The impact of armed conflict on health in Al-Raqqah governate, Syria

Maartje Hoetjes

The Netherlands

Master in International Health

September 2011– August 14, 2014

KIT (ROYAL TROPICAL INSTITUTE)

Vrije Universiteit Amsterdam

Amsterdam, The Netherlands

The impact of armed conflict on health in Al-Raqqah governate, Syria.

A thesis submitted in partial fulfillment of the requirement for the degree of Master in International Health

By

Maartje Hoetjes

The Netherlands

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Master International Health
September 2011 – August 2014
KIT (Royal Tropical Institute)/VU (Vrije Universiteit Amsterdam)

August 2014

Organized by:
KIT (Royal Tropical Institute)/ Development Policy & Practice Amsterdam, the Netherlands.
In Cooperation with:
VU (Vrije Universiteit Amsterdam/Free University of Amsterdam) Amsterdam, the Netherlands.

ACKNOWLEDGEMENTS

In February 2013 I left to Turkey/Syria for Médecins Sans Frontières (MSF) as medical responsible in an explorative mission. After completing the assessment, I stayed in Syria for several months to support the medical implementation and development of the Syrian mission, in different roles as project coordinator and medical coordinator. The complexity of the Syrian crisis and its disastrous impact on Syrian people's lives has been my personal motivation to write this dissertation. This study is dedicated them.

I would like to thank my thesis advisor for her support and encouragement throughout this study. I greatly appreciated her guidance and advice, which helped to keep me focused and motivated until the end. I would like to express my gratitude to the KIT course coordinators and facilitators for their advice and for making my master-study a very educative, interesting and enjoyable experience.

I am extremely thankful to Thaer Alhusain, Naser Almhawish and Tammam Aloudat for sharing their stories and taking the time to teach me about their country and its people. Your dedication has been an inspiration for me.

My gratitude goes out to the International Rescue Committee (IRC), Norwegian Aid Committee (NORWAC) and Médecins Sans Frontières (MSF) for making their data sets available for analysis. Thank you Dr. Thaer Alhusain, Dr. Naser Almhawish, Dr. Shah, Dr. Yamin Almosa Ibrahim and Vanessa Cramond for facilitating this process.

I would like to thank my colleagues at MSF for their support during my work and study, and for their ongoing efforts to save lives and reduce suffering around this world. I am still proud every day to work amongst all of you.

Lastly, I would like to thank my family and friends for their continued support during my study and during my work in the field, for their understanding and worrying on my behalf when I am working in insecure contexts. You make it all possible.

تكرس هذه الدراسة للشعب السوري

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ABBREVIATIONS

ACU	Assistance Coordination Unit
DALY	Disability Adjusted Life Years
IFRC	International Federation of the Red Cross and Red Crescent Societies
CL	Cutaneous Leishmaniasis
ICRC	International Committee of the Red Cross
ICU	Intensive Care Unit
IDP	Internally Displaced Person
IMC	International Medical Corps
IPD	In Patient Department
IRC	International Rescue Committee
IPV	Intimate Partner Violence
ISIL	Islamic State of Iraq and the Levant
MICS	Multiple Indicator Cluster Survey
MoH	Ministry of Health
MoHE	Ministry of Higher Education
MSF	Médecins Sans Frontières
NCD	Non-Communicable Disease
NORWAC	Norwegian Aid Committee
OPD	Outpatient Department
PHC	Primary Health Care
PTSD	Post Traumatic Stress Disorder
QRC	Qatar Red Crescent
RTI	Respiratory Tract Infection
SARC	Syrian Arab Red Crescent
SV	Sexual Violence
SOHR	Syrian Observatory Human Rights
UOSSM	Union of Syrian Medical Relief Organizations
UTI	Urinary Tract Infections
WHO	World Health Organization

GLOSSARY

Complex emergency: "humanitarian crisis that is linked with a large-scale violent conflict" [1].

Disability Adjusted Life Years: Value that measures life years lost both to premature deaths (years of life lost) as well as ill-health (years lived with disability) [2]

Determinants of health: factors that combined together affect the health of individuals and communities [3].

Health: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" [4].

Health system: "All the activities whose primary purpose is to promote, restore or maintain health." [5].

Intimate partner violence: "any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship" [6].

Sexual violence: "any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed, against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work" [6].

Vulnerability: "The characteristics of a person or group and their situation that influence their capacities to anticipate, cope with, resist and recover from the impact of a natural hazard (an extreme event or process). It involves a combination of factors that determine the degree to which someone's life, livelihood, property and other assets are put at risk by a discrete and identifiable event (or series or cascade of such events) in nature and in society" [7].

Violence: "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation" [6].

ABSTRACT

Problem: The Syrian conflict can be described as one of the biggest humanitarian disasters of the 21st century. In this complex emergency with overwhelming needs and limitations posed by lack of resources, security constraints and restrictions, it is necessary for intervening medical actors to develop medical strategies that are based on a thorough understanding of this context, main medical needs and most vulnerable groups.

Objective and methods: This thesis discusses the direct and indirect effect of the war on health-determinants and -outcomes and identifies the most vulnerable groups and important patterns in Al-Raqqah governate, Syria. An adjusted framework, based on the 'conceptual framework on the impact of armed conflict on health' from Guha-Sapir en van Panhuis (2002) is used to assess the impact of conflict on public health.

Main findings, conclusion and recommendation: Medical data illustrates an increase in infectious diseases in addition to an important existing burden of non-communicable diseases, mental health and nutritional problems, with children under five years, pregnant and lactating women, elderly, internally displaced population and disabled becoming increasingly vulnerable in the current context. The medical landscape has changed and health seeking choices have become increasingly influenced by security, availability and affordability of services. The primary focus should be on finding ways to strengthen, support and expand the Primary Health Care (PHC). Mechanisms should be developed to support referrals to specialized health care in more stable areas in or outside Syria. Interventions require sustainable links within the community and demand strong collaboration between the different medical actors.

Keywords: Syria, conflict and health, health determinants, vulnerable groups, complex emergency, violence.

Word count: 12,993

1 BACKGROUND ON THE SYRIAN ARAB REPUBLIC AND AL-RAQQAH GOVERNATE

1.1 SHORT HISTORY ON THE COUNTRY AND THE CONFLICT

Syria is a low-to-middle income country in the Middle East, whose borders were drawn in the Sykes-Picot Agreement between the United Kingdom and France in 1916. After this, the area defined as Syria came under French rule. Syria gained its independence in 1946 [8].

Following independence, several military coups occurred, followed by a popular uprising that gave power back to the civilians in 1954. The country briefly formed a union with Egypt from 1958-1961. Soon after, the Baath party took control over Syria by a coup in 1964. The Baathist Hafez Al-Assad, came to power in 1970, after two consecutive coups in which the Baath party leadership was overthrown, and remained in power until his death in 2000. After his death, Hafez was succeeded by his second son, Bashar Al-Assad [9]. The Al-Assad family is from a minority group of Alawites, an offshoot of Shiite Islam, who originate from North West Syria (Latakia governate) [8, 9].

The Baath-party in its Syrian origin, stood for Arab nationalism, secular rule and the application of social policies, including the establishment of free public services, subsidies for food and energy, and boosting infrastructure to provide houses, water and electricity [8, 10]. However, the Assad regime is generally described as highly authoritarian and repressive, with the Alawite-minority in control of the army, and an extensive network of security services; human rights abuses, disappearances and torture are commonly reported [9, 10].

In 2010 Syria had a population of 21,890,000 people, of which 56% lived in urban areas [11].The majority of the population is of Arab origin (90%), however, there is a large proportion of Kurdish (9%) and other minorities (Assyrians, Armenians, Circasssians and Turkmen) [8]. Many of the Kurdish Syrians do not have citizenship, which has complicated their obtaining legal jobs, get higher and university education or even travel [10]. Ninety percent of the population is Muslim, divided into different streams of Sunni Muslims (74%) and Shia Muslims (13%, including Alawite). Around 10% of Syrians are Christians and three percent are Druze [8].

Syria's economy is based on agriculture, mining (oil), manufacturing and services [12]. Following an economic crisis in 1980, the state followed a policy of neo-liberalisation, which was accelerated in 2005. This policy resulted in an economic growth between 2000 and 2010. However, in the same period there was an overall decline in household expenditure and a growing discrepancy between governates, resulting in an increased gap between the urban elite and periphery/poor [10, 13, 14]. According to experts on Syria, the economic growth did not benefit the larger population due to a poor institutional performance, a high level of corruption and a business controlled by the Assad-family [10, 13, 14].

At the beginning of 2011, inspired by the revolutions in Tunisia and Egypt (¨The Arab Spring¨), the country witnessed the first protests around the country, after the Friday prayers. This movement was initiated in the suburbs of the main cities [10]. Excessive use of force by the government propagated the anger throughout the country and turned the protests into an armed conflict. In turn, this armed uprising against the Assad regime has been transformed by regional and international politics, interests and ideologies into an ethno-sectarian war [10, 15] which since March 11, 2011, continues to the present day.

