

**REASONS FOR ENCOUNTER AND DIAGNOSES AT PRIMARY CARE LEVEL  
IN KLIPFONTEIN SUBDISTRICT, CAPE TOWN METROPOLE.**

**SUBMITTED BY**

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**YEAR: 2010**

## **RESEARCH DECLARATION**

I, the undersigned, hereby declare that the work contained in this assignment is my original work and that I have not previously submitted it, in its entirety or in part, at any university for any degree.

Signature: .....Dr J Kumari

Date: 27/11/2010

## **ABSTRACT**

**Aim:** To enumerate the reasons for encounter (RFE) and the diagnoses (pre-existing or new) of patients seen in Klipfontein sub-district of the Western Cape.

**Design:** Prospective, cross-sectional survey.

**Methods:** The International Classification of Primary Care -2 (ICPC-2) was used to code data collected over a 9-month period (Oct 09 to June 10) on five different days of the week from patients presenting at primary care facilities in the Klipfontein sub-district (Doctor Abdurahman, Heideveld, Hanover park and Gugulethu CHC). This study was part of a larger project that collected the same data in primary health facilities in other parts of the Western Cape, as well as the Northern Cape, North West and Limpopo Provinces.

**Results:** During the study, 1985 patients (male 697, female 1288) were seen and resulted in 4241 RFE and 3565 diagnoses.

The top twenty RFE in descending order of frequency were: cough, headache, appointments related to the cardiovascular system (mostly hypertension), visit for results related to cardiovascular system, backache, appointments related to the endocrine system (mostly diabetes), cardiovascular system follow up-unspecified, joint symptoms, localized abdominal pain, tiredness, pruritus, leg pain, sneezing, throat symptoms, dysuria, generalized body pain, vomiting, localized rash, diarrhoea, generalized rash. The top twenty diagnoses presented were uncomplicated hypertension, diabetes, arthritis, upper respiratory tract infections, asthma, tuberculosis, urinary tract infection, lower respiratory tract infection, allergic rhinitis, chronic obstructive pulmonary disease, gastroenteritis, complicated hypertension, ischemic heart disease, HIV/AIDS, fibromyalgia/muscle pain, epilepsy, high cholesterol, eczema, gastritis and heart failure.

### **Conclusions:**

This survey has identified the range of RFEs and diagnoses amongst patients attending ambulatory primary care in provincial health centres within the Klipfontein sub-district, Cape Town. Non-communicable chronic diseases and infectious diseases such as respiratory tract infections and gastroenteritis made up the majority of consultations. HIV/AIDS, TB, maternal and child health as well as trauma were all under represented relative to the burden of disease. Mental disorders were also poorly recognized relative to their expected prevalence. The findings have implications for district managers, guideline developers and those responsible for the training of primary care providers.

## **INTRODUCTION**

Primary health care in South Africa is predominantly provided by clinics and health centers. After 1994 many clinics and health centers were upgraded or developed to strengthen primary care services. Medical problems needing further management are referred to district hospitals or higher levels of care.<sup>1</sup> In 1994, the government opted for a primary care-led system of health care, to ensure equitable access for all.<sup>2</sup>

Despite a continued improvement in access to health care for the majority in South Africa, the system is still undergoing considerable health care challenges such as the shortage of healthcare providers and an overwhelming burden of disease.<sup>3</sup>

The quadruple burden of disease has been described as infectious diseases such as HIV/AIDS and tuberculosis, emerging chronic diseases such as asthma, diabetes and hypertension, violence and trauma related issues as well as maternal and child health.<sup>4</sup> It is of great importance that a clear approach is adopted in order to deal with these issues and primary care must be focused on and revitalized as it is the common point of entry for most ailments.

The burden of disease study in South Africa is based on mortality register data and extrapolation from other studies.<sup>4,5,6</sup> This work however does not shed light on how these diseases present at the primary care level and how primary care providers should be best trained to assess and diagnose them. A study of why people actually attend primary care facilities and what diagnoses they receive will complement the work on burden of disease.

Although many countries have conducted morbidity surveys in primary care (for example Nigeria<sup>7</sup>, Sri Lanka<sup>8</sup>, China<sup>9</sup>, Australia<sup>10</sup>, USA, Netherlands, Poland and Japan<sup>11</sup>) there is a shortage of published data on the reasons for encounter (RFE) and diagnoses in South Africa primary health care and currently there are no large scale up-to-date studies detailing the reasons for encounter in the country. The few published studies of this nature conducted are either outdated or have narrow geographic representation, as shown in Table 1 below. For example, three of the morbidity studies were conducted in Cape Town. Additionally, most studies have focused on doctors although the majority of public sector primary care in the country is provided by the nurses.<sup>12</sup>

**Table1: Morbidity studies at primary level in South Africa** <sup>12,13,14,15</sup>

<b>Reference</b>	<b>Setting</b>	<b>No. of patients</b>	<b>Provider</b>	<b>Public/private</b>
Mfenyana et al, 2010	Eastern Cape	4383	Nurses	Public
Data from Sparks reported in Mash B, Mfenyana K 2005	Gauteng	8335	Doctor	Both
Bloom,et al, 1988	Cape Town	64959 in 13 practices	Doctors	Private GPs
De Villiers et al,1994	Cape Town	680 in day hospitals. 3718 in 2 private practices	Clerk, nurse, doctor	Both
Silbert, 1970	Cape Town	50636	Doctors	Private GPs

Guidelines can assist with the adequate assessment of RFE and the appropriate management of conditions that are diagnosed. Training of PHC providers (doctors, clinical associates, nurses) should also be aligned with the common RFE and conditions diagnosed as well as appropriate guidelines to ensure that they are competent to deal with the challenges of primary care. With the help of appropriate guidelines, nurses alone could offer better treatment and compensate for the shortage of doctors in the areas of need. This will be more effective if their training is based on the common RFEs and diagnoses.<sup>16</sup> It is important for the protocol developers to formulate evidence-based guidelines that will support comprehensive and integrated services.

Many of the current guidelines are developed by hospital-based specialists, who are not familiar with primary care and undergraduate training, and are often situated in academic or tertiary hospitals. Consequently, graduating medical students and nurses are neither familiar with nor well equipped to deal with novel and often complex complaints seen at primary level, where the majority of the population meets healthcare for the first time.<sup>1</sup>

The Knowledge Translation Unit (KTU) of the University of Cape Town Lung Institute has an ongoing project, running in the Western Cape and Free State provinces. PALS (Practical Approach to Lung Health and HIV & AIDS in South Africa) PLUS is a project that provides syndromic guidelines (i.e. based on presenting symptoms) with educational outreach for frontline health workers to improve the quality and efficiency of primary care service delivery for adults with respiratory diseases including tuberculosis, HIV/AIDS & STD. The National Health Department of South Africa is looking to implement PALS PLUS on a wider scale in terms of other provinces.<sup>16</sup> Further revision and development of these guidelines requires knowledge of the RFE and diagnoses made at primary care facilities and in different geographic locations for the guidelines to be locally adapted. They have specifically requested that the results of this study be made available to them.

The FaMEC (Family Medicine Education Consortium) were also interested in an up to date survey of RFEs and the diagnoses at primary care facilities in order to develop better training programmes for doctors, nurses and clinical assistants. FaMEC comprised all 8 University departments of South Africa that offer family medicine. FaMEC has since been incorporated into the Academy of Family Physicians. The College of Family Physicians may also be interested in the results as a guide to the assessment of family physicians.

Managers of facilities can also use this information to help plan human resources to offer adequate patient management and to provide in-service training.

## **AIM**

To determine the main reasons for encounter (RFE) and diagnoses amongst patients attending public primary care facilities in the Klipfontein Sub-district of the Western Cape Metropole.

## **OBJECTIVES**

### Primary objectives:

- To enumerate all reasons for encounter (e.g. presenting symptoms) in patients seen at primary level facilities.
- To enumerate provider-reported diagnoses (pre-existing or new) of patients seen at primary level facilities

### Secondary objectives:

- To define the average number and range of reasons for encounter per patient
- To define the average number and range of provider-reported diagnoses per patient
- To describe the case mix of reasons for encounter and the diagnoses in relation to:
  - Age of clients
  - Sex of clients
  - Type of provider (doctor or nurse)

## **METHODS**

### **Study design**

The study was a prospective cross-sectional survey.

This study is part of a larger project that collected the same data in primary health facilities in other parts of the Western Cape, as well as the Northern Cape, North West and Limpopo Provinces. My investigation was limited to the Klipfontein sub-district within the Cape Town Metropolitan District.

