the pink area represents the female and children area, and the red is a general area for trauma patients arriving by an ambulance.

2.2 Sample

Qatari and non-Qatari female and male patients 18 years and older were purposively recruited and interviewed regarding the reasons motivating their attendance to HGH’s ED (instead of a PHCC). Only patients with musculoskeletal-related complaints were selected. This sample was determined based on statistics of patient presentation and demographics of the HGH ED (ED Statistics, 2012) and two direct observations. The first stage of recruitment involved the ED physician confirming that the patient they were treating presented with a musculoskeletal-related complaint. Next, the physician must have confirmed that the complaint is MSD-related and treatable at a PHCC. Following this, informed consent was obtained from the patient by the primary investigator to interview the patient. Patients who did not speak Arabic or English, were in distressed state, or declined the informed consent were excluded from the study.

2.3 Procedure

2.3.1 Direct Observations

In order to determine the most feasible way to identify, select, and interview patients, the primary investigator carried out two direct observations over two different days. Approval was obtained from the administrative office of the ED at HGH to access all areas of the ED and observe and interview patients as needed for the purpose of this study. Both direct observations lasted 90 minutes and included information regarding the physical layout of the different ED areas, the placement and roles of nurses/physicians, and patient flow. ED physicians and nurses assisted the primary investigator in clarifying any observations regarding triaging and patient flow. The male SnT (see Figure 2) consists of a registration/triage area, an initial treatment area, and secondary waiting and assessment area. The total number of physicians and nurses varies by the time of day and day of the week; however, there are usually two registration nurses and two triage ED specialists. If there is no shortage in ED physicians, a consultant is present at the registration assisting the registration nurses in triaging and determining patient priorities.

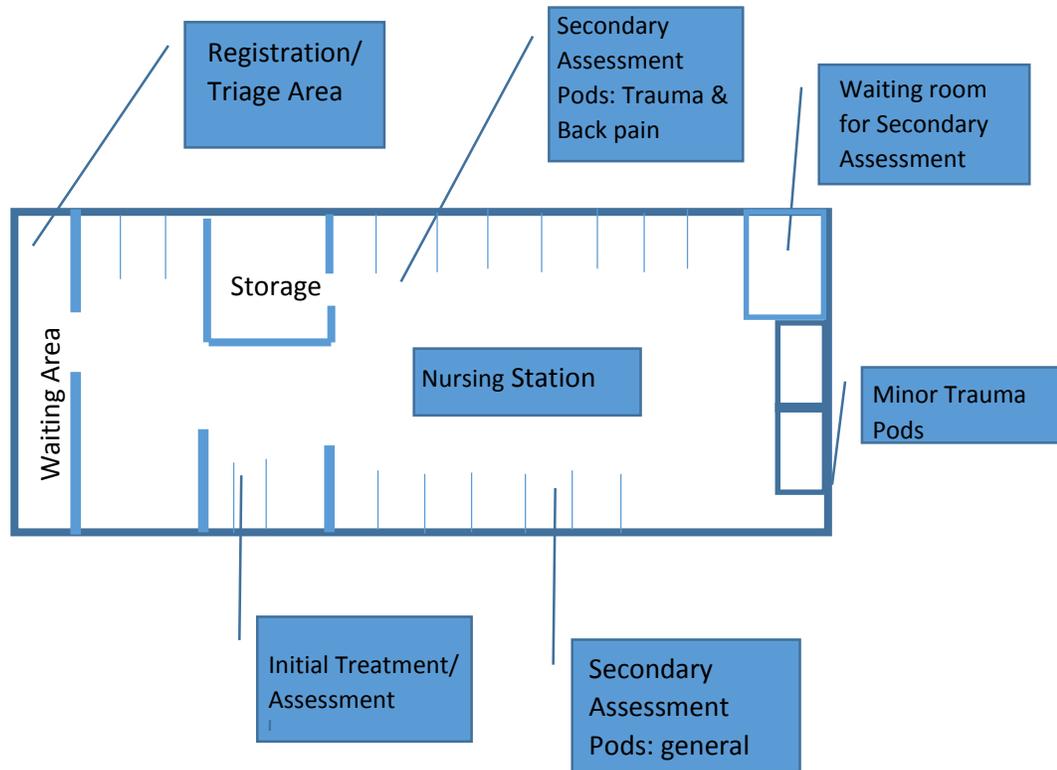


Figure 2: Hamad General Hospital Emergency Department Non-Qatari, Male SnT Area

As advised by HMC protocols, there are four possible priorities given to patients in the ED of HGH:

- Priority I: patients with immediate/imminently life threatening conditions.
- Priority II: Patients with a condition that may progress to a life threatening condition.
- Priority III: patients with minor complaints who may not be handled at an outpatient facility and referred to low-acuity areas, or patients with a condition that may become life threatening within 60 minutes of arrival.
- Priority IV: Patients who can wait for more than 12 hours and safely be referred to an outpatient department or a PHCC.

Patients who are designated a priority I or II are treated in areas other than the SnT and the MFT.

Those with priority III or IV could take one of two paths. One path is to be discharged from the

triage area after an initial consultation and determining their condition is not life-threatening by the triage ED physician—these patients are known as triaged-out where they are referred to a PHCC. If the triage ED physicians believe the condition requires further assessment and evaluation, patients undergo the other path. They either receive an initial treatment, such as an injection for immediate pain relief, or a diagnostic test, such as an X-ray. Those who are given an initial treatment are assessed again in the initial treatment area (usually patients who received an injection). Those who are ordered diagnostic tests are sent to the secondary waiting area and then placed in an assessment room in the secondary assessment area after completing the test. Designated ED physicians in the secondary assessment area determine whether a patient could be discharged or needs further treatment in the ED. Figure 3 provides a simplified scheme of the patient flow in the male SnT.

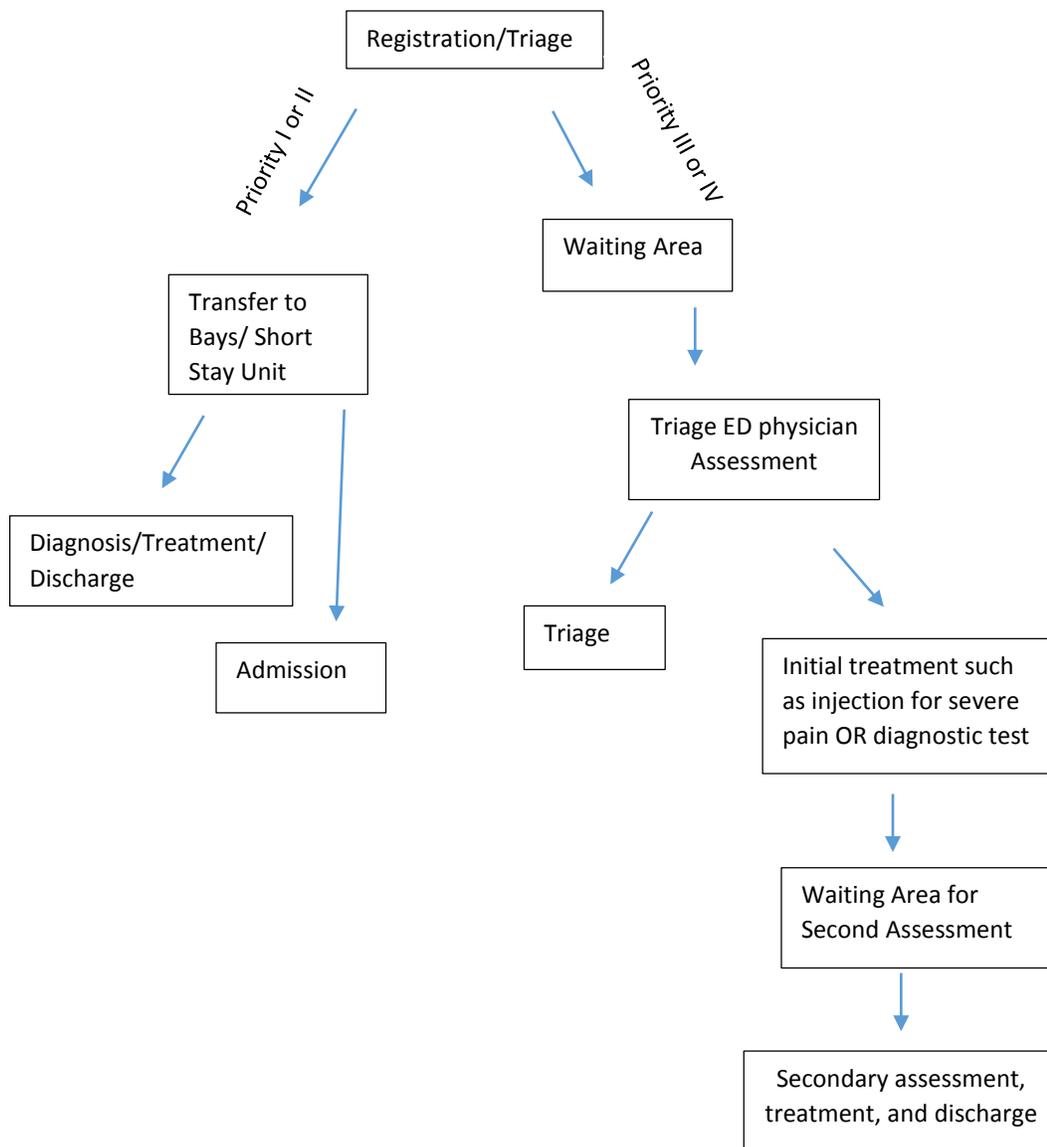


Figure 3: Simplified scheme of patient flow in the male SnT which shows that if at any time during secondary assessment the patient shows any signs of a life threatening condition, he will be redirected to another area as appropriate

The second direct observation was carried out in the MFT and the female SnT. The female SnT consists of a reception/registration area, a triage assessment area, and a secondary assessment area. Females and children are registered and given priority by registration nurses. After registration, they are sent for full assessment and treatment in the secondary assessment area. They follow the same scheme as patients in the male SnT except that an initial assessment is less common in the Female SnT. Initial assessment and triaging-out is carried out only if there

is no shortage in staff and high volume of patients. In the MFT, there is only one treatment area. Patients are registered, evaluated and treated appropriately without triaging.