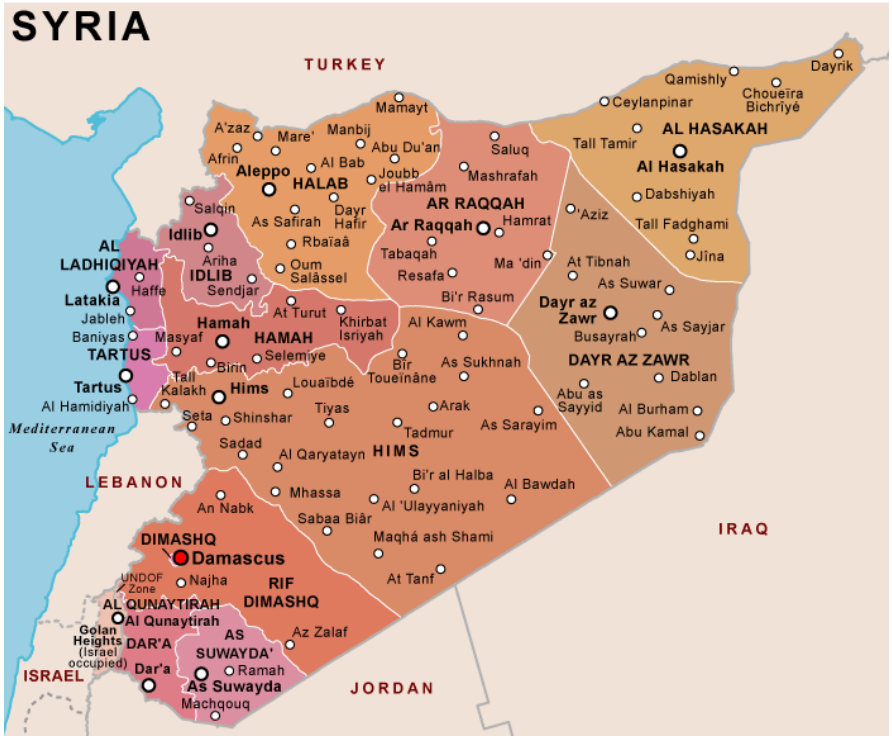

Figure 1: Syria [16]

1.2 AL-RAQQAH GOVERNATE

Syria is divided into 14 governates one of which is Al-Raqqah governate, in the north of Syria with Al-Raqqah city as its capital. According to the 2004 census, the governate had a population of 793,514 people of which 61.6% live in rural areas [17]. The governate is divided in the three districts of Tal-Abyad (pop. 127,270), Al-Tawrah (pop. 159,938) and Al-Raqqah (pop. 506,306), which are divided into 10 subdistricts. The border crossing to Turkey of the governate is located in Tal Abyad town (pop. 44,671) and therewith an important entry point for different actors [17] [Figure 1 and 2].

The main population of Al-Raqqah governate is Arab, with minorities of Kurds and (Armenian) Christians. The governate borders the governate of Al-Hassakah and Ayn Al Arab district of Aleppo governate, where the population is dominantly Kurdish. In these border areas, Arab villages and Kurdish villages are spread amongst each other. Also in the cities of Tal Abyad and Al-Raqqah there is an important Kurdish population [personal communication; T. Alhusain 18/5/14].

The Arab population originates from Bedouin tribes, nomadic and semi-settled, whose ties spread into Iraq and Jordan. In the 1950's and 1960's these tribes transitioned into sedentary agriculture along the Euphrate valley [10]. Al-Raqqah also has become home to a noteworthy population of non-tribal Arabs that originate from other parts of the country due to the Syrian governments policy to employ persons from other governates on key functions in the public sector and in the security apparatus [10] [personal communication; T. Aloudat 19/5/14, T. Alhusain 18/5/14, N. Almhawish 28/6/14].

Al-Raqqah was one of the last governates that rose up against Al-Assad's rule, however, with the take-over by opposition forces on the 5th of March 2013, Al-Raqqah town became the first, and so far only, provincial capital under full opposition control [18]. The opposition control did not bring

stability to the governate. Rival groups have battled for dominance of the governate since March 2011. Since July 2013 until present several clashes have been taking place between Kurdish forces and different Islamist forces, around the Kurdish dominated areas west and east of Tal Abyad [19–22]. Additionally, fighting erupted in the beginning of January 2014, between a coalition of opposition groups and the Islamic State of Iraq (ISIL), after which ISIL took full control over Al-Raqqah city and the majority of the governate [22, 23].

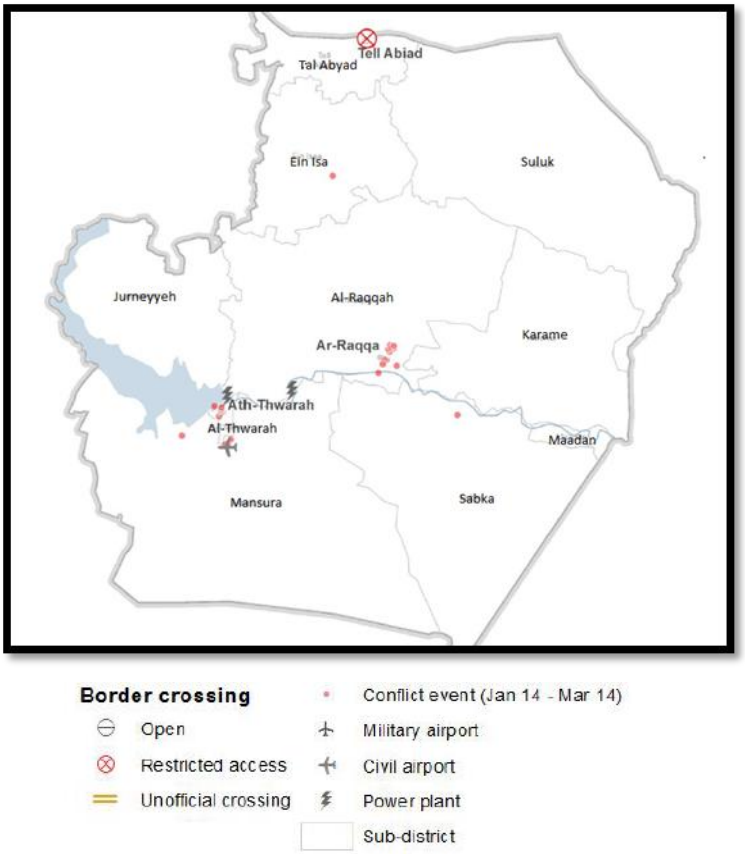

Figure 2: Al-Raqqah governate [22]

2 INTRODUCTION

2.1 PROBLEM STATEMENT

Syria has been torn by war for over three years now and the conflict can be described as one of the biggest humanitarian disasters of the 21st century. According to the Syrian Observatory Human Rights (SOHR) the death toll surpassed 162,000 victims at the end of March 2014 [24]. According to UNHCR, 2.8 million Syrians are presently living as refugees in neighboring countries while 6.5 million Syrians are internally displaced [25, 26], creating significant humanitarian and medical needs. In order to develop effective medical strategies in the current environment, it is necessary to create a better understanding of how the war has influenced the determinants of health and what consequences have resulted from this.

2.2 JUSTIFICATION

Since the start of the civil war in Syria on March 18, 2011, it has created many victims. The international focus of the conflict is on the number of deaths due to the violence. However, indirect consequences and human loss due to the civil war are many times higher than the direct fatalities from violence [27–29]. Also, indirect victims of the conflict will continue to appear into the future, even after the end of the conflict, due the negative impact on health determinants like education, physical environment, social support structures (broken families, orphans) and mental health consequences [27, 30].

Quantifying the direct and indirect effect of the conflict are however complicated [27, 30, 31]. Carrying out studies to estimate deaths or excess mortality are generally absent as well as other assessments. Carrying out such studies in current day Syria would be extremely challenging due to the displacement of medical professionals, a highly mobile population due to ongoing insecurity, fragmented medical services and restricted access by health professionals to large parts of the country, on top of an essentially collapsed health information system [22].

Prior to the conflict, the Syrian health profile included a high burden of non-communicable diseases [32]. Since the conflict, however, reports suggest that the medical needs are increasing due to an added weight of re-emerging infectious diseases [33–35] and high numbers of war wounded and disabled individuals. In parallel, the health system faces a sequential breakdown and is therefore no longer able to address these health problems [36].

In this complex emergency with overwhelming needs, medical actors face dilemmas as they have to prioritize their interventions in a context where resources are limited. Medical aid is further hampered by security constraints and restrictions, thereby even further reducing the access of medical actors to beneficiaries and vice-versa. In order to be as effective as possible in the complex environment, it is necessary for intervening medical actors to develop a thorough understanding of this context, the main medical needs and most vulnerable groups. For this purpose, an analysis should be done to describe how the war in Syria affects the public health profile.

Because the extent to which government social structures like health care are still functioning, as well as the extent of aid from UN agencies and ICRC, considerably differs between government and opposition controlled area's [37], this study will focus on Al-Raqqah governate. This governate, has been almost exclusively under control of opposition groups since the start of the conflict and government, UN and ICRC activities are minimal.

2.3 STUDY OBJECTIVES

2.3.1 General objective:

To describe the direct and indirect effect of the war on health in Al-Raqqah governate, Syria, in order to inform medical action of health actors in this governate.