### **Setting**

Klipfontein sub-district is situated in Cape Town (see Figure 1) and has a population of 436,335 according to the population estimate data of 2009 provided by the Statistics South Africa (Department of Health).

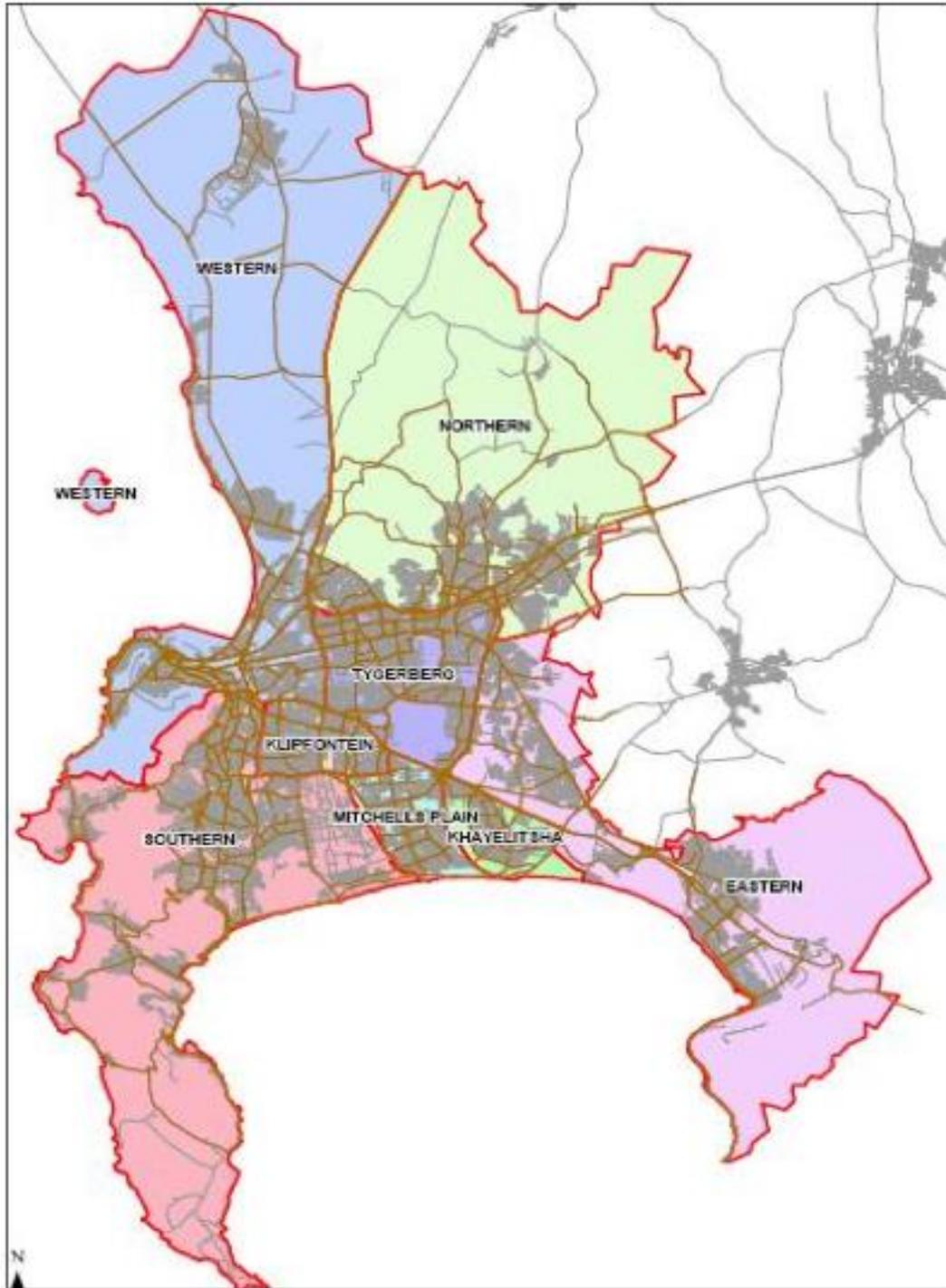


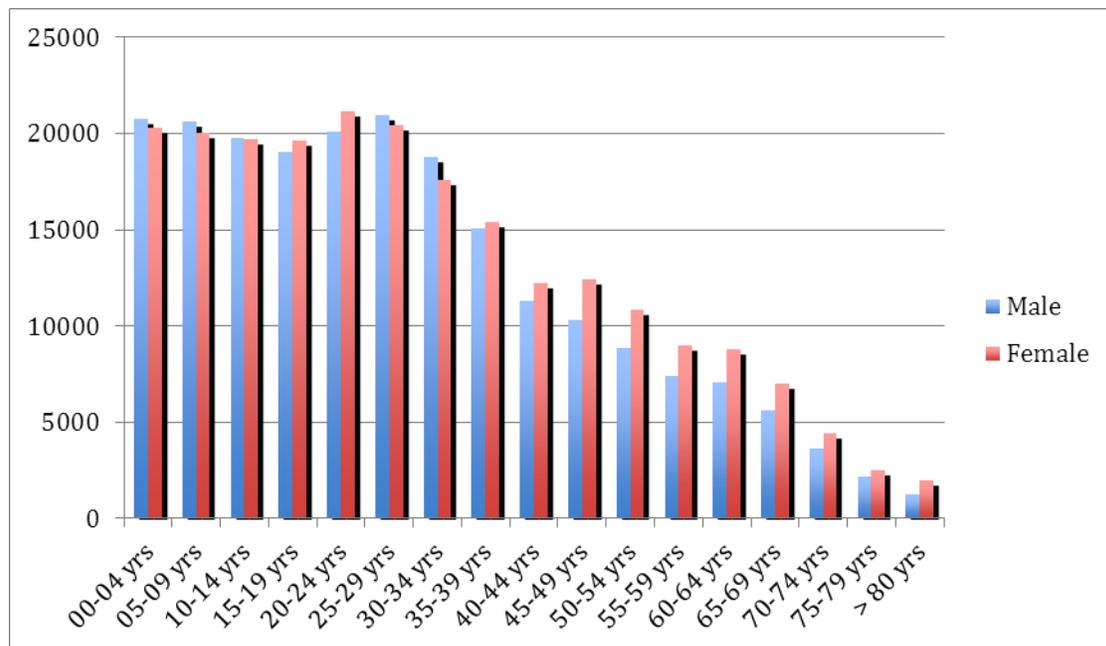
Figure 1: Map showing Klipfontein sub-district and other municipalities in the southern suburb of Western Cape <sup>17</sup>

Klipfontein sub-district represents nearly 18% of Cape Town's population and the average age of people is 26 years with a female preponderance (52.6 %). <sup>18</sup>

Table 2 and Figure 2 depict the distribution of the population across the different age groups. This sub-district has a relatively young population with only 3.6% older than 70 years.<sup>18</sup>

**Table 2: POPULATION ESTIMATE**

<u>Age group</u> <u>years</u>	<u>2009</u> <u>Male</u>	<u>2009</u> <u>Female</u>	<u>2009</u> <u>Total</u>
00 – 04	20760	20308	41067
05 – 09	20612	20061	40672
10 – 14	19784	19674	39458
15 – 19	19072	19653	38725
20 – 24	20084	21178	41262
25 – 29	20940	20429	41368
30 – 34	18757	17581	36338
35 – 39	15085	15409	30494
40 – 44	11279	12226	23505
45 – 49	10337	12455	22792
50 – 54	8870	10856	19726
55 – 59	7424	9002	16427
60 – 64	7098	8814	15912
65 – 69	5601	6995	12596
70 – 74	3652	4443	8095
75 – 79	2167	2490	4657
+ 80	1260	1980	3240
<b>Total</b>	<b>212,783</b>	<b>223,553</b>	<b>436,335</b>



**Figure 2: Population estimate of Klipfontein Sub-district - 2009**

This sub-district represents some of the most marginalized areas in the city and is characterized by low-income dormitory type residential areas with very limited economic activity. It is the sub-district in most need of regeneration, economic development, the provision of adequate housing and effective transport systems. The sub-district includes areas like Grassy Park, Gugulethu, Hanover Park, Lansdowne, Lavender Hill, Lotus River, Manenberg, Ottery, Strandfontein, Crossroads, Nyanga and Phillipi. The sub-district has one of the largest populations and also a very high population density (3827/sq. km).<sup>17</sup> This sub-district has a low standard of living with a high unemployment rate.