2.3.2 Interviewing

Semi-structured interview questions were developed inquiring for key points, such as, access to PHCCs, and knowledge of and satisfaction with other health facilities. These same factors have been emphasized in previous studies investigating the attendance to the ED by patients with non-urgent conditions (Read et al., 2014; Chmiel et al., 2011; Supreme Council of Health, 2011; Hoot, 2008). However, factors were modified to fit patients presenting to the ED with musculoskeletal-related conditions by including questions regarding the acuity of the presenting complaint, the mechanism causing the condition, and treatment received (Stafford et al., 2013; Fiahlo et al., 2013; MacKay et al., 2010). Direct observations and discussions with ED physicians determined that patients should be interviewed after receiving treatment and before being discharged. Registration nurses would inform the primary investigator of any patients presenting with musculoskeletal-related complaints such as knee pain, back pain, or pain from fall. Once informed, the primary investigator selected those 18 years and older. The ED physicians assessing the selected patients were asked by the primary investigator to confirm that the patient was suffering from a musculoskeletal-related condition treatable in a PHCC. After receiving confirmation, an informed consent was obtained and interview was held by the primary investigator once the ED physician completed treatment and discharged the patient. After completing eight pilot interviews in all SnT areas and the MFT, interview questions were modified once more to ensure appropriateness for patients in this setting. For example, during the direct observations and pilot interviews, it was noted that a possible barrier to accessing PHCCs is the inability to purchase a health card. In turn, a question was added regarding the availability of a health card in the interview.¹ The primary investigator (fluent in Arabic and English)

¹ See Appendix I for interview questions.

interviewed patients in either Arabic or English based on the patient's preferred language. Interviews conducted in Arabic were translated to English by the primary investigator immediately during the interviewing process. Patients who did not speak Arabic or English required translation, which was done by nurses who spoke their language, such as Hindi, if available. Available nurses translated patient responses in English to the primary investigator. All interviews lasted 10-35 minutes each. Patient selection and interviewing began at the beginning of the ED physician's shift. Shift one began at 7a.m. and lasted until 3p.m.; shift two began at 3p.m. and lasted until 11p.m.; shift 3 began at 11p.m. and lasted until 7a.m. Interviews were conducted twice a day to accommodate the shift changes and availability of nurses and physicians in all areas. They took place throughout the week and during the weekend with no particular order or previous planning by the primary investigator. Interview questions concentrated on each patient's main reason for attending HGH's ED, the type of complaint and condition, and previous musculoskeletal health problems and treatment obtained in other health facilities. Along with patient responses, recommendations to patients by ED physicians were noted. Key points from discussions between primary investigator and ED physicians and nurses regarding interviewed patient's condition and behavior were also noted.

2.4 Analysis:

2.4.1 Variables

Data was collected on patient demographics, characteristics, experience in the ED of HGH, and previous musculoskeletal health problem and treatment in other facilities. Collected information was organized in an Excel spread-sheet by the primary investigator on daily basis. Demographic information included age, gender, nationality, education, and occupation. Age was categorized into groups (18-29, 30-44, 45-59, 60-69, 70-79, 80+) according to the World Health Organization (WHO) standards (WHO, 2003). Qatari citizens were labeled Qatari, and other residents of Qatar, such as Indians, Egyptians, and Nepalese to name a few, were labeled non-

Qatari. Education was categorized into: 1) primary education (defined as education less than a bachelor's degree from a college/university, including a diploma), 2) secondary education (defined as any type of bachelor's degree from a college/university), and 3) higher education (defined as education beyond a bachelor's degree—such as a master's degree). Occupations were divided into three categories depending on the intensity of physical labor required. They were categorized as involving intense physical labor (such as construction workers and carpenters), and as involving some physical labor (such as office jobs which placed some strain on the musculoskeletal system). Variables describing characteristics of patients included: mode of arrival, possession of a health card, regular attendance of PHCCs, and type of MSD-related presentation. As observed in the direct observations, some patients had a health card implying that the ability to purchase a health card is not a barrier for accessing PHCCs. Therefore, information on health card possession and previous attendance of PHCCs were collected to give insight on regular attendance of PHCCs, and to avoid assumption that cost is the underlying factor for driving ED attendance seeking the free of charge services. Mode of arrival was either by a taxi or a personal vehicle (labeled as privately here), a company car, or an ambulance. Company cars were private cars or buses provided by a patient's employer.

The diagnosis given by the ED physician was categorized into two groups of MSDs: acute or chronic (this categorization was based on guidelines from the Australian Acute Musculoskeletal Pain Guidelines Group (2004) and WHO guidelines (2003)). Patients presenting with pain for less than one month and not experienced previously were categorized as acute MSDs. Further, acute MSDs caused by falls or falling objects were categorized into acute trauma-related conditions. Patients with pain felt for one or more months, on a monthly or yearly basis (recurrent pain), and/or from a chronic condition were categorized as chronic MSDs. Chronic MSDs caused by old falls or old RTIs were further categorized into chronic trauma-related conditions (WHO, 2003).

Acute and chronic MSDs were classified into four different groups after consulting with orthopedic physicians at HMC and based on previous research (MacKay et al., 2010). The conditions were classified into: 1) Trauma and related conditions, 2) Arthritis and related conditions, 3) Bone and spinal conditions, and 4) Unspecified MSDs. The trauma and related conditions variable was defined as trauma caused by falls, sudden movement/lifting heavy objects, falling objects/hit against objects, sports-related trauma, and RTIs. Patients with any form of arthritis such as rheumatoid arthritis or gout were classified under the second category. Patients with unspecified back pain or chronic back/neck pain were classified under bone and spinal conditions. Patients with unspecified musculoskeletal pain such as leg or arm pain not related to any chronic MSDs or not caused by trauma were classified under unspecified MSDs.

Variables concerning patient's experience at the ED of HGH included length of stay (LOS), shift presentation, area treated, and treatment received. LOS was defined as time from patient registration to patient discharge as recorded by the designated nurse. Areas patient was treated in included: Male SnT, Male SnT triage, Female SnT, and MFT. The treatments each patient received were categorized into: 1) consultation only, 2) initial treatment such as an injection for immediate relief, 3) diagnostic test such as an X-ray, 4) orthotic such as a splint, and 5) referral to an outpatient department (OPD) or a PHCC.

To address the second aim of the study (exploring previous musculoskeletal health problems and treatment at other health facilities), information regarding the type of facility attended and treatment received were also gathered. Facilities attended include specialists at OPDs or physical therapy specialists. Treatments previously received include analgesics, physical therapy sessions, and surgery.

2.4.2 Themes

The primary investigator used an applied thematic analysis approach to analyze patient responses (Guest et al., 2012; Thomas & Harden, 2009). During the process of interviewing, responses were constantly being reviewed to identify patterns and trends. After the interview process was complete, interviews were transcribed verbatim and examined line by line to determine patterns and themes. Words or sentences explaining an underlying reason were coded and then reduced to one theme. For example, words such as “better treatment,” “faster,” “the center takes too long, and it’s easier here” indicated preference and coded under one key theme: preference and convenience. Patients gave responses that indicated the reason for their attendance to an ED by saying phrases such as, “my condition is an emergency.” They also gave responses that indicated the reasons for attending the ED of HGH in particular by saying phrases such as, “Hamad is the main hospital; I only come here.” Reasons that motivate patients to visit a physician in the ED were categorized into: (1) the main reason for attending the ED, and (2) the main reason for attending HGH’s ED in particular. The second category was divided into four sub-categories: preference and convenience, access, lack of knowledge, and influence by employer. Patterns regarding previous musculoskeletal health problems and treatment experienced at other facilities were determined through inquiring about the nature of previous condition (recurrent pain from chronic MSD or previous trauma), treatment received at other facilities, type of facility (PHCC vs. OPD), and current treatment.

3. Results

Interviews were conducted until saturation was reached and no new information was gathered from patients' responses. Attention was paid to maintain a 3:1 male to female ratio, and 4:1 non-Qatari to Qatari ratio roughly aligning to HGH's ED patient characteristics.

3.1 Patient Characteristics:

Out of 111 patients initially selected, 14 patients were excluded: eight patients due to being re-diagnosed as urgent cases, four patients due to language barriers and unavailability of a translator, and two patients due to experiencing severe pain placing them in a distressed state. A total of 97 patients met the inclusion criteria. Twelve patients required translation. As shown in Table 1, out of the 97 interviews, there were 68 (70%) men and 29 (30%) women interviewed. Of the 68 male patients, 54 (79%) were non-Qatari and 14 (21%) were Qatari. Twenty-one (72%) of the female patients were non-Qatari and eight (26%) were Qatari. The median age of all (female and male) patients was 35.5 years old (IQR, 27-44.2). Most patients had a primary education: 15 (52%) females and 46 (68%) males. Occupations varied by gender. There were more males than females, mostly non-Qatari, with occupations involving intense physical labor (40% of males). Fifty-two percent of females, specifically non-Qatari females, had no occupation, compared to 7% of males.

Table 1: Demographic information of patients with non-urgent MSDs at HGH's ED (N=97)

Age	
18-29	33 (34%)
30-44	39 (40%)
45-59	22 (23%)
60-69	1 (1%)
70-79	2 (2%)
Gender	
Female	29 (30%)
Male	68 (70%)
Nationality	
non-Qatari	75 (77%)
Qatari	22 (23%)
Language	
Arabic Speakers	61 (63%)
Non-Arabic Speakers	36 (37%)
Education	
No Education	6 (6%)
Primary Education/ Diploma	61 (63%)
Secondary education	28 (29%)
Higher Education	2 (2%)
Physical Labor	
Involving Intense physical labor	28 (28.9%)
Involving some physical labor/strain on musculoskeletal system	49 (50.5%)
Unemployed	20 (20.6%)
Attend Primary care facility regularly	
PHCC	31 (32%)
Private clinic	14 (14%)
None	52 (54%)
Non-Qatari: Health card/ Private insurance	
Yes	48 (64%)
No	27 (36%)

The most common MSDs were acute conditions, specifically acute trauma-related conditions experienced by males. Thirty four percent of patients had chronic MSDs where 10%

were related to an old trauma and patients presented to the ED because of feeling recurrent pain.

Table 2 describes MSDs further according to gender and nationality.

Table 2: Categorization of patients with non-urgent MSDs in the ED of HGH according to condition, gender, and nationality

Musculoskeletal Category	Female		Male		Total (n=97)
	non-Qatari (n=21)	Qatari (n=8)	non-Qatari (n=54)	Qatari (n=14)	
Acute	9 (42.9%)	3 (37.5%)	11 (20%)	2 (14.3%)	25 (26%)
Acute Trauma	5 (23.8%)	1 (12.5%)	27 (50%)	7 (50%)	40 (41%)
Chronic	5 (23.8%)	2 (25%)	13 (24%)	3 (21.4%)	23 (24%)
Chronic Trauma	2 (9.5%)	2 (25%)	3 (6%)	2 (14.3%)	9 (9%)

As shown in Table 3, more than half of the patients arrived privately (77.4%) where the remainder arrived by a company car (11.3%) or an ambulance (11.3%). Patients who arrived by the company car are all non-Qatari (only one was a female), have trauma-related conditions, and have occupations involving intense physical labor. Patients who arrived via an ambulance are all males, mostly non-Qatari (90%) with acute/chronic trauma-related conditions (36%) and chronic conditions (36%). Females attended the ED more often during the weekend than during the week; 58% of patients during the weekend were female and 77% of patient presentations during the week were male.