2.3.2 Specific objectives:

1. Describe the pre-conflict determinants of health and health profile of Al-Raqqah governate;
2. Describe the impact of the Syrian conflict on health determinants and health indicators in Al-Raqqah governate;
3. Identify a shift in health outcomes due to the conflict, based on trends in morbidity data from Al-Raqqah governate and relevant literature;
4. Discuss the impact of the conflict on health, identify the most vulnerable population groups and important patterns, in order to inform medical action of health actors in Al-Raqqah governate.

2.4 METHODOLOGY

2.4.1 Framework

Guha-Sapir en van Panhuis (2002) developed a 'conceptual framework on the impact of armed conflict on health' [Figure 18 in annex] based on a literature review of studies of the influences of war on public health in different conflict settings [30]. A limitation in this analytical framework is that is does not address the influence of conflict on the morbidities associated with non-communicable diseases (NCDs), whilst these are dominating the morbidity profile in Syria [38]. Another aspect that is not built in the framework, is the disruption of society during conflict, while demographic changes lead to a shift in health needs and disruption of social networks decreases resilience, increasing vulnerability of certain groups [39].

This framework has therefore been adapted [Figure 3] in order to better assess the impact of the Syrian conflict on public health. The above-mentioned aspects have been added to the framework for analysis. Furthermore, this study has included pre-war determinants of health and the pre-war epidemiological profile. The health determinants discussed are based on the model [Figure 19 in annex] from Dahlgren & Whitehead (1991) and include living and working conditions, social networks and individual lifestyle factors [40].

2.4.2 Literature review

A literature review of peer-reviewed and grey literature in relation to health infrastructure, health determinants and public health problems in current and pre-war Syria was conducted. Literature was identified by using medical literature databases such as PubMed and Medline. The following combinations of key words were used: "Syria", "Middle-East", "conflict", "non-communicable diseases", "mental health", "nutrition", "health seeking behavior", "reproductive health", "infectious diseases", "outbreaks", "sexual gender based violence", "armed conflict", "complex emergency", "health(profile)". Grey literature includes published reports from UN agencies and (I)NGO's working in Syria, references from other reports and key informants, and further relevant literature identified through Google scholar search function.

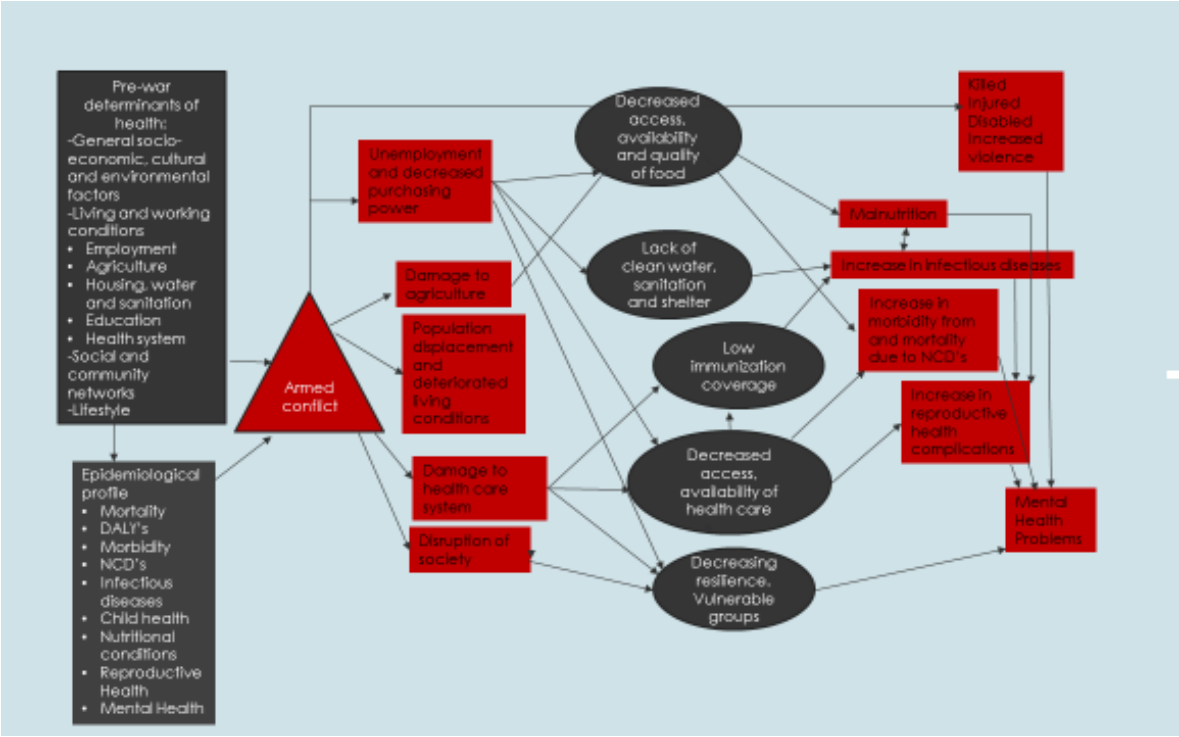

Figure 3: Framework for analysis of the impact of war on health in Syria

2.4.3 Key informant interviews

To confirm findings from the literature review and in case of gaps in the data, an expert opinion was sought. For this purpose unstructured interviews with key informants took place, with the following key informants: Dr. T. Aloudat, current head of the public health department of Médecins Sans Frontières (MSF), Operational Centre Amsterdam (OCA) and a Syrian citizen. He also previously worked for International Committee of the Red Cross (ICRC) and in Syria for the Syrian Association of the Red Cross (SARC). Dr. T. Alhusain is a surgical resident from Al-Raqqah hospital and currently works for MSF as the assistant medical coordinator, coordinating projects in Tal Abyad district of Al-Raqqah governate. Dr. N. Almhawish, surgeon from Al-Raqqah hospital, currently working as coordinator for the Norwegian Aid Committee (NORWAC), coordinating projects in Tal Abyad, Ar Raqqah governate. The interviews with the different key-informants took place at the following dates: T. Alhusain 18/5/14, T. Aloudat 19/5/14, N. Almhawish 28/6/14. One interview was conducted face-to-face while the others were conducted through skype. Notes of the conversation were taken during the interview. The average duration of the interviews was around one hour. After completing all interviews, notes were compared by subtopics. Mutual views and perceptions were used to confirm findings from literature and as a source for topics where there was no literature available.

2.4.4 Data sets

An analysis of available, existing medical data of (International) Non-Governmental Organisations ((I)NGOs) working in Al-Raqqah governate was done to establish trends and indications of a shift in the public health profile compared to pre-war Syria. MSF, NORWAC, and the International Rescue Committee (IRC) made their data sets available for analysis.

a. ***Outpatient health clinics (IRC)***: The outpatient data includes 3 health clinics, reflecting on 30,100 consultations in the outpatient department (OPD), 2,325 antenatal visits and 101 deliveries, over time span of six months, during the 4th quarter of 2013 (Q4-2013)

and 1st quarter of 2014 (Q1-2014). The health clinics are located in 3 small towns in Tal Abyad and Al-Raqqah districts, providing care for the town population as well as the population of the wider, rural area. Active conflict in the area led to the closure in two out of three OPDs in the first week of January 2014. The second OPD opened again in week 3, while the third OPD in Tal Abyad city only opened again in week 5.

b. ***Adult internal medicine ward (NORWAC)***: The internal medicine data includes 1,009 adult (>15 yrs) internal medicine ward admissions, including intensive care unit (ICU), in the 1st quarter of 2014 in the Tal Abyad hospital.
c. ***Paediatric ward (MSF)***: The paediatric ward data describes 1,654 admissions of children between 0 and 15 years, between July 1, 2013 and April 30, 2014, in Tal Abyad hospital. These include 189 daycare admissions. There is no aggregated data on IDP/host status. During the month of January the ward has been temporarily closed due to active fighting in the area.
d. ***Outpatient mental health care program (MSF)***: The mental health data describes 109 admissions in the mental health program of Tal Abyad between January 1 and April 30, 2014.
e. ***Other sources***: The database from the Violence Documentation Center was used to quantify direct victims of violence in Al-Raqqah governate. Furthermore, data was used from the Syrian Ministry of Health, the Assistance Coordination Unit (ACU), the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF).

2.4.5 Ethical considerations

The study concerns an analysis of pre-collected data, therefore did not require ethical clearance. The INGO's were able to approve the use of their data through their internal data-sharing policies. Key informants provided informed consent to use and source information obtained during their interviews.

2.4.6 Thesis structure

While the introduction of this thesis describes the structural environment, chapter 3 aims to describe the living conditions, social networks and lifestyle factors influencing health. This chapter is supplemented with a description of the epidemiological profile. The epidemiological profile will be structured by morbidity group, in order to allow an analysis with the medical data from the current situation. Chapter 4 will describe the impact of the conflict on health determinants and therewith the increased health risk factors. Chapter 5 describes the findings from the analyzed medical data, chapter 6 and 7 discusses the study findings, limitations and recommendations.