The majority of the population living in this sub-district are coloured (64.98%) as shown in the Table 3.

**Table 3: Ethnic population: according to the Planning Districts Socio-Economic Analysis 2007.**<sup>17</sup>

<b>Ethnic group</b>	<b>Male %</b>	<b>Female %</b>	<b>Total %</b>
Black African	13.99	15.47	29.46
Coloured	30.59	34.39	64.98
Indian/Asian	1.79	1.83	3.62
White	0.95	1.00	1.95
Total	47.32	52.68	100.00

This sub-district has the second highest level of unemployment of all Cape Town's sub-districts at 19.9% (See Table 4).<sup>17</sup>

**Table 4: The employment status in Klipfontein sub-district**<sup>17</sup>

<b>Employment Status (aged 15-65)</b>	<b>Male %</b>	<b>Female %</b>	<b>Total %</b>
Employed	23.36	20.91	44.26
Unemployed	10.30	9.63	19.94
Economically Active Total	33.66	30.54	64.20
Not Economically Active	13.18	22.62	35.80
Grand Total	46.84	53.16	100.00

### **Health services**

The Provincial Government of the Western Cape (PGWC) and the City of Cape Town (COCT) are the health authorities responsible for health care services in the Klipfontein sub-district. This sub-district has 18 primary care facilities, which includes 10 clinics, 3 satellite clinics and 5 community health centres (CHCs). The clinics and satellite clinics are run by COCT while the 5 CHCs are managed by the PGWC. The 10 clinics are Gugulethu, Hanover Park, Heideveld, Lansdowne, Manenberg, Masincedane, Nyanga, Silver town, Hannan-Crusade and Vuyani. The satellite clinics are Hazendal, Honeyside

and Newfield; these are supported by Silver town, Lansdowne and Hanover Park clinics respectively. The 5 CHCs are Doctor Abdurahman, Gugulethu, Hanover Park, Heideveld and Nyanga. The clinics operate daily, whereas the satellite clinics operate 1 to 2 days of the week. The Gugulethu and Hanover Park CHCs are open for 24 hours a day and provide dedicated trauma and emergency services after hours while other CHCs are open for 8 hours a day.

The clinics (COCT) provide following health care services; TB clinic, clinic for children under 13 years of age including vaccination services, family planning clinic, STI clinic, HIV counseling and wellness . CHCs (PGWC) offers services like general outpatients for adults, psychiatry clinic, ARV (ante retroviral therapy), trauma & emergencies and basic antenatal care (BANC). Two CHCs (Gugulethu and Hanover Park) also provide 24 hours midwife driven MOU (maternity & obstetrics unit) services. The Vuyani clinic is the only clinic in this sub-district that has also started providing ARV services independently from the 1<sup>st</sup> of August 2011.

All the clinics and satellite clinics are nurse-driven and refer difficult patients to the CHCs. The CHC refers patients to G. F. Jooste Hospital in Manenberg (Level I hospital) or Groote Schuur Hospital (GSH-Level II hospital) in Observatory. Midwives refer patients from MOUs to New Sommerset Hospital (NSH- Level II hospital) in Sea-point. Difficult patients from NSH get referred to GSH. The children from clinics and CHCs are referred to the Level III Red Cross Memorial children's hospital.

### **Sampling Procedures**

This study was a part of a larger national study surveying four Provinces (Limpopo, North West, Northern Cape and Western Cape). Each province selected four sub-districts for data collection. Cape Town Metropole has 8 sub-districts and out of those two sub-districts (Klipfontein and Tygerberg) was randomly selected.

The desired sample size for the province was 6000 and this was stratified according to the population between the four selected sub-districts. A sample of 1700 was required from Klipfontein. Based on the assumption that each CHC would provide 4-5 health workers willing to participate and that each health worker would contribute 100 patients, 17 health workers were needed from four CHCs. The sampling strategy was devised by Prof Lombard who is Head of the Biostatistics Department at the Medical Research Council.

Klipfontein sub-district has 5 CHCs and 13 clinics, but as the City of Cape Town (COCT) refused permission, selection was only possible from the CHCs. Four out of the five CHCs were then randomly selected by using random numbers generated in an Excel Spreadsheet, this process selected Heideveld, Doctor Abdurahman, Gugulethu and Hanover Park CHCs.

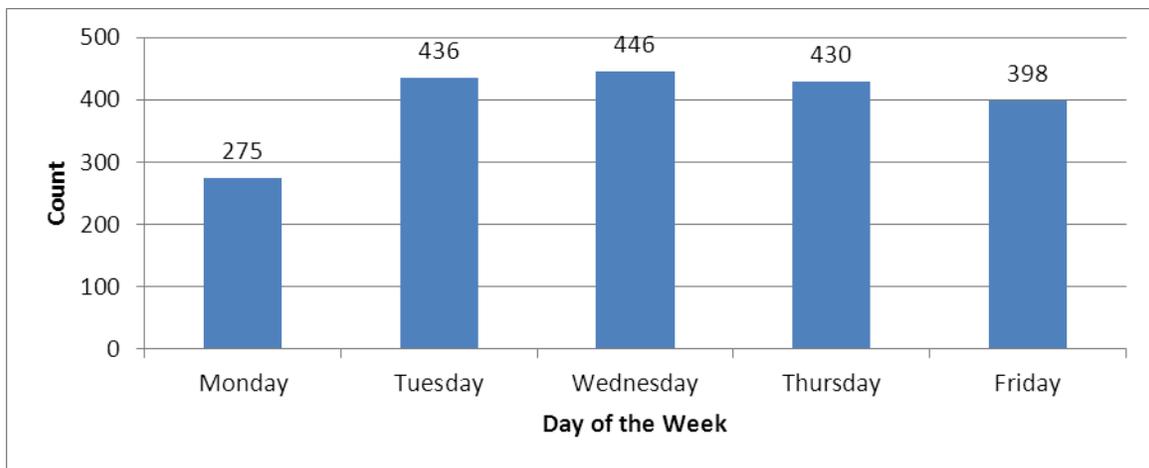
Primary care practitioners (nurses and doctors) from the selected facilities were then invited to participate.

### **Data collection**

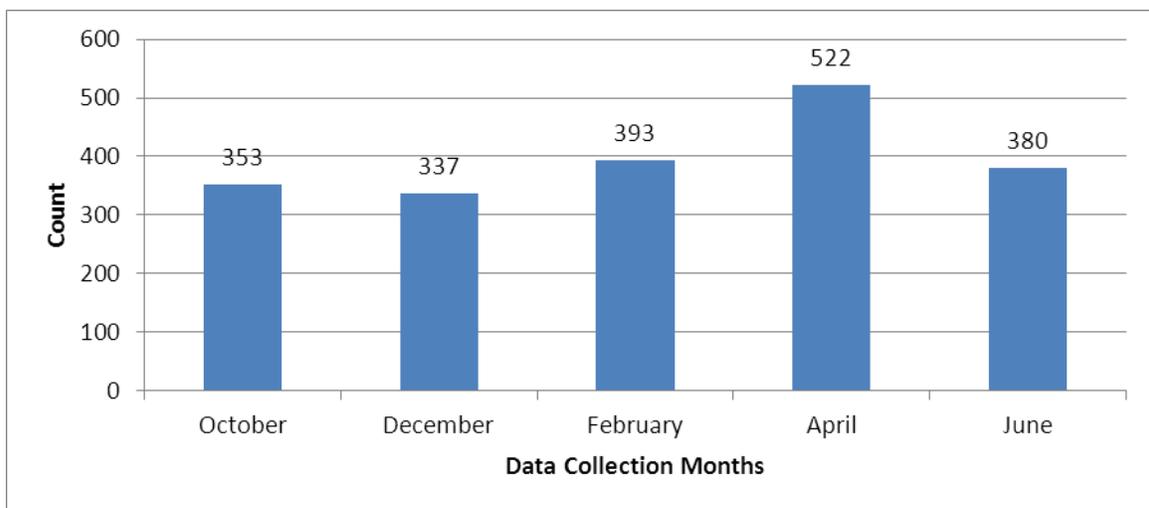
Data collection days at the selected facilities were stratified by time to account for seasonality and day to account for different patterns of attendance throughout the week. Each facility therefore was asked to collect data for 1-day on 5 occasions two months apart throughout the year and on a different day of the week each time.

Initially, the plan was to start collecting data from June 2009 but permission was delayed and the study could only start in the second week of October. Due to the deadlines set by the University for submission of the final research assignment it was then not possible to include a data collection in the July- September period.