Table 3: Arrival of non-urgent MSD patients to the ED of HGH

Mode of Arrival	
Private	75 (77.32%)
Company Car	11 (11.34%)
Ambulance	11 (11.34%)
Time of day Arrival to the ED	
Shift 1	29 (30%)
Shift 2	30 (31%)
Shift 3	38 (39%)
Day during the week	
Weekday	78 (80%)
Weekend	19 (20%)

The number of presentations of patients varied across shifts when considering gender and nationality (as shown in Table 4). In terms of conditions and number of presentations during each shift, most non-trauma related conditions arrived during shift three. There was no variation in number of patient presentations across shifts among acute/chronic trauma-related conditions.

Table 4: Number of presentation of patients with non-urgent MSDs in the ED of HGH during various shifts according to nationality and gender

	Female		Male	
	non-Qatari (n=21)	Qatari (n=8)	non-Qatari (n=54)	Qatari (n=14)
Time of day Arrival to the ED				
Shift One	2 (10%)	2 (25%)	25 (46%)	–
Shift Two	4 (19%)	3 (37.5%)	14 (26%)	9 (64%)
Shift Three	15 (71%)	3 (37.5%)	15 (28%)	5 (36%)

3.2 Patient Conditions and Treatment at HGH's ED

Further classification of conditions revealed that trauma-related conditions were the most common conditions (47%) followed by bone and spinal conditions (25%), unspecified MSDs (19%), and arthritis and related conditions (9%). Among the females, unspecified MSDs were the most common followed by trauma-related conditions, bone and spinal conditions, and arthritis and related conditions. Among the males, trauma and related conditions were the most common followed by bone and spinal conditions, unspecified MSDs, and arthritis and related conditions. Table 5 describes MSD classification further in terms of nationality and gender.

Table 5: Display of MSDs classification by nationality and gender of patients at HGH's ED

	Female, Qatari (n=8)	Female, Non-Qatari (n=21)	Male, Qatari (n=14)	Male, Non-Qatari (n=54)
Arthritis and related conditions	1 (12.5%)	2 (9.5%)	2 (14.3%)	4 (7.4%)
Bone and Spinal Conditions	1 (12.5%)	7 (33.3%)	2 (14.3%)	15 (25.9%)
Trauma and related conditions	2 (25%)	6 (28.6%)	9 (64.3%)	29 (53.7%)
Unspecified MSDs	4 (50%)	6 (28.6%)	1 (7.1%)	7 (13%)

Only ten (19%) of non-Qatari males were triaged-out, where four patients had acute MSDs, three patients had chronic MSDs and three of the patients had trauma-related conditions.

Three (30%) of the ten patients triaged out received only consultation and a referral to a PHCC. The remaining six patients triaged-out received consultation and prescription for analgesics, and one received a referral to an OPD. As for treatment for patients in other areas, the majority received consultation and a prescription for analgesics. Those who received only a consultation or received treatment a consultation, prescription for analgesics, and an additional treatment (n=81 patients) are further described in Table 6.

Table 6: Treatment received to patients with non-urgent MSDs according to gender/area in the ED of HGH (N=81)

	Female SnT	Male SnT	Male SnT Triage	MFT
Consultation Only (n=6)	2 (33%)	–	3 (50%)	1 (17%)
Initial treatment (injection) (n=25)	10 (40%)	12 (48%)	–	3 (12%)
Diagnostic Test (n=39)	8 (20.5%)	26 (66.7%)	–	5 (12.8%)
Orthotic (n=12)	–	10 (83%)	–	2 (17%)
Referral to OPD (n=25)	6 (24%)	12 (48%)	1 (4%)	6 (24%)
Referral to PHCC n=11)	6 (55%)	2 (18%)	3 (27%)	–

Diagnostic tests were ordered the most for patients with trauma-related conditions (60%) in comparison to non-trauma related conditions (20%). Trauma-related conditions were also most often referred to an OPD (mostly an orthopedic specialist), and given an orthotic (such as a splint). Table 7 describes treatments received further according to condition.

Table 7: Treatment received in the ED of HGH according to MSD classification

	Arthritis and related conditions	Bone and Spinal Conditions	Trauma and related conditions	Unspecified MSDs
Consultation Only (n=6)	–	2 (33%)	2 (33%)	2 (33%)
Initial treatment (n=25)	5 (20%)	9 (36%)	8 (32%)	3 (12%)
Diagnostic Test (n=39)	–	3 (8%)	29 (74%)	7 (18%)
Orthotic (n=12)	–	–	12 (100%)	–
Referral to OPD (n=25)	3 (13%)	3 (13%)	16(67%)	3 (13%)
Referral to PHCC n=11)	1 (10%)	5 (45%)	2 (18%)	3 (27%)

The median LOS of all areas combined is 60 minutes (IQR: 35-90). The shortest LOS was 10 minutes, which was experienced by three patients (3%). Two of the three patients who stayed in the ED for 10 minutes were in the MFT for acute and acute trauma-related conditions and one non-Qatari in the female SnT for an acute condition. All three patients received consultation and treatment, and only one received a diagnostic test in the MFT. The longest LOS was 240 minutes experienced by a male, non-Qatari with chronic recurrent back pain, who arrived during shift three. The patient received consultation and medication, but insisted on obtaining an injection or a consultation by an orthopedic specialist prolonging his LOS. Table 8 presents the LOS of patients experienced in each area.

Table 8: Patient presentation in the ED of HGH's various areas, LOS and treatment received

LOS (in minutes)	Female SnT (n=29)	Male SnT Triage (n=10)	Male SnT (n=44)	MFT (n=14)	Total (n=97)
<=20	5 (17%)	6 (60%)	3 (6.82%)	7 (50%)	21 (22%)
<20 -<=60	15 (52%)	4 (40%)	13 (29.55%)	6 (43%)	38 (39%)
<60 -<=120	8 (28%)	–	21 (47.72%)	1 (7%)	30 (31%)
<120 - <=180	1 (3%)	–	5 (11.36%)	–	6 (6%)
<180 - 240	–	–	2 (4.55%)	–	2 (2%)

One factor that determines the LOS is the treatment received. For example, patients who received a diagnostic test spent a longer time in the ED than those who received only a consultation. Table 9 displays the LOS according to treatment of only the 81 patients who received a consultation or a consultation and injection diagnostic test, or orthotic. The remainder of patients received consultation and treatment.

Table 9: LOS of patients with non-urgent MSDs in the ED of HGH according to treatment received (less than a consultation and prescription or more than a consultation and prescription)

LOS (minutes)	Only Consultation (n=6)	initial treatment (injection) (n=25)	Diagnostic test (n=39)	Orthotic (n=12)	Total (n=81)
<=20	4 (66.6%)	4 (16.7%)	5 (13%)	–	13 (16%)
<20 - <=60	1 (16.7%)	9 (37.5%)	10 (26%)	5 (42%)	25 (30.9%)
<60 - <=120	1 (16.7%)	10 (41.7%)	18 (46%)	7 (58%)	36 (44.4%)
<120 - <=180	–	1 (4.2%)	4 (10%)	–	5 (6%)
<180 - 240	–	1 (4.2%)	1 (3%)	–	2 (2%)

3.2.1 Trauma and Related Conditions

Trauma-related conditions were mostly experienced by individuals ages 18-29 (41% of 46 patients with trauma and related), and 30-44 (35% of 46 patients). The most common cause of trauma was falls followed by sports-related injuries, falling objects/hit against objects (such as hit foot against a door), and sudden movement/lifting heavy object. Falls are experienced by more males than females at home more than at the job. The least common cause of trauma is due to RTIs experienced by three patients at least 48 hours before presenting to the ED. Table 10 further describes trauma and related conditions according to gender and nationality.

Nine (70%) of the 13 patients who experienced trauma from work-related activities have occupations that require intense physical labor and only three patients (23%) have jobs that involves some physical labor and one male has an office job.

Table 10: Representation of patients with non-urgent MSDs in the ED of HGH classified as Trauma and related conditions, the cause and location of trauma

		Female non-Qatari (n=6)	Female Qatari (n=2)	Total Female (n=8)	Male non-Qatari (n=29)	Male Qatari (n=9)	Total Male (n=38)	Total (n=46)
Falls		4 (66.7%)		4 (50%)	17 (58.6%)	4 (44.4%)	21 (55.3%)	25 (54.3%)
	Home	3 (50%)	--	3 (37.5%)	7 (24.1%)	3 (33.3%)	10 (2.6%)	13 (28.3%)
	Work-related	1 (16.7%)	--	1 (12.5%)	7 (24.1%)	--	7 (18.4%)	8 (17.4%)
	Other	--	--	--	3 (10.3%)	1 (11.1%)	4 (10.5%)	4 (8.7%)
Hit against object/falling object		1 (16.7%)		1 (12.5%)	3 (10.3%)	1 (11.1%)	4 (10.5%)	5 (10.9%)
	Home	--	--	--	1 (3.4%)	--	1 (2.6%)	1 (2.2%)
	Work-related	--	--	--	2 (6.9%)	--	2 (5.3%)	2 (4.3%)
	Other	1 (16.7%)	--	1 (12.5%)	--	1 (11.1%)	1 (2.6%)	2 (4.3%)
RTI		1 (50%)		1 (12.5%)	2 (6.9%)	--	2 (5.3%)	3 (6.5%)
	Home	--	--	--	--	--	--	--
	Work-related	--	--	--	--	--	--	--
	Other	--	1 (50%)	1 (12.5%)	2 (6.9%)	--	2 (5.3%)	3 (6.5%)
Sports trauma				--	4 (13.8%)	4 (44.4%)	8 (21.1%)	8 (17.4%)
	Home	--	--	--	--	--	--	--
	Work-related	--	--	--	--	--	--	--
	Other	--	--	--	4 (13.8%)	4 (44.4%)	8 (21.1%)	8 (17.4%)
Sudden movement/lift something heavy		1 (16.7%)	1 (50%)	2 (25%)	3 (10.3%)	--	3 (7.9%)	5 (10.9%)
	Home	--	1 (50%)	1 (12.5%)	1 (3.4%)	--	--	2 (4.3%)
	Work-related	1 (16.7%)	--	1 (12.5%)	2 (6.9%)	--	2 (5.3%)	3 (6.5%)
	Other	--	--	--	--	--	--	--

3.2.3 Unspecified Musculoskeletal conditions

Half of the patients were between ages 30-44, and 6 patients (33%) were ages 18-29. The most common unspecified MSDs were leg and knee pain followed by hand and arm pain. There was only one Qatari female who had chronic pain from an old trauma, and the remaining patients had acute conditions. Table 11 displays further description of patients with unspecified MSDs according to gender and nationality. Majority of patients in this group have office jobs (39%) followed by jobs involving some physical labor (28%) and jobs with intense physical labor (11%). Four patients (22%) had no occupations.

3.2.2 Bone and Spinal Conditions

Half of patients who had bone and spinal conditions were between the ages 30-44. Majority of patients had non-trauma related chronic conditions and experienced recurrent back pain; either unspecified or related to a back problem. Table 11 displays further description of patients with bone and spinal conditions according to gender and nationality. Most of the patients had office jobs (40%) followed by jobs involving intense physical labor (20%) and involving some physical labor (16%). Twenty percent of patients did not have an occupation.