The focus for this study was on Al-Raqqah governate. Data and literature from this area is fragmentized and limited, moreover the research was limited to English sources. Furthermore the context is very dynamic and changing every day. Therefore the study has focused more on describing trends, and made use of different sources (medical data, literature study and key informants) to increase the validity of the findings.

3 PRE-WAR DETERMINANTS OF HEALTH

3.1 LIVING AND WORKING CONDITIONS

3.1.1 Employment and agriculture

The main economic activity in Raqqah is agriculture, with the Euphrates as an important source of water for irrigation [41, 42].

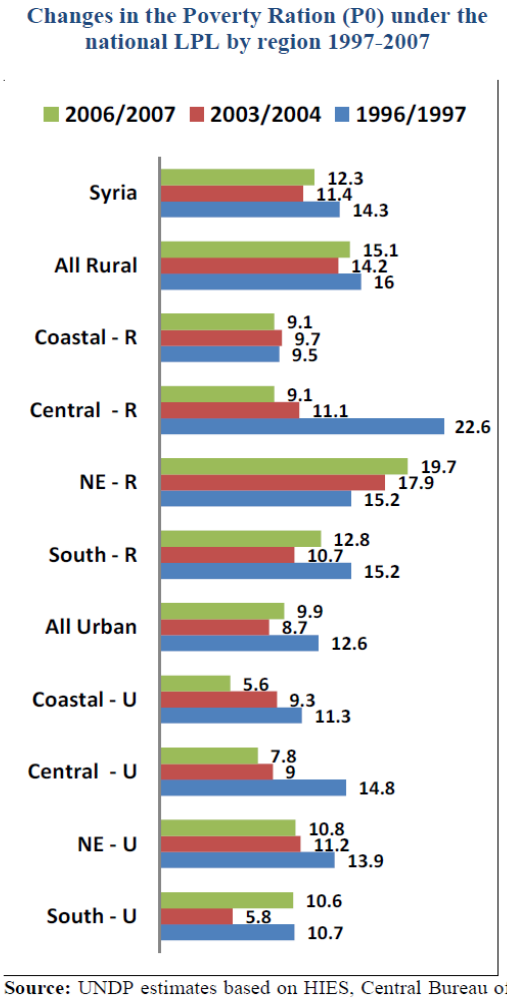

Figure 4: Changes of the poverty ration under the national lower poverty line by region, 1997-2007 [43]

As shown in Figure 4, the north-eastern governates of Syria, namely Hassakeh, Deir al-Zour and Al-Raqqah, have witnessed a growing poverty in the rural areas (NE-R) and have become the poorest regions of Syria in the past decade. Al-Raqqah's agriculture was greatly affected by the water crisis that peaked in 2008 and increased unemployment and reduced local food production. This event coincided with external economic factors and neo-liberalization policies driving up prices of food, fertilizers and energy. These developments caused many of Al-Raqqah farmers to move from their lands to the southern cities, in the hope to find employment [10, 14, 43].

3.1.2 Housing, water and sanitation

Ninety-one percent of families in Syria owned their houses and although there were significant disparities between urban and rural population, 92.4% of Al-Raqqahs population had improved sources for drinking water[1], and 85% was using improved sanitation facilities[2] for excreta disposal in 2006 [14, 44].

3.1.3 Education

Al-Raqqah governate scores the lowest rates in Syria regarding education, with only 55.3% of the children completing their primary school in 2006 [44]. Furthermore there are important gender differences, especially in secondary school attendance rates, with only 37.7% of all girls compared to 50.7% of boys attending in the same year. As a consequence of these low education rates, only 75.3% of the women in Al-Raqqah are literate [44].

[1] Piped water, public tap, tube well, protected well, protected spring and rainwater collection.

[2] Flush or pour flush to a piped sewer system, septic tank, ventilated improved pit latrine, with slab and composting toilet

3.1.4 Health system

In the tradition of Baathist social policies, Syria had a well-developed public health system that was freely accessible. It had a strong emphasis on primary health care (PHC) and prevention, provided from health posts and health centers, with a referral mechanism to district and governate health facilities. Through a strong component of mother and child services, provision of consumer subsidies, and improvements in living conditions, important advances were achieved in health indicators in the last decades [36, 45–48].

Most medical structures are managed by the Ministry of Health (MoH), while the university hospitals fall under the Ministry of Higher Education (MoHE) [48]. Pre-conflict Al-Raqqah governate had 11 hospitals of which four were public hospitals; one in Tal-Abyad, one in Al-Thawrah and two in Al-Raqqah city (one general and one emergency obstetric hospital). All these structures were managed by the MoH [49].

An important pharmaceutical industry in Syria produced more than 90% of the medicines used in the country [14, 36, 48]. There were sufficient and well trained health workers, although there was an imbalance in the number of doctors in comparison to other health workers [48]. Graduates who finished with high grades had the chance of entering the MoHE system and specialize. The others would enter the MOH system and were obliged to work two years in a rural public health structure [48] (personal communication; T. Aloudat 19/5/14). Government salaries were relatively low, therefore the health staff were allowed to have a private practice in parallel to their work in the public sector [48].

Mental health care was under developed, as the number of psychiatrists and psychologists functioning (0.31 and 0.1 per 100,000 population respectively) were far below the WHO recommendations[3]. Official in-service in training for PHC staff on these issues was also lacking [50, 51]. In Al-Raqqah governate there used to be only one psychiatrist (personal communication; T. Alhusain; N. Almhawish).

The double role of physicians in both public and private sectors undermined the public sector. Also, the perceived poor quality of care and long waiting times in the public facilities, contributed to patients diverting to private services or pharmacies [45] (personal communication; T. Aloudat, T. Alhusain; N. Almhawish). This development increased inequity between poor and rich, limited access for the poor to quality care and mostly affected vulnerable groups, such as chronic diseases patients [45, 46].

3.2 SOCIAL AND COMMUNITY NETWORKS

Social support mechanisms in Al-Raqqah are mainly derived from the tribal structures and (extended) family links. Although the tribal hierarchy decreased throughout the Baath period, the tribal links are still existent and are fallen back on in difficult times [52, 53] (personal communication; T. Aloudat, T. Alhusain and N. Almhawish).

Religion did not play a prominent role in the society due to the secular policies of the Syrian regime, until the more recent years when the role of Islam started to increase, mainly in urban areas (personal communication; T. Aloudat, T. Alhusain, N. Almhawish).

[3] WHO recommends 3.4 psychiatrists and 1.4 psychologist per 100,000 population [50, 51]

All citizens have equal rights under the Syrian constitution. The Baath party promoted the principles of gender equality, including equal access to employment and education for men and women and ratified the convention against discrimination of women. However, in personal status laws, several articles concerning marriage, divorce and child custody assign an inferior status to women [54–56]. The traditional, primary role of women in the society is to take care of the family's well-being. In many families, social honour codes around a females (sexual) behaviour, mobility and marriage, still play an important role [55].

With economic growth in the 1970's and 80's, women were encouraged to join the workforce, especially in the public sector. In order to facilitate their entry in the workforce, labour laws on maternity leave and childcare were established [54]. However, in the last decade this trend ceased due to the increasing unemployment which decreased the political need to mobilize women to work and secondly due to an increasing role of the Islam in society, emphasizing the role of women as mothers and wives [54]. The female labor force participation rate dropped from 21.3% in 2001 to 12.9% in 2010 [14].

The Multiple Indicator Cluster Survey (MICS) of 2006 measured that 13.9% of women age 20-49 years in Al-Raqqah were married before the age of 18, while at the same moment 3.8% of women from 15-19 years were married [44]. In wider Syria the percentage of women married before 18 years is higher in urban (18.6%) than rural (16.7%) area's, decreases with a higher level of mothers education[4], but is higher in higher socio-economic classes[5] [44].

The inferior status of women before the law and societal norms limiting women's development, made women a vulnerable group pre-war [43, 44].

3.3 LIFESTYLE

There is no published evidence available describing health seeking behaviour in Syria prior to the conflict. Key informants reported that it was common practice that patients would visit multiple doctors for single ailments, starting within the public health system for the first consultation and diagnostic tests, then continue on to the private health system for further testing, confirmation of diagnosis and treatment (personal communication; T. Aloudat, T. Alhusain, N. Almhawish).

With regards to lifestyle, Syria scores high in health risk behaviour like diet, tobacco use[6] and physical inactivity [57–59]. Smoking is predominantly a male activity while physical inactivity mostly occurs amongst women and probably is linked to gender roles [60]. Risk behaviour in traffic furthermore contributes to a high number and high fatalities in traffic accidents [48].

[4] 19.7% women married before their 18th in the group where her mother's education was none, compared 1.3% in the group of women that had a mother with university education [44].

[5] The percentage of women married before their 18th is 14.6% in the poorest, 20.3% in the fourth and 16.3% in the richest wealth index quintile [44].

[6] Tobacco use amongst population > 15 years is 42% for men and 0% for women [59].

3.4 PRE-WAR EPIDEMIOLOGICAL PROFILE

Before the conflict Syria was well advanced in the epidemiological transition (i.e. the burden of disease in the general population switches from infectious diseases to more chronic diseases). The country demographics show a reduction in fertility rate (from 5.3 in 1990 to 3.8 in 2004), an overall decline in mortality rates and increase in life expectancy from 66.4 years in 1990 to 73.1 years in 2009 [36, 61].