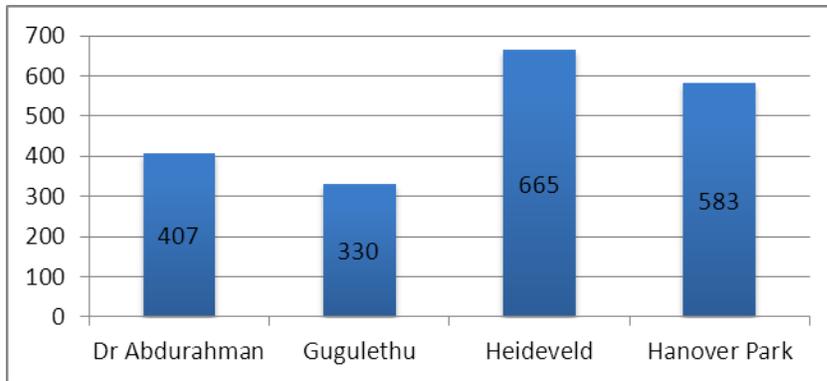
Figures 3 and 4 below demonstrate how the facilities were surveyed on different days of week and during different months of the year. Figure 5 shows the number of consultations from each facility.



**Figure 3: Consultations included according to the day of the week (N=1985)**



**Figure 4: Consultations included according to the month (N=1985)**



**Figure 5: Consultations included from different facilities (N=1985)**

All sequential ambulatory patients, presenting at the facilities to the primary care practitioners (nurses and doctors) on the study day were included in the study. Written informed consent was sought from both the facility and the health care provider.

Inclusion criteria for primary care practitioners:

- Willing to participate and motivated
- Should preferably be available for the duration of the study
- Primary care practitioners involved in vertical programme where they only see one type of patient (e.g. ARV clinic, TB clinic and dedicated clinics for non-communicable diseases) were excluded from the study.

Practitioners participating in the study were provided with a data collection sheet on which they were asked to record the following patient information: age, sex, reasons for encounter as reported in the patient's own words (maximum of five reasons for encounter per consultation) and the diagnoses (new or pre-existing) the providers ascribe (maximum of five per consultation).

Before every data collection day, the facility manager and the participating healthcare providers at each of the CHC were contacted, and arrangements were made to collect the data collection sheets from the previous data collection, and to confirm the next date. This was also to check if the forms were completed correctly and also to query any uncertainties related to data previously collected.

All participants were trained in the data collection by the researcher.

### **Data coding**

The researcher received training from Prof Mash at Stellenbosch University in the International Classification of Primary Care Version 2 (ICPC) coding system. We used the ICPC-2 to code data from the patients seen at the health centers.

ICPC-2 was published in 1998 and is a comprehensive, simple and practical classification that can be used in medical records and in different areas of primary care research. ICPC

chapters are based on body systems, following the principle that localization has precedence over aetiology. The components within each chapter permit considerable specificity for all three elements of the encounter; RFE, diagnosis and the process of care.<sup>19</sup>

ICPC-2 is a bi-axial classification system based on 17 chapters that have alpha codes (A-Z) on one axis and 7 components with rubrics bearing a two-digit numeric code on the second axis (see below).

### **ICPC chapters**

A – General and specified  
D – Digestive  
H – Ear  
L – Musculoskeletal  
P – Psychological  
S – Skin  
U – Urological  
X – Female genital  
Y – Male Genital  
Z – Social Problem

B – Blood  
F – Eye  
K – Circulatory  
N – Neurological  
R – Respiratory  
T – Endocrine, metabolic & nutrition  
W –pregnancy and family planning

### **ICPC components**

1. Complaint or symptom
2. Diagnostic, screening, and prevention activities
3. Medication, treatment and procedures
4. Test results
5. Administrative component
6. Referrals and other reasons
7. Diagnosis/disease (infectious diseases, tumour, trauma, congenital anomalies & others)

Since publication in 1987 by WONCA (World Organization of National Colleges, Academies, and Academic Associations of General practitioners/Family Doctors), ICPC has gradually received increasing world recognition as an appropriate classification for general/family practice and primary care, and has been used extensively in Europe<sup>20</sup> and Australia.<sup>21</sup> It is accepted by the World Health Organization (WHO) as a member of the family of International Classifications, and is being widely used both in routine daily practice and in research.<sup>19</sup>

### **Data Analysis**

RFEs and diagnoses from the data collection sheets were coded by the researcher and captured electronically in a Microsoft Excel spreadsheet.

Statistical analysis was done by a statistician from the Centre for Statistical Consultation at Stellenbosch University using the software programme Statistica version-9. The analysis included calculating the frequencies of the RFEs and diagnoses, and estimating the mean RFEs and diagnoses per patient. The frequency of RFEs and diagnoses were also analyzed by sex, age and healthcare provider category. Where comparisons were made between continuous and categorical variables an analysis of variance (ANOVA) was performed and the Mann-Whitney U Test was used to test for statistical significance ( $p < 0.05$ )

### **Ethical consideration**

Ethical approval for the study was obtained from the Health Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town and the University of Stellenbosch. The provincial Department of Health as well as the director of Klipfontein sub-district granted permission for the study to be conducted at the preselected CHC. The facility managers and the participating healthcare providers signed the informed consent. The healthcare providers were informed about the confidentiality of the data.

The information collected was not dissimilar from “tick sheet” or statistics forms routinely used for capturing consultation. No patient name or other unique identifier was collected. A waiver of informed consent from the patients was granted by the Ethics Committee.

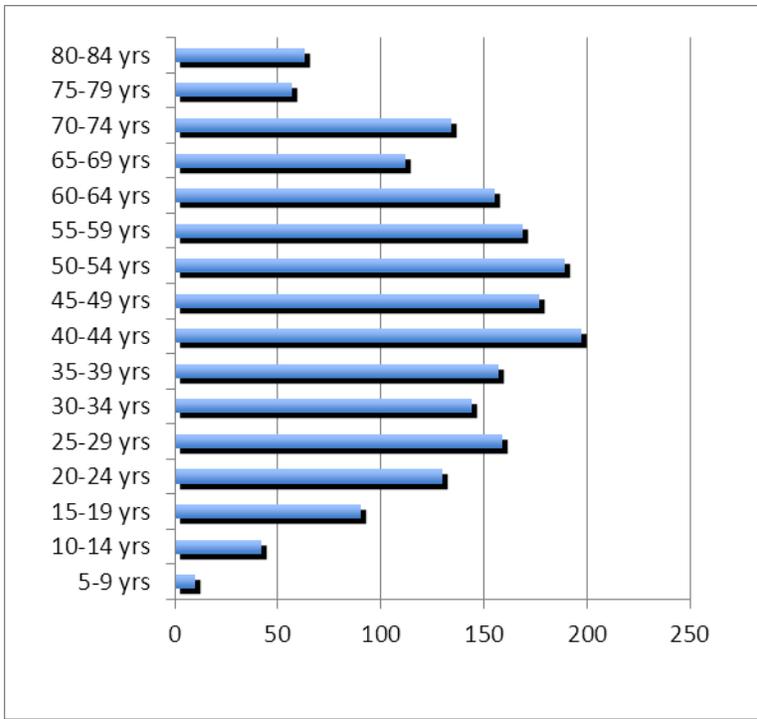
Data sheets could be associated with specific providers in order to clarify any entries that were not clear, but provider’s names were not captured as data or used in the analysis.

### **RESULTS**

Consultations for 1985 patients were recorded. Males comprised 697 (35.1%) and females 1288 (64.9%) of the study population. These patients generated 4241 RFEs and 3565 diagnoses. These were documented by 62 healthcare providers (39 doctors and 23 nurses). Doctors consulted 1131 (57%) and nurses 854 (43%) of patients.

#### **Age distribution**

The age distribution of people is shown in Figure 6 and Table 5. This suggests that the maximum number of RFE occurred in the 40-54 years age group. Relatively speaking very few children were seen in these facilities because paediatric patients mainly consulted at the City of Cape Town clinics.