3.2.4 Arthritis and Related Conditions

Patients who had arthritis and related conditions were mostly between ages 45-59 (33%) and the remaining in age groups 18-29, 30-44, and 70-79 (22% in each group). Most patients had arthritis and only two patient, non-Qatari males, with acute conditions: one with knee effusion and another with acute gout. Table 11 displays further description of patients with arthritis and related conditions according to gender and nationality.

Table 11: Description of MSDs according to nationality and gender

	Female non-Qatari (n=15)	Female Qatari (n=6)	Total Female (n=21)	Male non-Qatari (n=25)	Male Qatari (n=5)	Total Male (n=30)	Total (n=51)
Bone and Spinal Conditions	7 (46.7%)	1 (16.7%)	8 (38.1%)	14 (56%)	2 (40%)	16 (53.3%)	24 (47.1%)
Acute	3 (20%)	--	3 (14.3%)	2 (14.3%)	1 (20%)	3 (10%)	6 (11.8%)
Acute trauma	--	--	--	--	--	--	--
Chronic	3 (20%)	1 (16.7%)	4 (19%)	11 (44%)	1 (20%)	12 (40%)	16 (31.4%)
Chronic Trauma	1 (6.7%)	--	1 (4.8%)	1 (4%)	--	1 (3.3%)	2 (3.9%)
Unspecified Musculoskeletal Condition	6 (40%)	4 (66.7%)	10 (47.6%)	7 (28%)	1 (20%)	8 (26.7%)	18 (35.3%)
Acute	6 (40%)	3 (75%)	9 (42.9%)	7 (28%)	1 (20%)	8 (26.7%)	17 (33.3%)
Acute trauma	--	--	--	--	--	--	--
Chronic	--	--	--	--	--	--	--
Chronic Trauma	--	1 (16.7%)	1 (4.8%)	--	--	--	1 (2.0%)
Arthritis and related conditions	2 (13.3%)	1 (16.7%)	3 (14.3%)	4 (16%)	2 (40%)	6 (20%)	9 (17.6%)
Acute	--	--	--	2 (8%)	--	2 (6.7%)	2 (3.9%)
Acute trauma	--	--	--	--	--	--	--
Chronic	2 (13.3%)	1 (16.7%)	3 (14.3%)	2 (8%)	2 (40%)	4 (13.3%)	7 (13.7%)
Chronic Trauma	--	--	--	--	--	--	--

3.3 Main factors motivating patients to attend the ED instead of a PHCC

Themes for the main reasons for attending the ED included: **severe pain, perception of condition to be an emergency, and referral by a PHCC or another HMC hospital.** Each patient reported at least two reasons. The most common reason given by 61 (63%) of patients, both male and female, was to seek immediate relief for feeling severe, intolerable pain. Thirty eight patients (60%) who expressed severe pain to be their main reason had non-trauma related conditions; 20 (33%) had acute conditions and 18 (30%) had chronic conditions. One patient, a non-Qatari male with neck and chest pain said,

“I was working and I fell during the job. I fell this morning, I hurt my back. I immediately came here by the EMS. I have too much back pain, my company called the EMS”

Another male, non-Qatari patient with back pain said,

“I don’t get too sick very much. I don’t go to center or hospital. I have too much pain so I came here. I can’t wait for too long.”

The second most common reason expressed by 27 (29%) of the patients is the perception that the condition is an emergency and that their attendance to the ED is appropriate. Most patients who expressed this as the main reason had acute trauma-related conditions; this amounted to 16% of patients. This reason is more common among non-Qatari, males with trauma-related conditions.

A non-Qatari male said,

“Last night I had pain in my leg. This is from slipping and hitting a table. I usually go to health center for things like a cold, things I am supposed to go for. But not this, this is an emergency.”

The third most common reason for the remaining 9 (9%) patients was based on a referral from the ED of another HMC hospital or a PHCC and they were all acute trauma-related conditions caused by falls referred for suspected fractures. Out of the 9 patients, there were only two female and only one Qatari patient. Two referrals were made in order for the ED at HGH to refer to the orthopedic physician, the remainder were referrals for suspected fractures. ED physicians believed that the referrals were inappropriate, and patients who needed a referral to a specialist

should have been referred to an orthopedic physician directly from the PHCC or the private clinic since there is an established mechanism to do so and the patient has a non-urgent condition. Some patients had fractures and the ED physicians believed the case was urgent which could only be treated by a stabilizer (an orthotic). The patients were treatable at a PHCC since stabilizers were available to physicians there. A non-Qatari male patient with wrist pain who had fallen said,

“I went to the police clinic then they referred me to Hamad because they said they have an orthopedic specialist.”

Tables 12 and 13 display reasons in more detail according to gender, nationality, and MSD category.

Table 12: Representation of the primary reasons expressed by female patients with non-urgent MSDs for attending the ED of HGH

	non-Qatari (n=21)				Qatari (n=8)			
	Acute		Chronic		Acute		Chronic	
	Acute trauma	Other	Chronic Trauma	Other	Acute trauma	Other	Chronic Trauma	Other
Severe pain	3 (14.3%)	7 (33.3%)	5 (23.8%)	1 (4.8%)	1 (12.5%)	2 (25%)	2 (25%)	2 (25%)
Believe condition is an ER	–	2 (9.5%)	1 (4.8%)	–	–	1 (12.5%)	–	–
Referred by a PHCC or ED	2 (9.5%)	–	–	–	–	–	–	–
	Total Acute: 14 (66.6%)		Total Chronic: 7 (33.4%)		Total Acute: 4 (50%)		Total Chronic: 4 (50%)	

Table 13: Representation of the primary reasons expressed by male patients with non-urgent MSDs for attending the ED of HGH

	non-Qatari (n=54)				Qatari (n=14)			
	Acute		Chronic		Acute		Chronic	
	Acute trauma	Other	Chronic Trauma	Other	Acute trauma	Other	Chronic Trauma	Other
Severe pain	10 (18.5%)	9 (16.7%)	2 (3.7%)	10 (18.5%)	2 (14.3%)	2 (14.3%)	2 (14.3%)	1 (7.1%)
Believe condition is an ER	12 (22.2%)	2 (3.7%)	—	3 (5.5%)	4 (28.6%)	—	—	2 (14.3%)
Referred by a PHCC or ED	5 (9.3%)	—	1 (1.9%)	—	1 (7.1%)	—	—	—
	Total Acute: 38 (70%)		Total Chronic: 16 (30%)		Total Acute: 9 (64%)		Total Chronic: 5 (36%)	

3.4 Reasons for attending HGH's ED

The attendance of all patients in the ED of HGH in particular, except ones who were referred to HGH's ED, was influenced by factors such as: **preference and convenience, access, lack of knowledge, and influence by employer.** Table 14 displays a summary of the reasons according conditions to gender, nationality.

Table 14: A summary table of the reasons patients with non-urgent MSDs attend the ED of HGH according to gender, and nationality

	Female		Male		
Preference/Convenience	non-Qatari (n=11)	Qatari (n=5)	non-Qatari (n=23)	Qatari (n=10)	Total (n=49)
Acute	5 (45%)	1 (20%)	5 (22%)	2 (20%)	13 (27%)
Acute Trauma	2(18%)	1 (20%)	6 (26%)	3 (30%)	12 (24%)
Chronic	3 (27%)	1 (20%)	10 (43%)	2 (20%)	17 (35%)
Chronic Trauma	1 (10%)	2 (40%)	2 (9%)	3 (30%)	7 (14%)
Access	non-Qatari (n=4)	Qatari (n=3)	non-Qatari (n=6)	Qatari (n=2)	Total (n=15)
Acute	2 (50%)	2 (67%)	–	–	4 (26.7%)
Acute Trauma	–	–	5 (83%)	2 (100%)	7 (46.6%)
Chronic	1 (25%)	1 (33%)	1 (17%)	–	3 (20%)
Chronic Trauma	1 (25%)	–	–	–	1 (6.4%)
Lack of Knowledge	non-Qatari (n=2)	Qatari (n=0)	non-Qatari (n=12)	Qatari (n=1)	Total (n=15)
Acute	1 (50%)	–	5 (42%)	–	6 (40%)
Acute Trauma	–	–	5 (42%)	1 (100%)	6 (40%)
Chronic	1 (50%)	–	2 (17%)	–	3 (20%)
Chronic Trauma	–	–	–	–	–
Influence of employer	non-Qatari (n=2)	Qatari (n=0)	non-Qatari (n=7)	Qatari (n=0)	Total (n=9)
Acute	1 (50%)	–	1 (14%)	–	2 (22%)
Acute Trauma	1 (50%)	–	6 (86%)	–	7 (78%)
Chronic	–	–	–	–	–
Chronic Trauma	–	–	–	–	–

3.4.1 Theme 1: Preference and convenience

There was a common, perception among the patients interviewed and emergency staff consulted at HGH regarding the unfavorable process of seeking care at a PHCC. Whether the perception was developed from personal experience or from hearing about PHCCs, patients explained that waiting time for seeing a physician is “too long,” and the quality of assessment and treatment is inadequate. These were the main reasons influencing the decision of 49 patients interviewed (51% out of the 97 patients) to attend HGH’s ED in particular instead of a PHCC; 67% males and 33% female. Among the males, 33% are Qatari and 70% are non-Qatari. Among the females, 69% are non-Qatari and 31% are Qatari. The majority of patients (61% of 49

patients) explained that receiving care at the ED is “faster” and “easier” in comparison to receiving care at a PHCC. Patients that came to the ED because of severe pain believe that the length of time from arrival until receiving treatment is shorter at HGH’s ED than a PHCC. One non-Qatari male said,

“I came for check-up. The health center takes too long. I go, eight hours I wait for doctor. Waste my time. Many patients in every room. There are doctors but still long waiting time.”

Some patients believed that because HGH’s ED has full records of their medical history related to their musculoskeletal condition, it is “faster” for specialists to evaluate and provide treatment. Other patients believe that the health center will refer them to an emergency department anyway.

“I can go to any health center but they will refer me to the emergency anyways. It’s faster to come here. The health center hours are short, it is better here. When the condition is an emergency, they just take the person in.”

There were patients who also expressed that the ED was closer to their residence/job than the PHCC.

Some conditions require certain diagnostic tests or treatment by a specialist. Results of diagnostic tests in a PHCC take longer to obtain than in an ED. For those who need to be evaluated by a specialist, a referral is first written by a physician in a PHCC and then an appointment must be made with the specialist. This appointment could be months from the time a referral is written. When a referral is written in the ED, it is marked as priority indicating the need for an expedited appointment date at a specialist. In this study, patients who suspected the need for diagnostic tests and evaluations by a specialist (or knew they needed to be referred to a specialist for a known condition) came to the ED to expedite the process. Most of these patients had trauma-related conditions or recurrent pain from acute/chronic conditions. One non-Qatari male said,

“I came here because it is the main hospital. I want to be seen by a specialist but I need a referral. Can the doctor refer me?” Another male, Qatari said, “I fell on my knee at

home. I was not able to go anywhere else. My knee was hurting. It's easier to come here. I couldn't go to the specialist, they would need a referral first. Over here, it's easier, they have an x-ray."