3.4.1 Mortality

In 2011, the proportional mortality for all-cause deaths were mostly from cardiovascular diseases (44%) and other non-communicable diseases (18%). Communicable, maternal, perinatal and nutritional conditions only made up 13% of the total deaths [Figure 5].

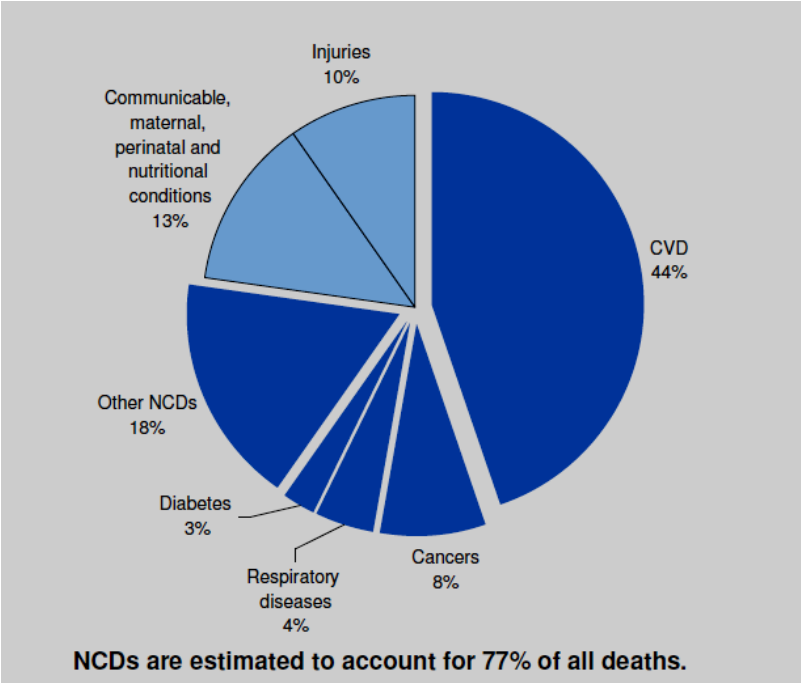

Figure 5: Proportional mortality (% of deaths, all ages), Syria 2011 [32]

3.4.2 Disability adjusted life years

Ischemic heart disease, major depressive disorder and cerebrovascular disease were the leading causes of disability adjusted life years (DALY's) in Syria in 2010 [57]. Figure 6 ranks the causes of DALY's according to their burden, while the bars indicate how much the burden has increased or decreased compared to 1990. Generally this figure illustrates how NCD's, mental health problems and injuries have been on the rise, while the burden of infectious diseases and morbidities related to child birth declined in the decade before the conflict erupted [57].

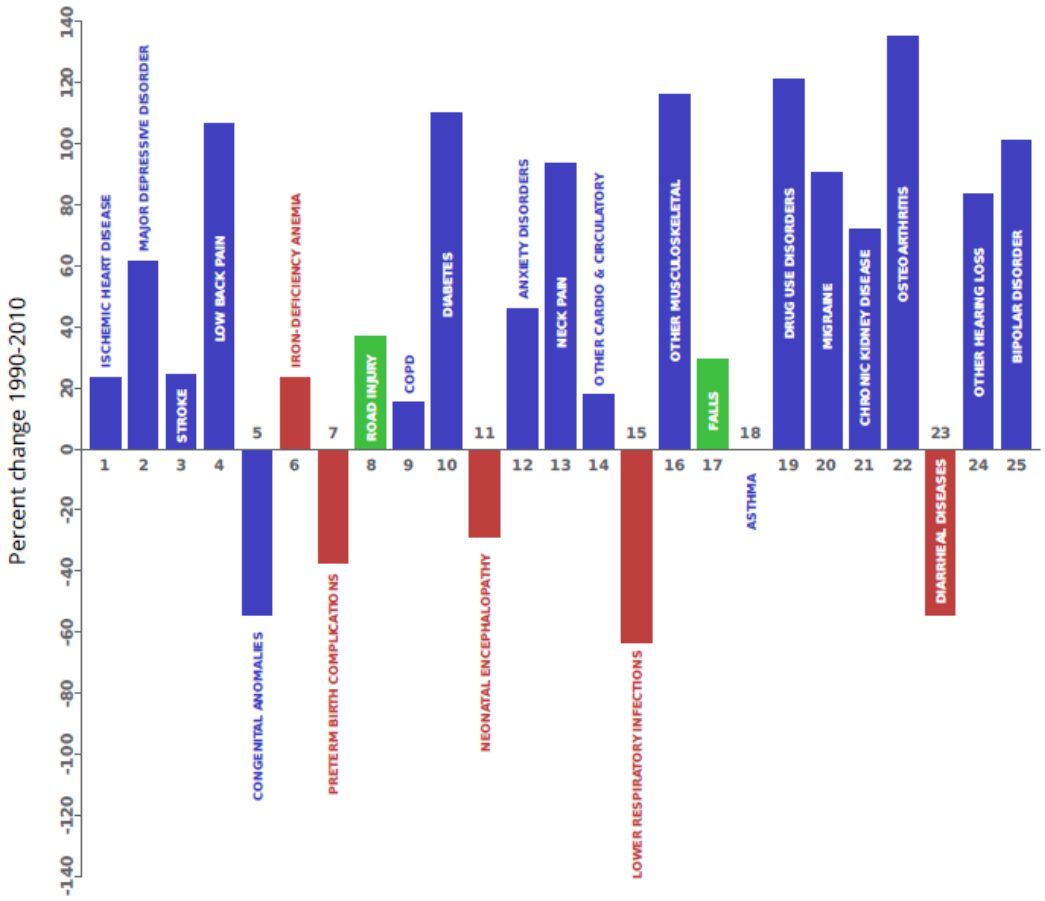

Figure 6: Leading cause of DALY's and percent change 1990-2010 [57].

3.4.3 Morbidities

The main causes of morbidity in 2006, according to data of the MoH are illustrated in Table 1. The MoH does not describe the data source used to publish this data. This data indicates that digestive diseases and respiratory diseases were the main reasons for people to seek health care.

Table 1: Top 10 causes of morbidity in Syrian Arab Republic (2006)	
Digestive diseases	15.7%
Respiratory diseases	13.2 %
Cardiovascular diseases	11.3%
Infectious and parasitic diseases	6.9%
The eye and adnexa	4.0%
Genitourinary diseases	3.5%
Musculo-skeletal system and connective tissue	3.4%
Blood diseases	3.2%
Accidents	2.9%
Tumors	2.8%
Others	33.1%

Table 1: Top 10 causes of morbidity in Syrian Arab Republic [62]

3.4.4 Non-communicable diseases

Urbanization with its changing lifestyle and health risk behaviour [see 3.3] in pre-conflict Syria resulted in a rise in non-communicable diseases (NCDs) and ageing diseases[7] [36, 48, 57]. Cardiovascular diseases, cancer, respiratory diseases (COPD) and diabetes were the main NCD's causing mortality and morbidity [32, 48].

3.4.5 Infectious diseases

Infectious diseases made a significant decline in pre-war Syria due to improved living circumstances and preventative services [63]. A reasonable vaccination coverage existed in children between 12-23 months with more than 87% of children completing their vaccination schedule [44]. Between 2005 and 2011 the occurrence of measles and mumps was reported, with small outbreaks in the country, although their size remained small (highest peak 517 measles cases in 2006 and 561 mumps in 2008, no locations specified) [64].

Cutaneous leishmaniasis (CL) formed a public health problem, with a total of 42,165 cases reported in 2010. The incidence of CL saw a significant increase in 2008, due to increased migration to towns resulting in an increased density of population in urban areas. The main burden of the disease was in Aleppo governate, followed by Idlib and Hama. The estimated incidence for Raqqah governate in 2008 was low with 1-10 per 10,000 population [65].

Syria has the highest worldwide known annual incidence of brucellosis, with 16 cases per 10,000 people/year [66]. There are no specific incidence rates for Al-Raqqah described. The prevalence of hepatitis A in the country is high; in 2000, a study noted that 89% of the study population had been previously infected, with 95% of cases occurring in patients under the age of 15 years [67]. Typhoid is endemic in Syria and cholera has not officially been reported since 1977 [68], although health professionals in Al-Raqqah have mentioned an outbreak of acute watery diarrhea in Ma'adan district in 2007 (personal observation, personal communication; T. Aloudat). There is no malaria transmission in the country [69].

TB and HIV prevalence have been low with a TB prevalence rate of 2.3 per 10,000 population and, with HIV screening generally implemented, 762 person reported to be living with HIV/AIDS in Syria in December 2012 [43, 59, 70].

3.4.6 Child health

The child mortality rate dropped significantly in Syria from an under 5 mortality of 38 per 1000 live births in 1990 to 16 per 1000 live births in 2010 [71][8]. There are no specific figures for Al-Raqqah.

The main causes of neonatal deaths in 2008 were pre-term births (50%), congenital anomalies (27%) and infections (8%) [71]. The main causes for under five deaths in the same year are included in the category 'other' (31%), pneumonia (8%), injuries (7%) and diarrhoea (5%) [71].