**Figure 6: Age distribution of RFEs**

**Table 5: Age distribution (N=1985)**

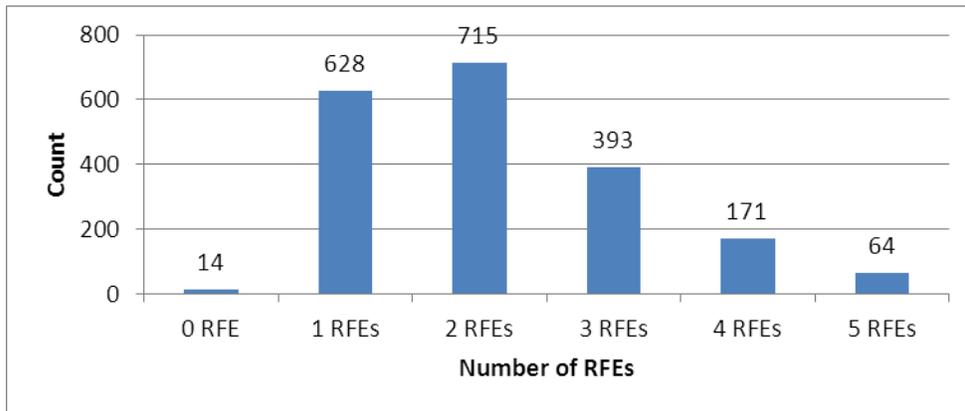
Age groups; years	Number	%
00-04	00	0.0
05-09	10	0.5
10-14	42	2.1
15-19	90	4.5
20-24	130	6.5
25-29	159	8.0
30-34	144	7.2
35-39	157	7.9
40-44	197	9.9
45-49	177	8.9
50-54	189	9.5
55-59	169	8.5
60-64	155	7.8
65-69	112	5.6
70-74	134	6.7
75-79	57	2.8
80-84	63	3.2
<b>Total</b>	<b>1985</b>	

**Number of RFEs and diagnoses per patient**

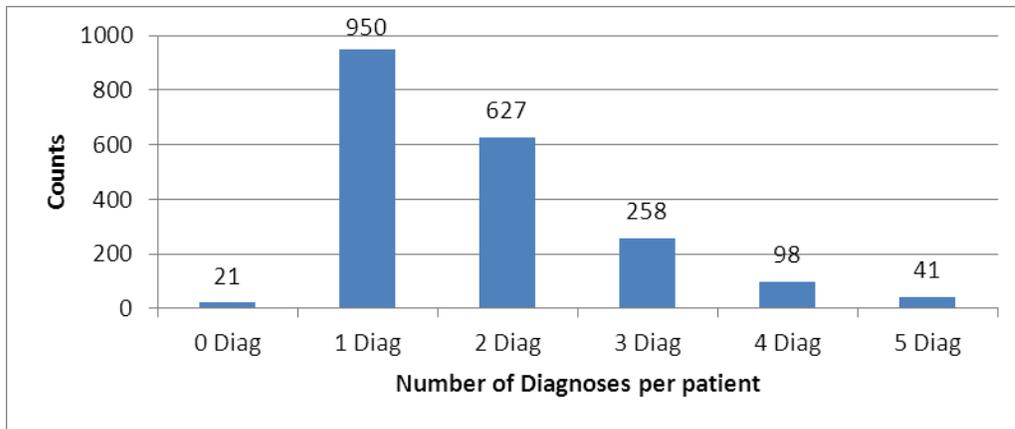
Patients seen by doctors presented with a mean of 1.9 RFEs (95% CI; 1.88-1.99) and received a mean of 1.9 diagnoses (95% CI; 1.82-1.95). The median was 2 for both RFEs and diagnoses and interquartile range were 1-3 for RFEs and 1-2 for diagnoses per patient. Patients seen by nurse practitioners had a significantly higher mean of 2.4 RFEs (95% CI; 2.32-2.47) and a significantly lower mean of 1.7 diagnoses per patient (95% CI; 1.61-1.73). The median was 2 for RFEs and 1 for diagnoses and interquartile range were 2-3 for RFEs and 1-2 for diagnoses per patient. Table 6 and Figures 7-8 shows the number of patients with different numbers of RFEs and diagnoses.

**Table 6: Number of RFE and diagnoses per patient (N=1985)**

Number	RFE		Diagnosis	
	n	%	n	%
0	14	0.7	21	1.0
1	628	31.6	940	47.3
2	715	36.0	627	31.6
3	393	19.8	258	13.0
4	171	8.6	98	4.9
5	64	3.2	41	2.1
<b>Total</b>	<b>1985</b>	<b>100</b>	<b>1985</b>	<b>100</b>



**Figure 7: The number of RFEs per patient for all patient encounters (N 1985)**



**Figure 8: The number of diagnoses for all patient encounters (N =1985)**

The mean number of RFE per patient was 2.13 (95% CI; 2.08-2.18) and the mean number of diagnoses per patient was 1.79 (95% CI; 1.75-1.83). The mean number of RFE per patient in males and females were both 2.1 ( $p=0.67$ ) and the mean number of diagnoses in males and females were significantly different at 1.7 vs. 1.8 ( $p=0.02$ ). There was no RFE recorded in 14 encounters and no diagnosis in 21 encounters.

### Frequency of RFEs

As depicted in Table 7, about 50% of the RFEs were coded within the respiratory, musculoskeletal, cardiovascular and digestive systems. Problems related to the respiratory system accounted for the most common reasons for patient encounters that included cough, sneezing and throat symptoms of which cough was in the majority. The high number of encounters from the musculoskeletal system was due to involvement of backache, leg pain and joint symptoms. The cardiovascular system mainly included follow up visits for hypertension. Psychological RFEs (mental health) occurred at low frequencies (1.9%) and blood related RFEs (which includes HIV/AIDS (B 90)) were also low at 1.1%. Pregnancy related and family planning encounters were the lowest at 0.5%.

**Table 7: Frequency of RFEs by ICPC chapter (N=4241)**

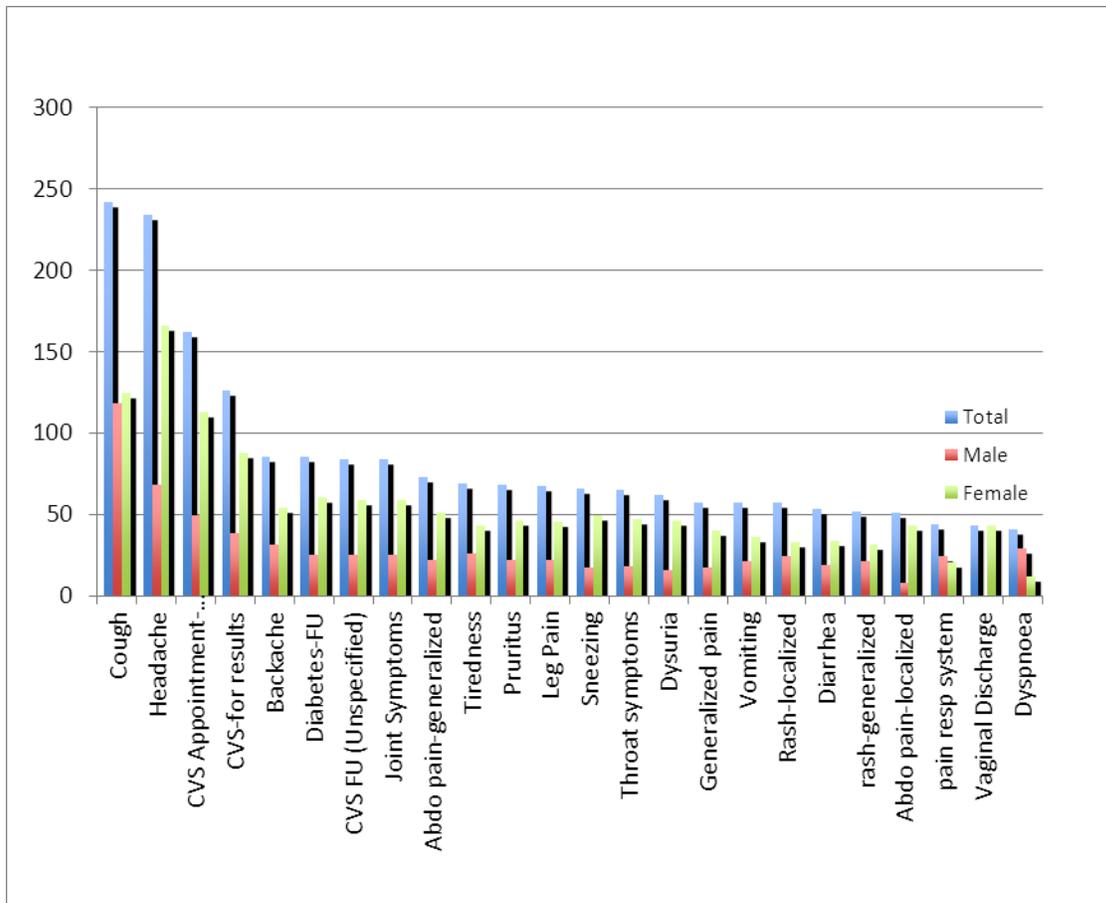
ICPC Chapter	Frequency (N)	%
R – Respiratory	689	16.2
L – Musculoskeletal	584	13.7
K – Cardiovascular	548	12.9
D – Digestive	459	10.8
N - Neurological	362	8.5
A – General and unspecified	336	7.9
S – Skin	322	7.5
T – Endocrine and metabolic	306	7.2
X – Female genital	138	3.2
F – Eye	111	2.6

U – Urological	104	2.4
P – Psychological	82	1.9
H – Ear	68	1.6
B – Blood, blood forming and immune system	49	1.1
Z – Social	33	0.7
Y – Male genital	27	0.6
W – Pregnancy, childbearing and family planning	23	0.5

The top twenty RFEs in descending order of frequency are shown below in the Table 8 and Figure 9. The top 20 RFEs account for 43% of all RFE.