The patient quoted above only received analgesics and physical therapy referral since he had back pain from an old fall.

Another non-Qatari, male said,

"I have back pain occasionally. I follow up at a clinic, but I need a referral to make an appointment to go there again. I'm in too much pain. I was told to go to a health center for referral, but now... I'm in too much pain. Can the doctor see me here? The specialist needs a referral."

The remaining 20 (41% of 49) patients believed that treatment at the ED is "better" in terms of care, assessment, communication, and treatment. Patients reported that PHCCs did not perform an adequate assessment which resulted in misdiagnosis and ineffective treatment. One patient, non-Qatari, male said,

"I come only when I feel very sick. But health center is not good. They just give medication without checking me or anything. It is better to come to Hamad"

A few unsatisfied patients came to the ED after seeing a physician at a PHCC for the same condition the same day or week. Some patients were frustrated with ineffective diagnosis and treatment at PHCCs and specialists, and believed that the solution could be found at HGH's ED.

A non-Qatari male who had visited a private clinic before coming to HGH's ED was worried because of increased pain and decided to come to HGH's ED. He explained:

"I went to Al Helal. I never go to doctors. My knee is still hurting so I came here after I went so I came here. If I have pain again, I wouldn't go to Al Helal again. I'll come here. There isn't much care there, here it is better. The doctor takes his time and explains to me my condition."

There was no significant variation in terms of gender, nationality or the type of musculoskeletal condition among patients observed for this particular sub-category.

3.4.2 Theme 2: Access

In previous studies, cost is a significant barrier to accessing health services in many countries (Uscher-Pines et al., 2013; Hoot, 2008; Masso et al. 2007). Cost as a barrier was also a common perception amongst HGH ED staff where many believed that the financial burden to access a PHCC (cost of purchasing a health card, cost of transportation, and other co-pay or medication expenses) is a main reason motivating non-Qatari patients to attend the ED of HGH and seek free of charge services. However, 64% of non-Qatari patients actually had a health card or private insurance, 47% attended a PHCC regularly, and 66% came privately at their own expense. Fifteen percent were not able to access PHCCs in this study; however, only three patients, non-Qatari, described that the cost of seeking care at a PHCC (including health card purchase, transportation, co-payment, and medication cost) was a reason to seek the free of charge care at HGH's ED. Twelve patients were not able to access a PHCC due to conflict between the hours of operation of PHCC and the time they needed immediate pain relief or the time they were able to attend a PHCC; 47% female and 53% male. Among the females, 57% were non-Qatari and among the males, 75% were non-Qatari. Most of the patients categorized under this sub-category had trauma-related conditions (53% of 15), and 13 (87% of the 15) attended a PHCC regularly. There were nine patients who reported that the PHCC was closed during the time they encountered severe pain or trauma and needed medical attention. Some patients were not able to leave their jobs (mostly men) or home (mostly women who relied on family members for transportation) during the active hours of operation of the PHCC. Since the only health facility available once they were able to seek care was HGH's ED, they came to the ED. A Qatari male expressed, *"I usually go to Al Lukhwia clinic but clinics are open at 9. If it was open, I would go there."* Another Qatari patient who believed her condition was an emergency said,

"We usually go to a health center. My whole family, they have all our records and everything. But today, I got pain and I got worried. I came to Hamad because it was the

closest and on the way home from my job. I came here because the health center would be closed by the time I reach them coming from work.”

Two patients identified the lack of a health facility or an ED near their homes as a barrier to accessing other care options. One patient, a non-Qatari female, who preferred a female physician, came to the ED at HGH after not finding a female physician during her visit to the PHCC.

3.4.3 Theme 3: Lack of Knowledge

There are PHCCs in various districts in Qatar, however, there is a lack of awareness among most non-Qatari’s regarding the existence and location of centers, the types of services available/offered, and requirements to seek care from those centers. There were 15 (15%) patients, only one Qatari male and two non-Qatari females, who were not aware of PHCCs and/or their services. Many non- Qatari patients explained that their lack of knowledge of available services in Doha is due to their recent arrival to Qatar. A female, non-Qatari patient expressed,

“I have been in Qatar for two months and my husband is only aware of Hamad. He did surgery here and he said it is a good hospital. I brought my daughter here before too. I would come back here, it has good enough doctors.”

One male, non-Qatari patient, who had a relative working at HGH also said,

“I have never visited a health center. I don’t know about it. I’ve been here for only eight months and didn’t visit a PHCC yet. I know a physician here at Hamad, but if I find out more about a PHCC I would go there.”

Five patients reported that they did not know what a PHCC is and only heard of the ED of HGH.

These patients did not express that the length of time spent in Qatar was a main reason for the lack of knowledge; most actually had been in Qatar more than a year. Two other patients, one Qatari, noted a lack of resources at PHCCs, such as X-rays, which they believed they needed.

However, it was confirmed by HGH staff that PHCCs are equipped with all necessary diagnostic tests including X-ray machines. The patient had not been aware of the full services provided at his designated clinic.

3.4.4 Theme 4: Influence of Employer

There were nine patients (9%) in this study who attended the ED of HGH due to employer influence. They were all non-Qatari; seven males and two females, with mostly trauma-related conditions. Most patients were not aware of the existence of a PHCC and were sent to the ED by their employer's transportation service; a company car. These patients were distinguished from patients in the already discussed sub-category, lack of knowledge, since they explicitly expressed coming to the ED of HGH upon their employer's advice. One male, non-Qatari patient explained,

"I don't know about health centers. I called the company and they brought me here. I came here with a company car. I only came here because the company sent me, but I usually do not go to the hospital."

3.5 Patients with previous musculoskeletal conditions: Past experience and treatment & current treatment

There were 36 (40%) patients who had a previous musculoskeletal health problem. Patients who had visited the ED of HGH or a PHCC/private clinic for the same condition recently and then attended the ED of HGH due to dissatisfaction with treatment were not included in this group. The majority of the 36 patients had non-trauma-related chronic MSDs who experienced recurrent pain from the same MSD. Table 15 displays the types of conditions experienced previously.

Table 15: Type of previous experience of musculoskeletal condition (n=36)

	Recurrent Pain (n=29)	Trauma triggered the pain of an old trauma (n=4)	Other Musculoskeletal Problem (n=3)
Acute			
unspecified MSDs	4 (13.8%)	--	--
Acute Trauma	--	--	--
Trauma and related conditions			2 (66.7%)
Chronic	--		--
Arthritis and related conditions	7 (24.1%)	--	1 (33.3%)
Bone and Spinal Conditions	15 (51.7%)	--	--
Chronic Trauma			
Trauma and related conditions	1 (3.4%)	4 (100%)	--
Bone and Spinal Conditions	1 (3.4%)	--	--
unspecified MSDs	1 (3.4%)	--	--
Total (n=36)	29 (80.6%)	4 (11.1%)	3 (8.3%)

Only 20 patients (55% of 36) received treatment at a PHCC, or a specialist in an outpatient department for their previous condition. None of the 20 patients had acute conditions. As shown in Table 16, most patients received more than one treatment. Patients who had non-trauma-related chronic MSDs received treatments such as analgesics, physical therapy, or a combination of both at a specialist. Patients who had previous trauma-related MSDs and received analgesics and physical therapy at a specialist. Five patients did not seek treatment for their condition at any health facility and relied on home remedies; they were mostly acute conditions (labeled *None* in Table 16). There were 11 patients who did not attend a PHCC or a specialist, instead they attended the ED of HGH every time they experienced recurrent pain.

Table 16: Treatments received by patients according to condition categorization of patients with non-urgent MSDs in the ED of HGH

	Trauma and related conditions (n=8)	Arthritis and related conditions (n=8)	Bone and Spinal Conditions (n=17)	unspecified MSDs (n=5)	Total (n=36)
Analgesic–s when in pain (injection)	1 (13%)	–	2 (12%)	2 (40%)	5 (14%)
Analgesics	5 (63%)	6 (75%)	10 (59%)	–	21 (58%)
Physical Therapy	1 (13%)	1 (13%)	1 (6%)	–	3 (8%)
Prosthetic	1 (13%)	–	–	–	1 (3%)
Surgery	–	1 (13%)	–	–	1 (3%)
None	–	–	4 (24%)	3 (60%)	7 (19%)
Total (n=36)	8 (22%)	8 (22%)	17 (47%)	5 (14%)	

Currently, only nine (25% of 36) patients, who often experience recurrent pain, are following up with their condition with a specialist regularly. The remainder (75%) rely on check-ups and treatment at the ED of HGH only when experiencing recurrent pain. Emergency physicians emphasized that it is common for patients to come to the ED when experiencing recurrent pain only for an injection and/or a prescription for an analgesic. A male, non-Qatari said,

“I just need medication. If medications were available at pharmacies, then I wouldn’t come here. I don’t want a referral or follow up with doctors.”

Patients with trauma-related conditions who had completed their treatment (for example, completed the prescribed physical therapy sessions) were not following-up with their specialist anymore. Patients explained the need for a new referral in order to re-visit the specialist every time they experienced recurrent pain is “difficult” to attain. They explained it required attending a PHCC, waiting for long hours to see a physician obtaining a referral. After the referral, they needed to make an appointment which could be months away. Many chronic patients with previous MSD-related health problems who were treated at specialists and still experienced

severe pain were frustrated from the ineffective treatments. They found relief only in analgesics that could be easily accessed at the ED. A non-Qatari, male patient expressed,

“I have disc from 2008. Today the pain got very bad. I saw many doctors before about this. They give me medications. Every doctor recommends something differently. Some recommend surgery and others don’t, only recommend physical therapy. I did it, but finished my sessions. Going to the doctors doesn’t help so much.”

A female, Qatari patient, expressed frustration from not finding relief by saying,

“I was diagnosed with arthritis 6 months ago. I have visited many doctors in private clinics. They only prescribe medication. Oh, and physical therapy as well. I came to Hamad today because they are only ones to help me. I couldn’t take it any longer. Each physician is giving me a different diagnosis.”

The emergency physician advised the patient to continue with medication prescribed and inquired regarding the types of specialists visited. After discharging the patient, the ED physician discussed the lack of consistency in following up with treatment from the patient, and the lack of management by the specialist and referral to the proper arthritis specialist. This frustration was also apparent in other cases among ED physicians themselves.