An important factor to note is that the proportion of consanguineous marriages[9] in Al-Raqqah is high (67.5%), with first cousin marriage the favoured type of consanguinity (39% of all marriages) [72]. Children out of consanguineous marriages have a higher chance to be born with autosomal recessive diseases and malformations [72]. This pattern will therefore play a role in the (child) health needs in

[7] Ischemic heart disease, stroke and other cardio and circulatory diseases increasing their proportional weight in premature mortality with 22, 23 and 13% between 1990 and 2010 (39,52,59).

[8] The under 5 mortality rate is estimated 6/1000 live births in developed regions [126].

[9] Consanguineous marriages in this study was measured until the degree of relationship beyond second cousins (>1/64).

Al-Raqqah. Moreover, there is a high carrier rate amongst the Syrian population of haemoglobinopathies like beta-thalassemia (5%) and alpha-thalassemia (1-5%) [73], which are possibly even higher amongst the Raqqah population due to consanguinity.

3.4.7 Nutritional conditions

Anemia is a problem in all age groups in Syria, with a prevalence of 23% in children from 6 months to 5 years and over 40% in women of childbearing age in 2002, mainly assigned to iron-deficiency, although other micro-nutrient deficiencies and the high rates of haemoglobinopathies also contribute to this prevalence [73, 74].

Under nutrition was a problem in pre-war Syria, reflected in 9.7% of children under five reported underweight for their age in the MICS of 2006. Wasting was described to be more prevalent in Al-Raqqah governate with 3.7% of children severely wasted[10] and children from 6-11 months mostly affected [44]. This problem could be connected to the low breastfeeding rates, as infant-formula increases the risks for infections and is not that well-adjusted to the child's needs. In Al-Raqqah the estimated exclusive breastfeeding rates were only 26.5% [44]. The MICS in 2006 estimated that 11% of infants in Al-Raqqah governate was born with a low birth weight (<2500 grams) [44].

3.4.8 Reproductive health

Syria had a, for the middle-east region, a comparative low maternal mortality (58 per 100,000 live births), although this is five times higher than in western countries. Furthermore there are significant differences in the maternal mortality ratio throughout the country; ranging from 34 per 100,000 live births in Damascus to 81 per 100,000 live births in the Al-Raqqah governorate in 2004 [75]. Reasons for this difference can be explained by the lower educational and economic levels in Al-Raqqah [43]. Moreover the total fertility rate in Al-Raqqah was 5.46 in 2005, which was above the total fertility rate (3.1) for Syria [75].

Sexual activity before marriage is socially not acceptable for women in Syria. Abortion possibilities were available and happened commonly, but only under hidden circumstances. Also problems like sexual violence and sexual transmitted diseases were issues for which care was likely not sought, as they were surrounded by a vast stigma (personal communication; T. Aloudat, N. Almhawish).

Across Syria the caesarean-section rate was 14.8% in 2000, which seems rather high taking into account that the same year only an estimated 55.4% of women delivered in the hospital [76]. No hospital caesarean-section rate has been reported. In 2006, 85% of women in Al-Raqqah delivered with skilled attendants of whom 62.9% delivered in a health facility and more than 80% of pregnant women went for an ANC visit one or more times [44].

3.4.9 Mental health

Major depressive disorders, anxiety and drug use disorders are an important burden of ill-health in Syria [Figure 6] [57]. Unfortunately there is hardly any English literature describing this problem, which is probably due to the under-development of this sector in the Syrian health system [see 3.1].

Key-informants describe that psychological care used to be non-existent in Al-Raqqah. Most patients with psychiatric problems used to be treated by neurologist and there was a high incidence of prescription on tranquilizers (personal communication; T. Alhusain; N. Almhawish).

[10] weight for height less than minus three standard deviations

4 THE SHIFT IN SOCIAL DETERMINANTS OF HEALTH AND HEALTH INDICATORS FOLLOWING THE CONFLICT.

4.1 LIVING AND WORKING CONDITIONS

The Syrian conflict and economic sanctions have had a devastating impact on the living conditions of the Syrian population.

4.1.1 Employment and purchasing power

In 2011 there was an 80% increase in unemployment in Syria, with the rural area of Al-Raqqah one of the most affected areas. Two thirds of the unemployed are between 15 and 29 years with a low educational level [14, 42]. In 2013, 48.8% of Syrians were estimated to be unemployed [77], we can assume that this percentage will be higher in Al-Raqqah. The purchasing power of individuals decreased, due to the devaluation of the Syrian pound with 300 % against the US dollar and increasing prices due to the sanctions against the country and market disruption [77, 78]. The oil sanctions further hampered the affordability of fuel for cooking, heating, power supply, transport and functioning of the water system, with additional indirect consequences for prices of food and other products [22]. The Syrian Centre for Policy Research estimates in 2013 that by the second quarter of 2013, more than half of the Syrian population had descended into poverty [77].

The unemployment and declined purchasing power also influenced the access to health care. Patients who were previously able to afford private health care are becoming increasingly dependent on the public health system [26].

4.1.2 Agriculture and food availability

Since the conflict, agricultural production has been hampered[11] by insecurity, thereby limiting access to cultivation fields and markets as well as the high price of fuel. Al-Raqqah also experienced damage to its irrigation canals (10%) [42]. Limited rainfall during the winter of 2013/2014, further raises the expectation that the production this summer (2014) will be low [22, 79].

Shortages of food, due to limited production as well as import problems, have been reported. The prices of bread and other food items have significantly increased by as much as 100% in some areas [22, 78]. In May 2014 only 70% of bakeries in Al-Raqqah were reported to be working. The main constraints are the lack of flour and fuel [80].

Many Syrians, both resident and Internally Displaced Persons (IDPs) population, report that they have been changing their eating habits since the conflict started. Reports of consumption of less meals and limiting consumption of fruit, meat, dairy products and eggs due to their high costs [26, 42] are not uncommon. Additionally, the availability and affordability of infant formula has become severely challenged [34].

[11] The wheat production of 2013 showed a decline of 40% compared to the trend of the previous 10 years and the livestock sector in Syria has significantly reduced [42]

Syrians report to be borrowing food/money or sending family members to relatives with more resources. Negative coping mechanisms such as the sale of productive assets, early marriage, working for armed groups and begging are described as current ways of dealing with the food insecurity [42].

The Turkish border of Al-Raqqah has been closed since January 2014 due to the increasing influence of ISIL in this region. This further limits the access of (food) commodities and humanitarian aid into the area [22]. In April 2014, the WFP reported that Al-Raqqah had not received the planned food distributions for 4 months [22].

4.1.3 Housing, water and sanitation

Through voluntary and forced displacement a significant part of the population has left Al-Raqqah governate and population from other governates have arrived (dominantly Aleppo, Hama and Homs). In December 2013 OCHA estimated that 251,000 IDPs reside in Al-Raqqah [26].

There are no official collective centers or camps in Al-Raqqah governate. IDPs live with host families, in empty buildings or makeshift accommodations [26]. The displacement is multidirectional and dynamic, as many IDPs establish links with different locations and have been forced to move several times, depending on the location of the fighting [81, 82].

Access to clean water around the country has declined with an estimated of 40% from pre-crisis levels, due to the destruction of water plants (2014) [26, 83]. The ACU reports a lack of fuel for water pumps and a lack of tanks to store water in Al-Raqqah [84]. The assessment of more than 60 collective centers in Tal Abyad district by MSF in the summer 2013, had the same findings. This report also describes how many existing sanitation structures in these centers are not functioning anymore due to clogging of the system and damage to drainage channels. Most of the water being consumed in Al-Raqqah is untreated, increasing the risk for spread of waterborne diseases [26, 34, 78]. Furthermore, due to lack of hygiene and crowded living conditions there is a proliferation of vectors of disease (i.e. flies, sandflies). As result a high prevalence of diarrhea and skin diseases are being reported amongst the IDP's [85].

4.1.4 Environment

Due to the sanctions on oil and disruption of the normal processing process, several unregulated oil refineries have started to appear in Al-Raqqah governate. These self-constructed refineries pollute the soil, water and air. Many children are working in these refineries, which can have effects on their health [86]. In the Iraq war, oil fires caused respiratory tract complains, rash and fatigue [87].

Land mines are used in the conflict and known to be placed in areas around Tal Abyad and Al-Raqqah town [80]. There are no indications of the usage of chemical weapons in Al-Raqqah governate.

4.1.5 Education

Another way in which the conflict has impact on the society is through the hampered education. Poor education is linked to poor health and high stress levels [3]. In Al-Raqqah an estimated 23% of schools are currently not functional due to insecurity, many teachers have left the area and schools have been damaged or are functioning as residence for IDPs [80]. Students in Al-Raqqah were not able to make their final exams this year, due to living in opposition controlled areas (personal communication; N. Almhawish, T. Alhusain).

4.1.6 Health care system and health indicators

The availability of medical care in Syria is severely limited by, as Dewachi (2013) describes it, the increasing 'militarization of health care'. Medicine is targeted, as well as implicated in the warfare. Examples are the (deliberate) attacks on medical facilities by both government and opposition forces, repeated airstrikes by government forces on health facilities, the usage of health professionals as an instrument to commit violence by the different actors (through torture, withholding of care, preferential treatment) and the targeting of health workers [81, 88–90].