**Table 8: Top 20 reasons for encounter (RFEs N=4241)**

No	RFE	ICPC	n	%	Cumulative %
1	Cough	R 05	242	5.7	5.7
2	Headache	N 01	234	5.5	11.2
3	Cardiovascular appointment (provider initiated)	K 64	162	3.8	15.0
4	Cardiovascular test results	K 61	126	2.9	17.9
5	Backache	L 02	85	2.0	19.9
6	Endocrine appointment (provider initiated)	T 64	85	2.0	21.9
7	Cardiovascular follow up (unspecified)	K 63	84	2.0	23.9
8	Joint symptoms	L 20	84	2.0	25.9
9	Abdominal pain	D 01	73	1.7	27.6
10	Tiredness	A 04	69	1.6	29.2
11	Pruritus	S 02	68	1.6	30.8
12	Leg pain	L 14	67	1.6	32.4
13	Sneezing	R 07	66	1.5	33.9
14	Throat symptoms	R 21	65	1.5	35.4
15	Dysuria	U 01	62	1.5	36.9
16	Generalized pain	A 01	57	1.3	38.2
17	Vomiting	D 10	57	1.3	39.5
18	Rash-localized	S 06	57	1.3	40.8
19	Diarrhea	D 11	53	1.2	42.0
20	Rash-generalized	S 07	52	1.2	43.2



**Figure 9: RFEs frequency in descending order**

The top 5 RFE in different age groups are compared in Table 9. Headache and cough were the two most common RFE in all age groups between 15 to 69 years. Fever was the commonest in younger patients and follow up of cardiovascular disease in older patients.

**Table 9: Top 5 RFE by age group (N=4241)**

Age groups (years)	n	1st	2nd	3rd	4th	5th
05-14	111	Fever (42)	Cough (6)	Pruritus (6)	Localized rash (5)	Generalized rash (5)
15-19	192	Cough (14)	Headache (13)	Pruritus (11)	Fever (07)	Abdominal Pain (07)
20-24	249	Headache (21)	Abdominal Pain (14)	Cough (12)	Vaginal discharge (08)	Nasal Congestion (8)
25-29	347	Headache (21)	Cough (20)	Dysuria (16)	Abdominal Pain (12)	Nasal Congestion (12)

30-34	334	Cough (23)	Headache (17)	Abdominal pain-local-(10)	Dysuria (8)	Diarrhea, Vomiting, Abdominal, Pain (07 each)
35-39	374	Cough (28)	Headache (24)	Vomiting (12)	Diarrhoea (11)	Backpain (10)
40-44	428	Headache (34)	Cough (29)	Abdominal pain (15)	CVS appointment (11)	Nasal congestion (10)
45-49	380	Headache (26)	Cough (21)	Abdominal pain (12)	CVS appointment (10)	Backpain (10)
50-54	396	Cough (25)	Cardiovascular test results (20)	Headache (18)	CVS appointment (16)	Leg symptoms (10)
55-59	365	CVS appointment (30)	Cough (16)	Headache (16)	CVS Follow up (unspecified) (13)	Cardiovascular test results (12)
60-64	318	CVS appointment (22)	Cough (20)	Cardiovascular test results (16)	Headache (16)	Endocrine appointment (14)
65-69	254	CVS appointment (23)	Endocrine appointment (17)	Cardiovascular test results (15)	Cough (09)	Headache (09)
70-74	258	CVS appointment (29)	Cardiovascular test results (19)	Arthralgia (12)	Endocrine appointment (12)	CVS Follow up (unspecified) (11)
75-79	115	CVS appointment (11)	CVS Follow up (unspecified) (08)	Cardiovascular test results (07)	Arthralgia (07)	Endocrine FU (diabetes) (05)
80-84	120	Cardiovascular test results (08)	CVS Follow up (unspecified) (08)	Headache (07)	Cough (07)	Arthralgia (07)

The top 20 RFEs in males is shown in Table 10 and in females in Table 11

**Table 10: Top 20 RFEs in males (N=1499)**

No	RFE	ICPC 2	n	%
1	Cough	R 05	118	2.8
2	Headache	N 01	68	1.6
3	CVS appointment (provider initiated)	K 64	49	1.1
4	Cardiovascular test results	K 61	38	0.9
5	Backache	L 02	31	0.7
6	Dyspnoea	R 02	29	0.7
7	Weight loss	T 08	27	0.6
8	Tiredness	A 04	26	0.6
9	Endocrine appointment (provider initiated))	T 64	25	0.6
10	CVS Follow up (Unspecified)	K 63	25	0.6
11	Joint symptoms	L 20	25	0.6
12	Rash-localized	S 06	24	0.5
13	Pain respiratory system	R 01	24	0.5
14	Sweating	A 09	22	0.5
15	Abdominal pain	D 01	22	0.5
16	Pruritus	S 02	22	0.5
17	Leg pain	L 14	22	0.5
18	Vomiting	D 10	21	0.5
19	Rash-generalized	S 07	21	0.5
20	Loss of appetite	T 03	20	0.5

**Table 11: Top 20 RFEs in females (N=2742)**

No	RFE	ICPC 2	n	%
1	Headache	N 01	166	4.0
2	Cough	R 05	124	3.0
3	CVS appointment (provider initiated)	K 64	113	2.6
4	Cardiovascular results	K 61	88	2.0
5	Endocrine appointment (provider initiated)	T 64	60	1.4
6	CVS Follow up (Unspecified)	K 63	59	1.4
7	Joint symptoms/Arthralgia	L 20	59	1.4
8	Backache	L 02	54	1.3
9	Abdominal pain	D 01	51	1.2
10	Sneezing/Nasal congestion	R 07	49	1.1
11	Throat symptoms	R 21	47	1.1
12	Pruritus	S 02	46	1.1
13	Dysuria	U 01	46	1.1

14	Leg pain	L 14	45	1.0
15	Tiredness	A 04	43	1.0
16	Abdominal pain-localized	D 06	43	1.0
17	Vaginal discharge	X 14	43	1.0
18	Generalized pain	A 01	40	0.9
19	Fever	A 03	40	0.9
20	Knee symptoms	L 15	39	0.9

### Frequency of diagnoses

As shown in Tables 12 and 13, the most common diagnoses according to body systems (ICPC chapters) were cardiovascular, which mainly comprised hypertension and ischaemic heart disease. The second most common diagnoses were from the respiratory system and consisted of upper respiratory tract infection, asthma, lower respiratory tract infection, allergic rhinitis and chronic obstructive pulmonary disease. Psychological diagnoses (mental health) occurred at low frequency (2.4%). The top 20 diagnoses account for 53% of all diagnoses.