In the male, non-Qatari area, some triage ED physicians requested diagnostic tests and an initial treatment of an injection for some patients with severe pain. In several cases, the ED physicians carrying out secondary assessment after the initial treatment believed that such patients should have been triaged out instead and not given an injection. ED physicians expressed that some of the discrepancy in triaging patients is related to the variation in the initial judgment of the ED physician in triage. Some ED physicians who were more likely to triage out patients explained that patients who needed injections or analgesics could obtain such treatment at PHCCs, but since there was difficulty in accessing a PHCC, they saw no harm in ordering an injection for the sake of relieving the patient from the pain and then referring the patient to a PHCC or an appropriate specialist. There was also inconsistency in treatment for patients with trauma-related conditions who were often ordered diagnostic tests despite the lack of symptoms indicating an urgent case. Some ED physicians explained that this occurs often especially when the physician is not fully able to understand the patient when inquiring about the mechanism and

acuity of trauma due to language barriers. To ensure not triaging out an urgent case, ED physicians believed that the safest path was to order a diagnostic test. The inconsistency in triaging has left some ED physicians and staff with the impression that HGH does not have any protocols for triaging. ED physicians also discussed that there was a lack of understanding of ED use appropriateness, especially by frequent visitors of SnT and the MFT areas who ED physicians recognize and believe utilize the ED as primary care facilities. ED physicians recognized another common trend regarding visiting the ED frequently to obtain medical reports exempting the patient from work for several days. ED physicians discussed that patients attend the ED of HGH in particular to obtain a medical report for sick leaves from their employers since most employers did not rely on medical reports from other health facilities. In this study, 14 (14%) patients obtained a sick leave medical report where four came to the HGH specifically for it.

Emergency physicians had also shared the same opinion as the patients regarding quality of treatment in PHCCs. They believed that physicians at PHCCs lacked experience and knowledge, especially in regards to MSDs. Several ED physicians agreed that treatment of semi-urgent trauma-related conditions were appropriate in the ED only since PHCC physicians lack the skills in managing such patients. ED physicians discussed receiving many inappropriate referrals oftentimes with inadequate physician notes and diagnosis. They attributed the mismanagement to lack of training in MSDs, and suggested a constant updating of PHCC physicians of most common conditions and best practice for improved quality and reduced burden on the ED.

4. Discussion

This study clarifies the significance of determining factors motivating patients with non-urgent conditions to attend the ED instead of a PHCC in the context of specific health conditions. The only prior qualitative study to this study exploring reasons for patients with non-urgent conditions to attend the ED found that the majority were influenced by their employer to attend the ED, and that they did not have the government-issued health card enabling them to access PHCCs (Read et al., 2014). The results of the Read et al. (2014) were mostly experienced by non-Qatari females. In this study, 64% of the non-Qatari men and female patients had a health card or private insurance, yet 35% of those patients did not attend the PHCC on a regular basis. Rather, one main factor affecting ED attendance was the feeling of severe pain and/or lack of access (ability to attend a health facility in a timely manner) to a PHCC for immediate relief. Another main factor was the perceived severity and the belief that the condition required emergency care. Referrals from a PHCC or an ED of another HMC hospital were also factors driving the presentation of patients with non-urgent conditions in the ED of HGH. Majority of patients who experience trauma-related conditions that caused severe pain were alarmed and suspected a serious condition and the need for a specialist and diagnostic tests. Patients with acute conditions, who never experienced an MSD before, were also alarmed by the severe pain and suspected a serious condition and thus attended the ED. Choosing the ED could be due to the difference in the interpretation of the severity of the condition where patients believe their attendance to the ED is appropriate (Gaeiski et al., 2008). As determined in other studies, being alarmed to believe that a condition is serious can be explained by the anxiety developed from uncertainty, driving ED attendance to obtain an “expert’s” opinion (O’Cathain, 2008). Severe pain, perceived severity, and referrals are factors reported in previous studies investigating patients with non-urgent conditions attendance at the ED in the context of MSDs in the United

States, the United Kingdom, and Brazil (Stafford et al., 2013; Gaeiski et al., 2008; Fiahlo et al., 2013).

Variation in responses between patients with different characteristics and health status in this study and the Read (2014) study is expected and observed in other studies conducted in the same country/region focusing on non-urgent ED use (Stafford et al., 2013). For example, studies investigating patients with non-urgent conditions in the United States reveal preference, feasibility in accessing PHCCs for their urgent conditions (urgency as rated by patients), and limited financial ability as main reasons motivating patients with non-urgent conditions to attend the ED (Uscher-Pines et al., 2013; Hoot, 2008; Masso et al., 2007; Ragin et al., 2005). One study, also in the United States, focused on patients with low severity musculoskeletal complaints determined that seeking pain relief was the main driver for attending the ED (Gaeiski et al., 2008).

In this study, it was found that the underlying factors driving patients with non-urgent conditions to attend the ED of HGH in particular are related to preference and convenience. Results are similar to previous studies in Western and European countries (Hoot, 2008; Masso et al., 2007; Giesen et al., 2014). Convenience was defined by patients as the length of waiting time and feasibility in obtaining immediate relief for severe pain from PHCCs or making appointments at specialists. Other patients attended the ED due to preference of obtaining quality care from specialists in the ED of HGH and the OPD of HGH versus care from general physicians at PHCCs. Further interpretation of preference and convenience leads to the key findings regarding the main factors driving patients with non-urgent conditions to attend the ED: the unattainability of accessing PHCCs and specialists at OPDs, and the low quality care and treatment by primary care physicians as perceived by patients. Regardless of gender or nationality, majority of patients agreed that attending a PHCC and experiencing long waiting times only to result with inadequate assessment and evaluation, and ineffective treatment is a barren endeavor. Despite the

availability of government PHCCs in various parts of Qatar, patients can only access those designated to their district. PHCCs designation also varies according to nationality and gender where some PHCCs are only available to Qataris, females, or non-Qatari single males. There are only two PHCCs available to non-Qatari single males in Qatar. Resorting to the ED of HGH was the only other advantageous alternative known to most. Responses of patients in this study are similar to previous conclusions regarding patient satisfaction of health services in Qatar as reported in the National Health Accounts in 2011 (“Supreme Council of Health,” 2011). Most Qatari patients expressed that the MFT and the female SnT was the preferred option to obtain primary care on a regular basis. Such patients explained that HGH was the “main” hospital, and considered the two areas as an option among the available services for primary care in Qatar. ED physicians explained that the lack of understanding of the appropriate use of an ED leads to a majority of patients utilizing the SnT and the MFT areas as primary care facilities. Another contributing factor for choosing the ED of HGH over PHCCs was that employers only accepted medical reports for sick leave from staff at HGH. Medical reports not issued by HGH staff were not accepted by most employers due to the increased fraud of medical reports and sick leaves from the private sector. Only recently the Social Health Insurance scheme has rolled out a computerized system to monitor and track patient records with particular attention to sick leaves at private doctors (Walker, 2014).

Patients were not the only ones who resorted to the ED of HGH for better quality. PHCCs and EDs of other hospitals also relied on the expertise of HGH’s ED physicians. Emergency physicians had shared the same opinion as the patients regarding quality of treatment in PHCCs where they believed that physicians at PHCCs lacked experience and knowledge, especially in regards to MSDs. This is observed in the inappropriate referrals of trauma-related conditions for suspected fractures. Qatar could be experiencing lack of quality assessment and evaluation, referrals, and inadequate care due to the lack of confidence in MSD evaluation, and poor

education and training in medical schools of MSDs as found in various previous research studies in Brazil, Canada, and the United States (Fiahlo et al., 2013; Oswald et al., 2008; MacKay et al., 2010). It was determined that the lack of quality assessment leads to higher rates of many ill-diagnosed musculoskeletal-related conditions in the ED (MacKay et al., 2010).

The increased utilization of ED services for recurrent pain, instead of specialists as advised, and the expression of frustration from ineffective treatment also indicate the inconsistency of management and treatment of MSDs among specialists (in OPDs and the ED). In this study, more than half of the patients with chronic MSDs experiencing recurrent pain did not follow up with a specialist regularly as reported by the ED physicians of HGH. Patients with non-trauma related acute conditions and recurrent pain rely on analgesics from the ED and obtain injections for immediate relief most of the time. This behavior of frustration also indicates a health system that could be unfavorable for patients who need to reach specialists immediately. Protocols and guidelines on MSD management by the WHO and the National Institute for Health Care Excellence (NICE) recommend a holistic approach to managing MSDs incorporating sharing of information regarding the MSD, promoting activity and exercise appropriately, weight loss programs if necessary, and education on self-management. Guidelines also recommend continued review and long-term monitoring of symptoms (NICE, 2014). Regarding unspecified low back pain management, offering injections with therapeutic substances is not recommended, and continued monitoring of patient's condition is heavily emphasized (Savigny et al., 2009). Implementation of such guidelines could be lacking in the PHCCs in Qatar since the poor implementation of guidelines and low quality of care focusing on prevention is common in several Middle Eastern healthcare systems (Al-Ahmad et al., 2005; Mokdad et al., 2014).

Sharing of information on condition status and treatment plan is a critical component of adequate, effective consultation and treatment. Patient dissatisfaction is expected when these components are not addressed. Previous research reported that most patients with back pain seek

repeated care demanding clarifying information regarding condition and diagnosis (McPhilips-Tangum et al., 1998). One possible reason for the lack of information sharing in Qatar is language barriers hindering physician-patient communication. This was a concern expressed by Arabic-speaking physicians when treating non-Arabic or non-English speaking patients. They discussed the inability to fully understand patient's complaint and the difficulty in addressing their needs. This miscommunication can also misguide patients on the appropriate facilities to attend and treatments to pursue. A language barrier is a common issue in countries with demographics similar to Qatar. In a study in Saudi Arabia focusing on trends of ED utilization by Saudi nationals, patients were found to have difficulty communicating with non-Arabic physicians in PHCCs lowering their satisfaction of services (Alyasin et al., 2014).). In Qatar, language barriers is a challenge for migrant workers when navigating services in Qatar. This is observed in the lack of knowledge among non-Qatari patients regarding the existence of PHCCs, the designated PHCC to their district, and the types of services available at PHCCs.

Employers of non-Qatari residents are expected to provide insurance schemes as planned by the SCH when the Social Health Insurance scheme was initially rolled out (“Supreme Health Council”). However, employers oftentimes advise their patients to attend the HGH of ED if they do not have chronic diseases such as diabetes as it was observed in this study. The lack of knowledge is a concern to be addressed by employers or contractors who assist in recruiting migrant workers.

4.1 Implications for policy and practice

To address the issue of crowding in the ED of HGH by patients with non-urgent conditions, the SnT was established to treat less critical patients in 2010 (Saifeldeen et al., 2012). A consultant ED physician is also placed oftentimes at patient registration to assist with triaging, reducing consultation and LOS (Mason et al., 2014). However, crowding is still a major issue and initiatives to reduce the burden of patients with non-urgent conditions are ongoing at HGH.