The national hospital of Al-Raqqah was bombed on June 20, 2013, totally destroying the intensive care unit (ICU) and injuring 3 medical staff [91]. On March 11, 2014, the hospital was again targeted, destroying the dialysis unit. Medical structures in Tal Abyad were damaged during violence on the 11th January 2014 [92]. Other constraints to humanitarian access reported in the governate include active conflict which limits access and armed groups interfering in humanitarian activities by restricting movements of (I)NGO's and obstructing beneficiaries from accessing humanitarian aid [84].

In Al-Raqqah, 70% of the public health facilities are reported either out of service or damaged (December 2013) [34, 78]. The ratio of medical doctors per population across Syria has dropped to 1 per 4,041 persons from a 1 per 661 persons before the start of the conflict [77]. This is the result of medical doctors fleeing the country. The domestic pharmaceutical industry has been severely damaged and production has declined with an estimated 60-70% [77]. Moreover, the import of certain medications and medical equipment are constrained by international sanctions [14, 93, 94]. MoH supply lines to hospitals and health centres in Al Raqqah are presently severly hampered or non-existent [22, 26]. Due to the lack of available healthcare inside Al-Raqqah, many Syrians have also sought it outside Syria, and hospitals in Turkish Urfa province are overloaded (personal communication; T. Alhusain 18/5/14, personal observation).

The conflict has led to a breakdown of the vaccination program, due to power cuts, lack of supply, lack of staff and insecurity that prevent parents to bring their children to the existing vaccination sites. In August 2013, 25% of the vaccination sites in Al-Raqqah district and 80% of vaccination sites in Tal Abyad district were not functioning anymore, while the operational sites were only partially covering with interrupted outreach programs [95]. Due to the collapse following the start of the conflict three years ago we can assume that a majority of the children under the age of four years in Al-Raqqah have not completed their vaccination schedule.

With the collapse of the health system, surveillance for communicable diseases has also stopped functioning. There is therefore no system in place for the early detection of outbreaks, the risk for which is high in the current context. The ACU has set up an early warning system in Northern Syria and is publishing regular reports, whilst the MoH/WHO is also publishing weekly epidemiological reports, including Al-Raqqah. However, the disease categories and case definitions used by both organizations are different, resulting in discrepancies in reported figures, unclear geographical areas of coverage and many gaps in reporting sites and reporting frequency [88, 96–98].

The amount of aid from United Nations (UN) agencies and International Committee of the Red Cross (ICRC) differs between government and opposition controlled areas. These agencies depend on the authority of the Syrian state, which has implemented restrictions and bureaucratic procedures, that effectively limit the humanitarian access and support across frontlines [37]. On February 22, 2014 the UN adopted a resolution on access to aid, demanding 'safe and unhindered humanitarian access – including conflict lines and across borders – to people in need throughout Syria'. This non-binding

resolution would also enable cross-border aid and therewith was a breakthrough on diplomatic grounds. However, as UN Secretary-General Ban Ki-moon stated end April 2014, the access of foreign aid overall had not improved at that point [99, 100]. Currently the Organisation for the Coordination of Humanitarian Affairs (OCHA), UNICEF and WHO only have 'facilitators' in Al-Raqqah governate, the other UN organizations are absent [78]. There are a handful of (I)NGO's that work inside Syrian borders, in opposition controlled areas, without permission from the Syrian government. MSF closed its medical activities in this governate due to security constraints in May 2014. Furthermore there are national organizations and networks, like the Union of Syrian Medical Relief Organizations (UOSSM) that support facilities with medical assistance and relief. All (I)NGO's operating inside Al-Raqqah governate, work from neighboring Turkey. The violent context inside Syria as well as restrictions and regulations for (I)NGO's in Turkey, make it extremely challenging for medical actors to bring in supplies, communicate and have access for their staff in a safe way [82].

4.2 DISRUPTION OF SOCIETY

The conflict in Syria is mostly restricted to urban setting, and has resulted in a demographic shift within cities [81]. It has disrupted social networks that used to provide formal and informal care and changed social roles and norms. These have been replaced by armed groups imposing their ideology, which might not connect to the needs of the community and can increase vulnerability of certain groups [39, 101, 102].

In areas controlled by the Islamic State of Iraq and the Levant (ISIL) (including Ar-Raqqah), the group has imposed their interpretation of Islamic rule, with strict obligatory praying times and a smoking ban. For women there is a strict dress code that imposes the abaya and niqab. Women are not allowed in public unaccompanied by a male relative. If these rules are not obeyed, women and their male relatives risk imprisonment, abduction and execution [22, 103]. These new restrictions further limit women's coping mechanisms, exposing them increasingly to early marriage, sexual exploitation and abuse [102, 104]. Especially women of female headed households, poor families and women living in crowded collective centers are increasingly vulnerable. Minority groups like Kurds and Christians have also become vulnerable due to ISIL's imposed restrictions on and actions directed towards these groups [22, 103, 105, 106].

5 IMPACT OF WAR ON EPIDEMIOLOGICAL PROFILE OF AR RAQQAH GOVERNATE

5.1 MORBIDITY

5.1.1 OPD

In the fourth quarter of 2013 (Q4-2013) and first quarter of 2014 (Q1-2014) 30,100 patients were consulted in the 3 OPD's in Tal Abyad and Al-Raqqah districts. Respiratory tract infections (RTI) consistently reflect the main burden of disease in terms of proportional morbidity with an average of 35% of all OPD consultations, followed by diabetes (8.5%), bronchial asthma (6.6%), hypertension (6.4%) and watery diarrhea (6.4%).

Twenty-seven percent of all these OPD consultations were provided to children under five and in the first quarter of 2014, 23% of consultations were provided to adults older than 50 years. Compared to the Syrian demographics[12], persons in these age groups proportionally utilize more health care services as the healthcare needs in these specific groups are probably higher. The main consultations amongst under-fives were for RTIs (56.3%), watery diarrhea (13%) and bronchial asthma (6.3%) [Figure 7]. Amongst the population over 50 years these were for hypertension (21.5%), diabetes (21.3%) and RTI's (16.2%) [Figure 8].

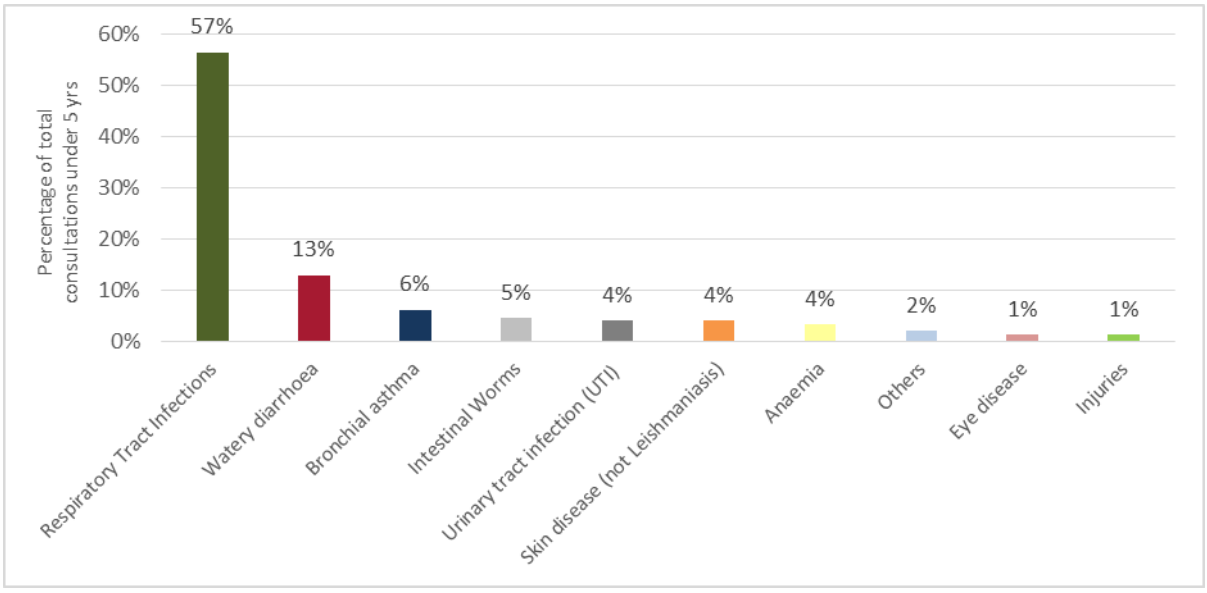

Figure 7: Main morbidities amongst children under 5 in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014, (N=9007)

[12] 12,3% of the Syrian population < 5 years old [127] and 2,3% of the Al-Raqqah population older than 65 [128] (no exact figures described for >50 years)