**Table 12: Frequency of all diagnoses by ICPC chapter (N=3565)**

ICPC Chapter	n	%
K – Cardiovascular	819	22.9
R – Respiratory	545	15.7
L – Musculoskeletal	440	12.3
T – Endocrine and metabolic	391	10.9
S – Skin	249	6.9
D – Digestive	225	6.3
A – General and unspecified	173	4.8
N – Neurological	146	4.0
X – Female genital	123	3.4
B – Blood, blood forming and immune system	104	2.9
U – Urological	90	2.5
P – Psychological	86	2.4
F – Eye	56	1.5
H – Ear	51	1.4
Y – Male genital	31	0.8
W – Pregnancy, child bearing and family planning	30	0.8
Z – Social	06	0.1

**Table 13: Top 20 Diagnoses (N=3565)**

No	Diagnosis	ICPC	n	%	Cumulative %
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1	Hypertension (uncomplicated)	K 86	537	15.0	15.0
2	Diabetes	T 90	268	7.5	22.5
3	Arthritis	L 91	142	4.0	26.5
4	Upper respiratory tract infection	R 74	109	3.0	29.5
5	Asthma	R 96	95	2.6	32.1
6	Tuberculosis	A 70	69	1.9	34.0
7	Urinary tract infection	U 71	59	1.6	35.6
8	Lower respiratory tract infection	R 78	58	1.6	37.2
9	Allergic rhinitis	R 97	53	1.5	38.7
10	Chronic obstructive pulmonary disease	R 95	50	1.4	40.1
11	Gastroenteritis	D 73	50	1.4	41.5
12	Hypertension (complicated)	K 87	49	1.4	42.9
13	Ischaemic heart disease	K 76	48	1.3	44.2
14	HIV/AIDS	B 90	47	1.3	45.5
15	Fibromyalgia, muscle pain	L 18	45	1.3	46.8
16	Epilepsy	N 88	44	1.2	48.0
17	High cholesterol	T 93	44	1.2	49.2
18	Eczema	S 88	43	1.2	50.4
19	Gastritis	D 87	41	1.1	51.5
20	Gout	T 92	39	1.1	52.6

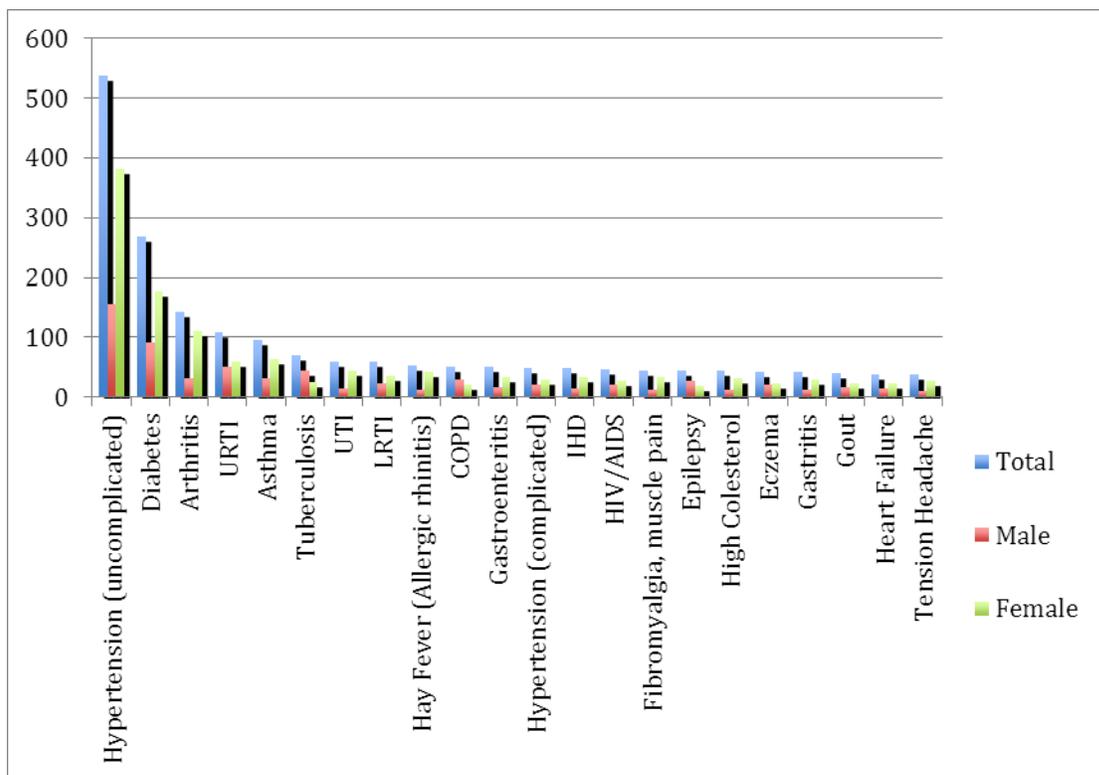


Figure 10: Frequency of diagnoses in descending order

The frequency of diagnoses according to age groups is shown in Table 14. HIV and related infectious conditions appear common amongst young adults with non-communicable diseases dominating in the middle aged and elderly. Children were mostly diagnosed with infectious diseases as well as skin, eye, ear, nose and throat conditions.

**Table 14: Top 5 diagnoses according to age (N=3565)**

Age group (years)	n	1st	2nd	3rd	4th	5th
05-14	72	Upper respiratory tract infection (5)	Conjunctivitis (3)	Generalised rash (2)	Allergic Rhinitis (2)	Dermatitis (2)
15-19	162	Tonsillitis (6)	Acne (4)	Chicken pox (3)	Dysmenorrhea (3)	Dermatitis (3)
20-24	164	Anemia (8)	UTI (6)	Influenza (5)	Vaginal Discharge (4)	Thyrotoxicosis (2)
25-29	234	Gastroenteritis (09)	Urinary tract infection (08)	TB (08)	HIV (07)	STI (05)
30-34	222	HIV (12)	URTI (10)	Hypertension (09)	TB (09)	UTI (06)
35-39	259	Hypertension (19)	URTI (17)	Diabetes (13)	TB (13)	HIV (11)
40-44	325	Hypertension (41)	Diabetes (17)	Allergic Rhinitis (11)	URTI (10)	Asthma (10)
45-49	309	Hypertension (51)	Diabetes (19)	Osteoarthritis (09)	LRTI (07)	Asthma (15)
50-54	338	Hypertension (62)	Diabetes (26)	Osteoarthritis (18)	Asthma (14)	TB (12)
55-59	336	Hypertension (75)	Diabetes (38)	Osteoarthritis (22)	Asthma (13)	COPD (08)
60-64	321	Hypertension (74)	Diabetes (45)	Osteoarthritis (16)	COPD (09)	Tonsillitis (09)
65-69	261	Hypertension (57)	Diabetes (36)	Osteoarthritis (16)	IHD (09) without Angina	URTI (07)
70-74	314	Hypertension (77)	Diabetes (43)	Osteoarthritis (22)	HPT- complicated (11)	Gout 10
75-79	146	Hypertension (37)	Diabetes (16)	Osteoarthritis (14)	HPT-complicated (6)	Lipid Disorder (04)

80-84	138	Hypertension (32)	Osteoarthritis (10)	Diabetes (9)	CCF (08)	HPT complicated (6)
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STI was coded as A 78 - infectious disease others/ NOS (not otherwise specified)

The top 20 diagnoses in men and women are shown respectively in Tables 15 and 16

**Table 15: Top 20 diagnoses in males (N= 1206)**

No	Diagnosis	ICPC 2	n	%
1	Hypertension (uncomplicated)	K 86	155	4.3
2	Diabetes	T 90	92	2.6
3	Upper respiratory tract infection	R 74	51	1.4
4	Tuberculosis	A 70	44	1.2
5	Asthma	R 96	32	0.9
6	Arthritis	L 91	31	0.8
7	Chronic obstructive pulmonary disease	R 95	29	0.8
8	Epilepsy	N 88	26	0.7
9	Lower respiratory tract infection	R 78	22	0.6
10	HIV/AIDS	B 90	21	0.6
11	Hypertension (complicated)	K 87	20	0.5
12	Eczema	S 88	20	0.5
13	Gout	T 92	17	0.4
14	Gastroenteritis	D 73	16	0.4
15	IHD	K 76	15	0.4
16	Heart Failure	K77	15	0.4
17	Elevated Blood Pressure	K 85	15	0.4
18	Urinary tract infection	U 71	14	0.4
19	High Cholesterol	T 93	12	0.3
20	Otitis media	H 71	11	0.3

NB: URTI: cold, pharyngitis, rhinitis, and coryza

**Table 16: Top 20 diagnoses in females (N=2359)**

No	Diagnosis	ICPC 2	n	%
1	Hypertension (uncomplicated)	K 86	382	10.7
2	Diabetes	T 90	176	5.0
3	Arthritis	L 91	111	3.1
4	Asthma	R 96	63	1.7
5	Upper respiratory tract infection	R 74	58	1.6
6	Urinary tract infection	U 71	45	1.3
7	Hay fever (Allergic rhinitis)	R 97	42	1.2
8	Lower respiratory tract infection	R 78	36	1.0
9	Gastroenteritis	D 73	34	0.9
10	Fibromyalgia, muscle pain	L 18	34	0.9
11	Ischaemic heart disease	K 76	33	0.9

12	High cholesterol	T 93	32	0.9
13	Gastritis	D 87	30	0.8
14	Hypertension (complicated)	K 87	29	0.8
15	Tension headache	N 95	27	0.7
16	HIV/AIDS	B 90	26	0.7
17	Rheumatoid arthritis	L 88	26	0.7
18	Tuberculosis	A 70	25	0.7
19	Heart failure	K77	23	0.6
20	Eczema/dermatitis	S 88	23	0.6

## **DISCUSSION**

Women made up almost two thirds of the patient encounters and this is consistent with other studies in South Africa, Scandinavia, China and Sri Lanka.<sup>8,9,12, 22, 23</sup> In the Eastern Cape morbidity survey this was explained by a demand for contraception and pregnancy related encounters, but this cannot be argued in the current study. Other explanations could be that men are less inclined to seek medical care, or have less access to care if they are working.