In a systematic review of interventions aimed at reducing crowding at the ED, alternative walk-in centers have also proven to be successful in reducing the burden on EDs and fulfilling patient needs (Mason et al., 2014). This could be particularly useful in Qatar due to the limited availability of facilities to some populations such as non-Qatari single males. Other interventions could be focused on conveying a clear message of the appropriate use of the ED and spreading awareness of PHCCs. Consistency in triaging and treating only those who need urgent care as determined by HMC's triage protocols are ways to enforce conveying such message. Another point to be addressed by concerned policy makers aiming to reduce the burden of non-urgent ED use by migrant workers is obligating employers to provide insurance to their employees as originally expressed in the Social Health Insurance scheme. This is critical, especially since majority of patients who are attending the ED for non-urgent conditions are non-Qatari migrants,

Similar to the computerized monitoring system of sick leaves, establishing an electronic system monitoring patient record and treatment that is accessible by all PHCCs and HMC health facilities will contribute to better management of patients with MSDs. Cerner, an IT solutions company, has signed an agreement with HMC to establish such electronic system in 2012 ("Hamad Medical Corporation Signs a Landmark Agreement with Center," 2012). However, the system has not yet been fully implemented in all HMC hospitals. Moving forward with such a system could be essential in patient management. For patients with recurrent pain and/or conditions that require a specialist, feasibility in access is critical. As suggested by some ED physicians, modification of the existing referral system to include a priority emphasizing urgency of an appointment accepted from PHCCs and not only the ED of HGH is one method to achieve accessibility.

The issue of quality has proven to be a key factor driving patients to attend the ED of HGH. Increasing the knowledge of primary care physicians at PHCCs, and enforcing the implementation of available guidelines in MSD management in PHCCs can further improve

quality of care of musculoskeletal-related conditions. This will also help with enforcing preventive care, which is effective as emphasized by recent WHO reports (Woolf & Akesson, 2011). Recommendations of enforcing guideline implementation is not only limited to MSDs. Guidelines are applicable to other chronic conditions (Savigny et al., 2009), and in turn it is expected that issues found here and solutions proposed regarding MSDs are also applicable to other chronic conditions.

4.2 Implications for further research

Many interventions in various countries have been executed to reduce the burden of non-urgent ED use; however, these interventions are tailored to address the main factors driving patients with non-urgent conditions to attend the ED specific to those countries. The aim of this study is limited to understanding the attendance of the ED of HGH by patients with non-urgent MSDs in particular. Therefore, findings are not necessarily generalizable to other populations in Qatar. Future studies focusing on characterizing patients in the ED of HGH will further broaden the understanding of non-urgent ED use in Qatar. Furthermore, characterizing patient healthcare utilization in the same manner for comparison purposes will reveal the patient burden on HGH in respect to other health facilities. Hence, existing, effective interventions aiming to reduce increased ED use could be tailored to factors and characteristics found in studies.

It is speculated that MSDs are neglected because initiatives are directed towards diseases, which cause high mortality rates; MSDs are associated with high rates of morbidity and low mortality rates. Another possible reason is the wide range of complex conditions, which encompass MSDs (Woolf & Erwin, 2012). Determining the burden of MSDs and the highest at-risk population is critical in order to address the best evidence-based prevention and control strategies provided by the Bone and Joint Decade in 2000 (Woolf & Erwin, 2012). The Global Burden of Diseases has determined which MSDs contribute the most to the disease burden in Qatar, but impact of MSDs on Qatar's disease burden and economy has not been extensively

studied. Studies focusing on the healthcare utilization of patients with MSDs of HGH, other HMC facilities and PHCCs will further contribute to the understanding of the impact of MSDs on Qatar's healthcare. Analysis of the cost burden of MSDs on healthcare, health expenditure, and Qatar's economy is also necessary to highlight the rising burden of MSDs.

In terms of MSD management, observations regarding the treatment of musculoskeletal patients in the ED were limited in this study to only the types of treatment. This calls for future research studies focusing on comprehensive patient evaluation and treatment in the ED, other HMC facilities, and PHCCs. Such research studies will reveal weaknesses and gaps determining key points of improvement regarding musculoskeletal management and contribute to reducing MSD's rising burden.

5. Limitations

One limitation was language barrier which limited communication between the primary investigator and patients who did not speak English nor Arabic. The primary investigator was also not able to interview patients who were experiencing severe pain. One weakness of this study is carrying it out during the Islamic month of Ramadan¹. The ED Statistics report that the highest number of new patient presentation is during shift 3 (41%) and the lowest is during shift 2 (20%). In this study, the number of patient presentations did not vary across shifts. This is possibly due to the change in the hours of operation of PHCCs during the month of Ramadan influencing patient presentation times and reasons for attending the ED of HGH. It was observed in this study that many patients attended the ED of HGH breaking fast and prayer as well shifting time of day attendance trends. Some patients expressed preferring the ED of HGH due to distance. In this study, this could not be further investigated since PHCCs were designated by district and majority of patients did not know the exact district their residence was classified under.

¹ The month of Ramadan is the ninth month of the Islamic calendar where Muslims fast. Fasting is one of the five pillars of Islam where Muslims abstain from food, drink, martial relations and ill-conduct from dawn until sunset every day through the month (“2014 Month of Ramadan Information, 2014)

6. Conclusion

This is the first qualitative study in Qatar to determine reasons motivating patients with non-urgent MSDs (both male and female, Qatari and non-Qatari) to attend the ED of HGH. Overall, the findings of preference and access in a timely manner were similar to previous studies (Field & Lantz, 2006; Masso et al., 2007; Fiahlo et al., 2013; Stafford et al., 2013). However, this study also reveals another factor driving the behavior of a significant portion of Qatar's population to the ED for non-urgent conditions: the lack of knowledge of the existence of PHCCs.

There was variation in the main reason for attending the ED according to type of MSD. For example, patients with trauma-related conditions, who suspect their condition to be an emergency and believe they need diagnostics and a consultation by a specialist, prefer the ED since all services are available in one place. Patients with recurrent, severe pain seeking immediate relief prefer the ED for faster treatment and/or referral to specialists as needed. Factors driving non-urgent ED use are related to factors experienced outside the ED of HGH. Preferring the ED over PHCCs stem from inaccessibility to immediate care and low quality care in PHCCs. Quality care and feasibility could be addressed by increasing accessibility to PHCCs to patients with conditions requiring immediate attention. However, increasing PHCC accessibility alone is ineffective, quality of care should also be addressed alongside (van Uden et al., 2006; Martin et al., 2002; Gaieski et al., 2008). WHO and NICE recommends holistic approaches to managing MSDs effectively; however, many patients in Qatar have only received limited physical therapy sessions and rely on analgesics for recurrent pain. Few patients expressed continuing treatment with the appropriate specialist, and none discussed physician recommendations of customized exercise or other approaches other than analgesics for pain relief. An effort towards improving quality of assessment, evaluation, and treatment of patients with MSDs is critical in the prevention and reduction of the MSD burden of disease in Qatar.

Issues of lack of knowledge could be addressed by obligating employers to inform and provide non-Qatari's of health services upon arrival. Future research focused on characterizing patients in the ED of HGH will highlight key factors contributing to non-urgent ED use. Findings will help policy makers set priorities and focus initiatives aiming to reduce the burden on HGH. Research investigating health care utilization by patients with MSDs and treatment provided can also reveal impact of MSDs on society and healthcare. Addressing issues that arise in research will help with reducing MSD burden and advance prevention measures.

Appendix A

Duke University-DGHI

Hamad General Hospital, Emergency Department

Factors driving patients with non-urgent MSDs to attend the ED at HGH instead of a PHCC.

Interview Questions

Date:

Shift:

Area:

Interview conditions

Reasons for attending the ED:

Probes for discussion

1. Chief Complaint:
2. How did it happen? What is the cause of your pain?
3. Have you had this condition for a while? How long?
4. Was HGH the closest health facility to your residence or the health center?

Primary Care Access:

Probes for discussion

5. Have you seen any physicians regarding this condition in a health center in Qatar?
6. What kind of treatment did you receive for this condition before?
7. Do you have a health card?
8. How do you reach the health center?
9. How did you arrive here today?

Demographic information:

Nationality:

Gender:

Age:

Education:

Occupation:

Residential Area:

Date of Arrival to Qatar (mm/yy):

Nearest Health center:

Medical condition:

Diagnosis:

Treatment received:

Time of discharge:

References

- Alyasin, A., Douglas, C. (2014) Reasons for non-urgent presentations to the emergency department in Saudi Arabia. *International Emergency Nursing*, 22(4), 220-5. doi: 10.1016/j.ienj.2014.03.00.1
- Australian Acute Musculoskeletal Pain Guidelines Group. (2004). Evidence-based management of acute musculoskeletal pain: a guide for clinicians. *National Health and Medical Research Council Australian Government*. Retrieved November, 2014, available from: <https://www.nhmrc.gov.au/guidelines-publications/cp94-cp95>.
- Authoritative information and statistics to promote better health and wellbeing. (2014). Health-care expenditure on arthritis and other musculoskeletal conditions 2008-2009. *Australian Institute of Health and Welfare Australian Government*, 20, 57. Retrieved December 17, 2014, available from: <http://www.aihw.gov.au/publication-detail/?id=60129548392>.
- Bener, A., Al Mazroei, A. (2010, August). Health services management in Qatar. *Croat Medical Journal*, 51, 85-88. doi: 10.3325/cmj.2010.51.85.
- Bener, A., Zirie, M. A., Kim, E.J., Al Buz, R., Zaza, M., Al-Nufal, M., Basha, B., Hillhouse, E. W., Riboli, E. (2013). Measuring burden of diseases in a rapidly developing economy: State of Qatar. *Global Journal of Health Science*, 5(2), 134-144. doi: <http://dx.doi.org/10.5539/gjhs.v5n2p134>.
- Carlson, J., Menegazzi, J., Callaway, C. (2012, August). Magnitude of national ED visits and resources utilization by the uninsured. *American Journal of Emergency Medicine*, 722-726. doi: 10.1016/j.ajem.2013.01.001.
- Chmiel, C. A. H., Rosemann, T., Zoller, M., Eichler, K., Sidler, P., Senn, O. (2011). Walk-ins seeking treatment at an emergency department or general practitioner out-of-hours service: a cross-sectional comparison. *BioMed Central Health Services Research*, 11, 1-10. doi: 10.1186/1472-6963-11-94.
- Durand, A. C., Gentile, S., Devictor, B., Palazzolo, S., Vignally, P., Gerbeaux, P., Sambu, R. (2011). Ed patients: how nonurgent are they? Systematic review of the emergency medicine literature. *American Journal of Emergency Medicine*, 29, 333-345. doi:10.1016/j.ajem.2010.01.003.
- van Charante, E. P., van Steenwijk-Opdam, P. CE., Bindels, P. JE. (2007). Out-of-hours demand for GP care and emergency services: patients' choices and referrals by general practitioners and ambulance services. *BioMed Central Family Practice*, 8(46). doi:10.1186/1471-2296-8-46.
- Fiahlo, S.M., Glaucio, R. C., Zimmermann, A. F., Riberio, G. G., Neves, F. S., Pereira, I. A., Fialho, G. L. (2011) Musculoskeletal system assessment in an emergency room. *The Brazilian Journal of Rheumatology*, 51(3), 240-248.

- Field, S., Lantz, A. (2006). Emergency department use by CTAS Levels IV and V patients. *Canadian Journal Emergency Medicine*, 8(5), 317-322.
- Gaieski, D. F., Mehta, S., Hollander, J. E., Shofer, F., Bernstein, J. (2008). Low-severity musculoskeletal complaints evaluated in the emergency department. *Clinical Orthopedics and Related Research*, 466(8), 1987-1995. doi: 10.1007/s11999-008-0277-5.
- Global Burden of Disease. (2010) GBD Profile: Qatar. *Institute for Health Metrics and Evaluation*. Retrieved March 10, 2014, available from: www.healthmetricsandevaluation.org.
- Guest, G., MacQueen, K., M., Namay, E., E. (2012). Applied Thematic Analysis: Introduction to applied thematic analysis. Retrieved March 10, 2015, available from: http://www.sagepub.com/upm-data/44134_1.pdf.
- Hamad Medical Corporation. Retrieved August, 2014, available from <http://www.hamad.qa/en/index.aspx/>.
- Hamad medical corporation signs a landmark agreement with center. (2012). *Cerner*. Retrieved March 11, 2015, available from: http://www.cerner.com/about_cerner/newsroom/hamad_medical_corporation_signs_agreement/.
- Higginson, I. (2012). Emergency department crowding. *Emergency Medicine Journal*, 29, 437-443. doi:10.1136/emmermed-2011-200532.
- Hoot, N., Aronsky, D. (2008, August). Systematic review of emergency department crowding: causes, effects, and solutions. *Health Policy and Clinical Practice/Review Article*, 52(2), 126-136. doi:10.1016/j.annemergmed.2008.03.014.
- MacKay, C., Canizares, M., Davis, A. M., Badley, E. M. (2010, February). Health care utilization for musculoskeletal disorders. *Arthritis Care & Research*, 62(2), 161-169. doi: 10.1002/acr.20064.
- Mai, X., Wong, T., C., Wong, S., Y., Chin, K., S., Tsui, K., L., Hsia, R., Y. (2013). Dealsy in service for non-emergent patents due to arrival of emergent patients in the emergency department: a case study in Hong Kong. *The Journal of Emergency Medicine*, 45(2), 271-280. doi: <http://dx.doi.org/10.1016/j.jemermed.2012.11.102>.
- Masso, M., Bezzina, A., J., Siminski, P., Middleton, R., Eager, K. (2007). Why patients attend emergency departments for conditions potentially appropriate for primary care: Reasons given by patients and clinicians differ. *Emergency Medicine Australia*, 19, 333-340. DOI: 10.1111/j.1742-6723.2007.00968.x.
- Mason, S., Mountain, G., Turner, J., Arain, M., Revue, E., Weber, E., J. (2014). Innovations to reduce demand and crowding in emergency care; a review study. *Scandinavian Journal of*

trauma, resuscitation & emergency medicine, 22-25. Retrieved March 14, 2015, available from: <http://www.sjtrem.com/content/22/1/55>.

McBeth, J., Jones, K. (2007), Epidemiology of chronic musculoskeletal pain. *Best Practice & Research Clinical Rheumatology*, 21(3), 403-425. doi:10.1016/j.berh.2007.03.003.

McCaig, L. F., Nawar, E. W. (2006). National hospital ambulatory medical care survey: 2004 emergency department summary. *Advance Data from Vital and Health Statistics: National Center for Health Statistics*, 372, 1-30.

McPhilips-Tangum, C., A., Cherkin, D., C., Rhodes, L., A., Markham, C. (1998). Reasons for repeated medical visits among patients with chronic back pain. *Journal of General Internal Medicine*, 13, 289-295. Retrieved March 12, 2015, available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1496956/pdf/jgi_93.pdf.

Mclean, S., L., Bayley, E., W., Cole, F., L., Bernardo, L., Lenaghan, P., Manton, A. (1999, August). The LUNAR project: a description of the population of individuals who seek health care at emergency departments. *Journal of Emergency Nursing*, 25(4), 270-282.

Mokdad, A., H., Jaber, S., Aziz, M. I A., AlBuhairan, F., AlGhaithi, A., AlHamad, N., M., et al. (2014, January). The state of health in the Arab world, 1990-2012: an analysis of the burden of diseases, injuries, and risk factors. *The Lancet*, 383, 309-320. doi: [http://dx.doi.org/10.1016/S0140-6736\(13\)62189-3](http://dx.doi.org/10.1016/S0140-6736(13)62189-3).

Moore, G., Gerdtz, M., Manias, E., Hepworth, G., Dent, A. (2007). Socio-demographic and clinical characteristics of re-presentations to an Australian inner-city emergency department: implications for service delivery. *BMC Public Health*, 7, 320. doi:10.1186/1471-2458-7-320.

Morgan, A., Burgess, S. (2011) What is health emergency? The difference in definition and understanding between patients and health professionals. *Australian Health review*, 35, 284-289. doi: 10.1071/AH10922.

Morris, Z.S., Boyle, A., Beniuk, K., Robinson, S. (2011). Emergency department crowding: towards an agenda for evidence-based intervention. *Emerg Med J*, 29(6), 460-6.

Musculoskeletal disorders. (2012, December 18). Retrieved February 24, 2015, available from <http://www.cdc.gov/niosh/programs/msd/>.

Musculoskeletal Conditions. (2014). *National Institute for Health and Care Excellence*. Retrieved February 24, 2015, available from: <http://www.nice.org.uk/guidancemenu/conditions-and-diseases/musculoskeletal-conditions>.

Nagree, Y., Camarda, V. J., Fatovich, D. M., Cameron, P. A., Dey, I., Gosbell, A. D., McCarthy, S. M., Mountatin, D. (2013). Quantifying the proportion of general practice and low-acuity patients in the emergency department. *MJA*, 198(11), 612-6115. doi:10.5694/mja12.11754.

O’Cathain, A., Coleman, P., Nicholl, J. (2008, April). Characteristics of the emergency and urgent care system important to patients: a qualitative study. *Journal of Health Services Research & Policy*, 13(2), 19-25. doi: 10.258/jhsrp.2007.007097.

Oswald, A. E., Snell, B. L., Wiseman, J. (2008, July 4). The current state of musculoskeletal clinical skills teaching for pre-clerkship medical students. *The Journal of Rheumatology*, 35, 2419-36. doi: 10.3899/jrheum.080308.

Qatar Health System. *Supreme Health Council*. Retrieved March 10, 2015, available from: <http://www.sch.gov.qa/health-services/services-to-public/qatar-health-system>.

Ragin, D., F., Hwang, U., Cydulka, R., K., Holson, D., Haley Jr, L., L., Richards, C., F., et al. (2005, December). Reasons for using the emergency department: results of the EMPATH study. *Academic Emergency Medicine*, 12 (12), 1158-1160. doi: 10.1197/j.aem.2005.06.030.

Read, J. G., Varughese, S., Cameron, P. A. (2014). Determinants of non-urgent emergency department attendance among females in Qatar. *Qatar Medical Journal*.

Saifeldeen, K. A., Cameron, P. A., Oddy, J. (2012). ‘See and Treat’ model of care at Hamad General Hospital [Abstract]. *Health and Biomedicine*. doi: <http://dx.doi.org/10.5339?qfarf.2012.BMP18>.

Savigny, P., Kuntze, S., Watson, P., Underwood, M., Ritchie, G., Cotterell, M., et al. (2009). Low Back Pain: early management of persistent non-specific low back pain. *National Collaborating Centre for Primary Care and Royal College of General Practitioners*.

Schwartz, M., P. (1995, October). Office or emergency department? What’s the difference. *Southern Medical Journal*, 88(10), 1020-1024.

Stafford, V., Greenhalgh, S., Davidson I. (2013). Why do patients with simple mechanical back pain seek urgent care? *Physiotherapy*, 100(2014), 66-72. doi: <http://dx.doi.org/10.106/j.physio.2013.08.001>.

Statistics Authority (2011), *Labor Force Survey by Sample, State of Qatar*.

Supreme Council of Health. (2011). Qatar National Health Accounts-1st report years 2009-2019: a baseline analysis of health expenditure and utilization. *Policy Affairs Directorate Supreme Council of Health*, 1-57.

Thomas, J., Harden, A. (2009). Methods for the thematic synthesis of qualitative research in systematic reviews. *ERSC National Centre for Research Methods*, 10(7), 1-19. Retrieved February 10, 2015, available from: http://eprints.ncrm.ac.uk/468/1/1007_JTAHthematic_synthesis.pdf.

Walker, L. (2014). Qatar launches sick leave monitoring system with private doctors. *Doha News*. Retrieved January 20, 2015, available from: <http://dohanews.co/qatar-launches-sick-leave-monitoring-system-private-doctors/>.

World Health Organization. (2009). Country cooperation strategy for WHO and Qatar. *WHOEMRO*. Retrieved February, 2014, available at: http://www.who.int/countryfocus/cooperation_strategy/ccs_qat_en.pdf?ua=1.

World Health Organization. (2003). The burden of musculoskeletal conditions at the start of the new millennium. *WHO Scientific Group*, 919, 3-218.

World Health Organization. (2003). International classification of external causes of injury (ICECI). *WHO*. Retrieved February, 2014, available from: <http://www.who.int/classifications/icd/adaptations/iceci/en/>.

Woolf, A. D., Akesson, K. (2001, May 5). Understanding the burden of musculoskeletal conditions. The burden is huge and not reflected in national health priorities. *British Medical Journal*, 322,1079. doi: <http://dx.doi.org/10.1136/bmj.322.7294.1079>.

Woolf, A., D., Erwin, J. (2012). The need to address the burden of musculoskeletal conditions. *Best Practice & Research: Clinical Rheumatology*, 2(2), 183-224. doi:10.1016/j.berh.2012.03.005.

Woolf, A. D., Pfleger, B. (2003). Burden of major musculoskeletal conditions. *Bone and Joint Decade 2000-2010 Bulletin of World Health Organization*, 81(9), 646-656.

Van Uden. C. J., Wikens. R. A., Wesseling, G. J., Crebolder, H. F., van Schayck, C. P. (2006). Use of out of hours services: a comparison between two organizations. *Emergency Medicine*, 20, 184-187. doi: 0.1136/emj.20.2.184.

Vos, T., Flaxman, A.D., Naghavi, M., et al. (December, 2012). Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the global burden of disease study 2010. *Lancet*, 380, 2163–2196. doi: [http://dx.doi.org/10.1016/S0140-6736\(12\)61729-2](http://dx.doi.org/10.1016/S0140-6736(12)61729-2).

Yelin, H., E., Cisternas, M., Watkins-Castillo, S., I. (2013). The burden of musculoskeletal diseases in the United States. *Bone and Joint Initiative USA*. Retrieved March 14, 2015, available from: <http://www.boneandjointburden.org/2014-report/x0/economic-cost>.

2014 Month of Ramadan Information. (2014). *Islamic Foundation of Toronto*. Retrieved April 15, 2015, available from: <http://www.islamicfoundation.ca/ramadan.aspx>