The main RFE by ICPC chapter found in this study were broadly similar to other surveys of primary care from Australia, China and South Africa.<sup>9, 10, 13</sup> When looking at diagnoses by ICPC chapter the respiratory system is consistently the commonest in all primary care settings.<sup>9,10, 13, 14, 15, 24</sup> Compared to previous morbidity surveys in South Africa the cardiovascular chapter appears to have become more prevalent in the last 20 years.<sup>14, 15</sup>

Cough and headache were the commonest symptoms in primary care and this is confirmed by other local studies.<sup>12, 13</sup> Cough is a symptom of upper respiratory tract infection and is usually self- limiting, but one cannot ignore the importance of proper history and physical examination as it may be a presenting symptom of serious conditions like pneumonia, tuberculosis, asthma or cardiac failure.

Cardiovascular disease was the commonest reason to attend primary care and this was mainly due to hypertension. Although the leading diagnosis in both sexes the percentage of diagnoses attributed to hypertension was higher amongst women. The preponderance of hypertension in females was also seen in Gauteng.<sup>1</sup>

In terms of the burden of disease therefore non-communicable chronic diseases dominate the picture seen in ambulatory primary care. Other non-communicable diseases that were also amongst the top 20 conditions included diabetes, arthritis, epilepsy and asthma. This is similar to the findings of other South African morbidity surveys in Mthatha and Gauteng.<sup>1</sup> Epilepsy was commoner amongst males and this finding was confirmed in Gauteng and Mthatha.<sup>1</sup> Overall, epilepsy also appeared to be more common in the Mthatha survey than Cape Town.<sup>1</sup>

Infectious diseases such as respiratory tract infections and gastroenteritis were also common. Infective and chronic diseases were also common in Mthatha and Gauteng.<sup>1</sup> HIV/AIDS, despite being a huge part of the burden of disease, was relatively uncommon in the survey. The main reason for this may be because services for such patients have been developed in a separate more vertical HIV/AIDS programme. While this approach has enabled the roll out of ARVs it also means that care for individual patients is fragmented at the primary care level.

In the Gauteng study, depressive disorders were amongst the top 20 diagnoses made in women attending primary care clinics.<sup>1</sup> In this study, however very few patients presented with psychological and social problem and mental health disorders did not feature in the top 20 list of diagnoses. This is similar to the finding in the Sri Lanka study and that in the Eastern Cape.<sup>8, 12</sup> Most often patients with mental health problems present with somatic symptoms and there is thus a possibility of these diagnoses being overlooked by the healthcare provider and represents a missed diagnostic opportunity.<sup>23</sup>

It was observed that the two other aspects of the quadruple burden of disease, namely violence and trauma as well as maternal and child health, were under represented in ambulatory primary care in this study. Patients with trauma usually attend the casualty at the health centre or the local hospital and would not be expected in the consulting room. The reason for the low numbers of maternal and child health problems is because they also attend dedicated clinics for antenatal care and the City of Cape Town clinics are mostly responsible for paediatric patients.

It can be seen therefore that ambulatory primary care in these community health centres is only attending to a part of the expected burden of disease. Consultations are particularly dominated by non-communicable chronic diseases. HIV/AIDS, TB, maternal and child health, violence and trauma are all dealt with in other vertical programmes, other parts of the same facility or in other organizations. This points toward a poor integration of services at the primary care level.

### **Limitations of this survey**

- I could not collect much data from children. The reason was that the children are treated in the clinics that are managed by the City of Cape Town. I could not get permission from them and hence had to exclude these clinics from the study.
- The survey could not be conducted in the months of July, August and September and it is possible that some diseases with a seasonal occurrence, such as influenza, may be under represented.
- The study relied on the health worker accurately capturing the patient's reasons for encounter. The accuracy of this could not be determined in the study.
- There was some variability in the detail with which health workers recorded the data. In general terms the doctors appeared to provide more detail than the nurses. Data was not captured in a way that identified individual health workers and this variability could not be analyzed.

- The error rate in coding was calculated by comparing the coding from an independent and more experienced rater using a randomly selected sample of 20 datasheets. The error rate was calculated as 6.6% (95% CI; 4.0-9.2) for RFEs and 9.3% (95% CI; 6.0-12.6) for diagnoses. Some errors in coding could be due to fairly minor differences such as between R07 (sneezing/nasal congestion) and R08 (nasal symptoms/other) or to omissions such as when a recorded RFE was not coded. Only the most common RFE and diagnoses were presented, whose ranking would be less affected by the error rate.

### **Implications of the study**

The data obtained in this study will be combined with the data from the larger study to create a broader picture of ambulatory primary care in the country.

The picture of ambulatory primary care that emerges from this study may enable district managers to target in-service training on the symptoms and conditions most commonly encountered. It may also assist with the planning of other resources such as medication and equipment. The study also highlights the lack of integration of services at the level of the patient and demonstrates that primary care in this context is mainly dealing with adults and non-communicable chronic diseases.

The findings may also be of use to those creating primary care guidelines, such as PALS PLUS, to ensure that the guidelines include the commonest reasons for encounter and conditions seen. The findings may also influence the curricula for the training of clinical nurse practitioners, doctors and family physicians. In particular, the study points towards a need for better recognition of mental health disorders.

The information obtained from this study can also be used as a baseline for future studies that assess changes in the way primary care services are utilized and the diagnoses made.

### **CONCLUSION**

This survey has identified the range of RFEs and diagnoses amongst patients attending ambulatory primary care in provincial health centres within the Klipfontein sub-district, Cape Town. Non-communicable chronic diseases and infectious diseases such as respiratory tract infections and gastroenteritis made up the majority of consultations. HIV/AIDS, TB, maternal and child health as well as trauma were all under represented relative to the burden of disease. Mental disorders were also poorly recognized relative to their expected prevalence. The findings have implications for district managers, guideline developers and those responsible for the training of primary care providers.

### **ACKNOWLEDGEMENTS**

I deeply appreciate and acknowledge the nursing staff and doctors working in CHCs that participated in the study, the Provincial department of health and director of Klipfontein

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## Appendix



### University of Cape Town Lung Institute (Pty) Ltd and University of Stellenbosch, Family Medicine

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#### CONSENT FORM: NURSES/DOCTORS

We are kindly inviting you to participate in our study.

The Division of Family Medicine and Primary care, Stellenbosch University and the Knowledge Translation Unit based at the University of Cape Town Lung Institute wish to conduct a survey involving ambulatory patients and doctors/nurses seeing them. The study aims to check the reasons for encounter among patients presenting at primary facilities, as well as the various diagnoses the patients receive. You will be asked to record on a designated form the age, sex, reasons for encounter and diagnoses in patients during consultations. Such data will be collected during 5 days spread out over the year. Ethical approval for the study has been granted by the Research Ethics Committee of Stellenbosch and Cape Town Universities and the study will subscribe to the Declaration of Helsinki and to MRC and ICH guidelines. You will be notified of the findings of the survey.

Your willingness to participate in this study will be greatly appreciated. Note that your participation in this study is entirely voluntary and you may decide to not participate or withdraw from the study any time without fear of reprisal.

The survey will significantly contribute to our understanding of the conditions seen in primary care and the way that they present. The research will contribute to the development of guidelines for primary care and the design of training programmes for primary care nurses and doctors. For further information about the study, please contact **Dr Jyoti Kumari** as above.

<p>I am <b>WILLING</b> to participate in this study (Please tick) €</p> <p>Name: _____ Designation _____</p> <p>Date _____</p> <p>Telephone number (w): _____</p> <p>Cell number: _____</p> <p>Fax number : _____</p> <p>Postal address: _____</p>
<p>I am <b>NOT WILLING</b> to participate in this study(Please tick) €</p> <p>Name: _____ Designation _____</p> <p>Date _____</p>