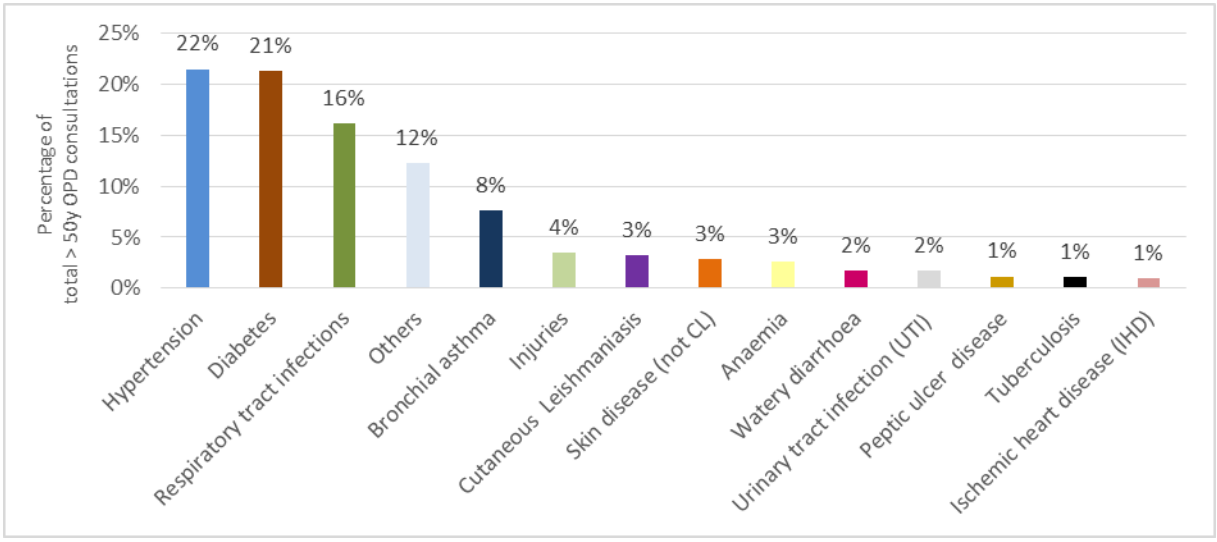

Figure 8: Main morbidities amongst the patients > 50 years in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q1-2014 (N=3031)

An average of 21% of all OPD consultations was provided to IDP's. RTI's (23%), diabetes (11.4%) and hypertension (7.9%) were responsible for the majority of consultations in the IDP population. Comparatively, in the host population these were RTI's (37%), diabetes (7.8%) and watery diarrhea (6.6%) [Figure 9].

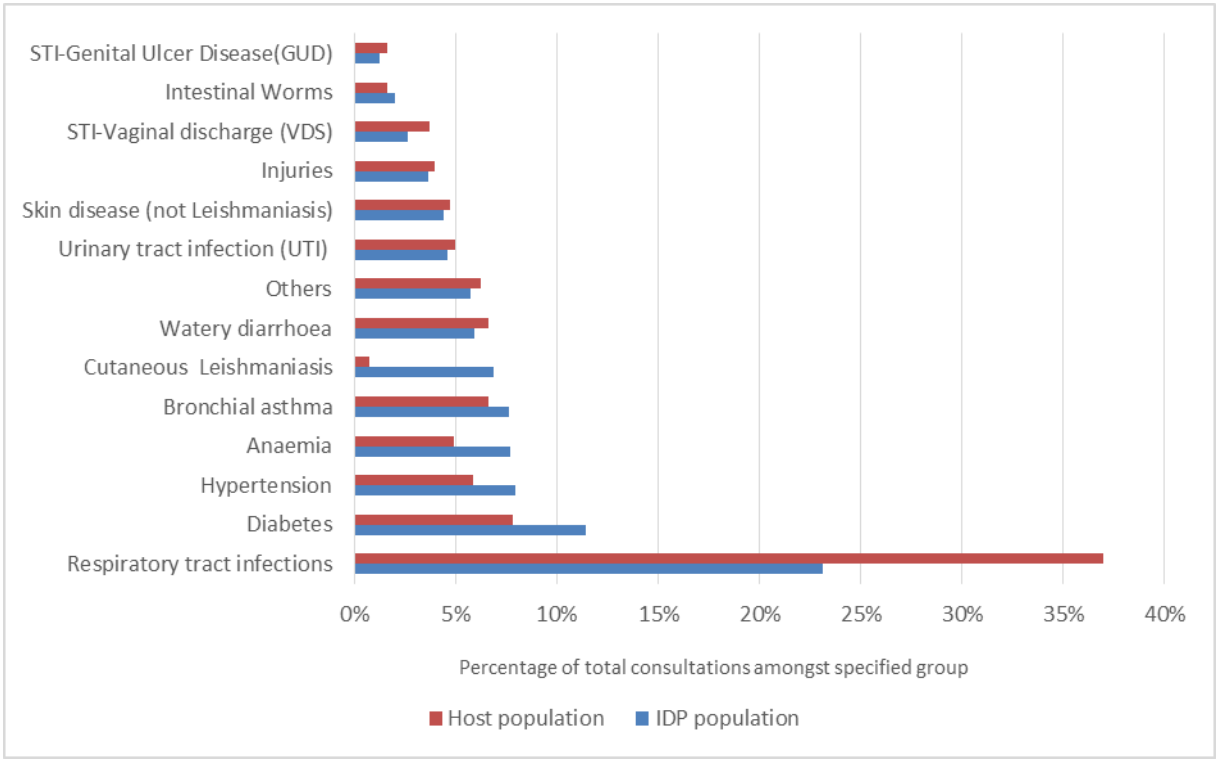

Figure 9: Main morbidities amongst IDP and host population in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014 (N=30,100)

5.1.2 Internal medicine ward

The internal medicine ward (>15 yrs) in Tal Abyad admitted 1,009 persons during Q1-2014, of which 152 were treated in the Intensive Care Unit (ICU). Figure 10 describes the main reasons for admission. Only 10% of the patients were defined as IDPs, which is lower than the percentage of IDPs seen in the 3 OPDs spread out over the districts (21%) and might indicate an access problem for IDPs to seek secondary health care in Tal Abyad. Main reasons for admissions were gastro-enteritis (19%), acute bronchitis (17.8%) and pneumonia (10.6%) [Figure 10].

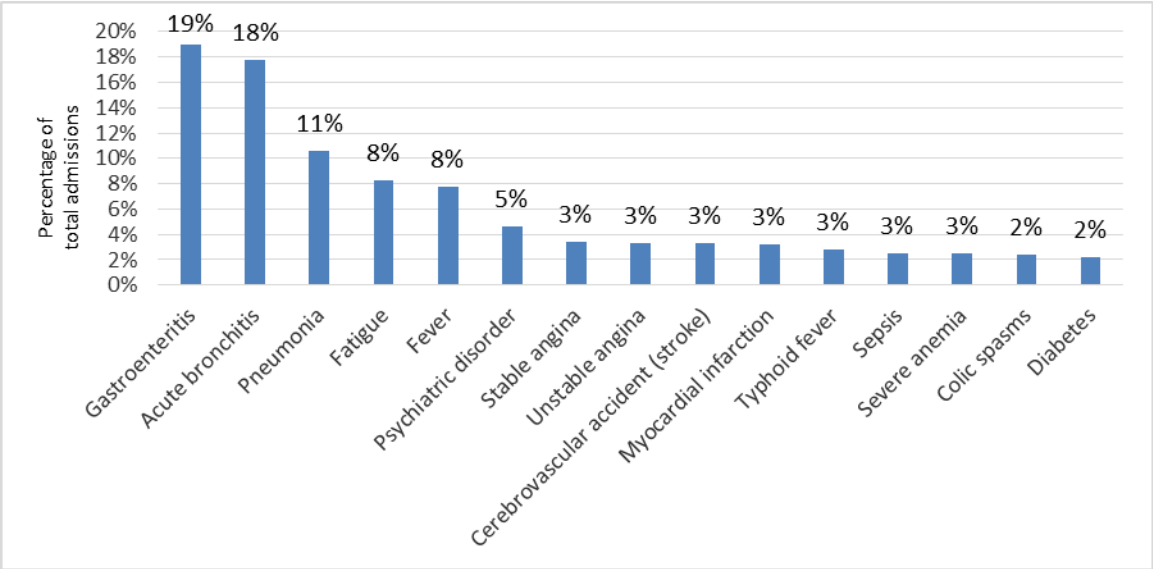

Figure 10: Main morbidities amongst patients >15 admitted in the IPD (including ICU) of Tal Abyad hospital, Q1-2014 (N=1,009)

5.1.3 Paediatric Ward

The paediatric ward admitted 1,654 children between July 2013 and April 2014, of which 82% were under five years old (68% <2 yrs). The main reason for admissions was gastro-enteritis (30.5%), RTI (26.3%) and others (7.1%).

5.1.4 General morbidities compared to pre-conflict health profile

When classifying the main morbidities seen in the OPD, internal department and pediatric ward in the disease categories used by the MoH to indicate the main morbidity in Syria before the conflict [Table 1] it seems that respiratory diseases and infectious diseases have started to play a more prominent role in the main morbidity profile than before the conflict [Figure 11].

This comparison is limited due to the lack of case definitions for the categories used by the MoH, and the fact that the data only has a limited coverage (eg. no surgical services included). However, in a general overview, the trend seems important. An increase in the burden of respiratory diseases and infectious diseases could be explained by the deteriorated and crowded living conditions and collapsed preventative programs like EPI.

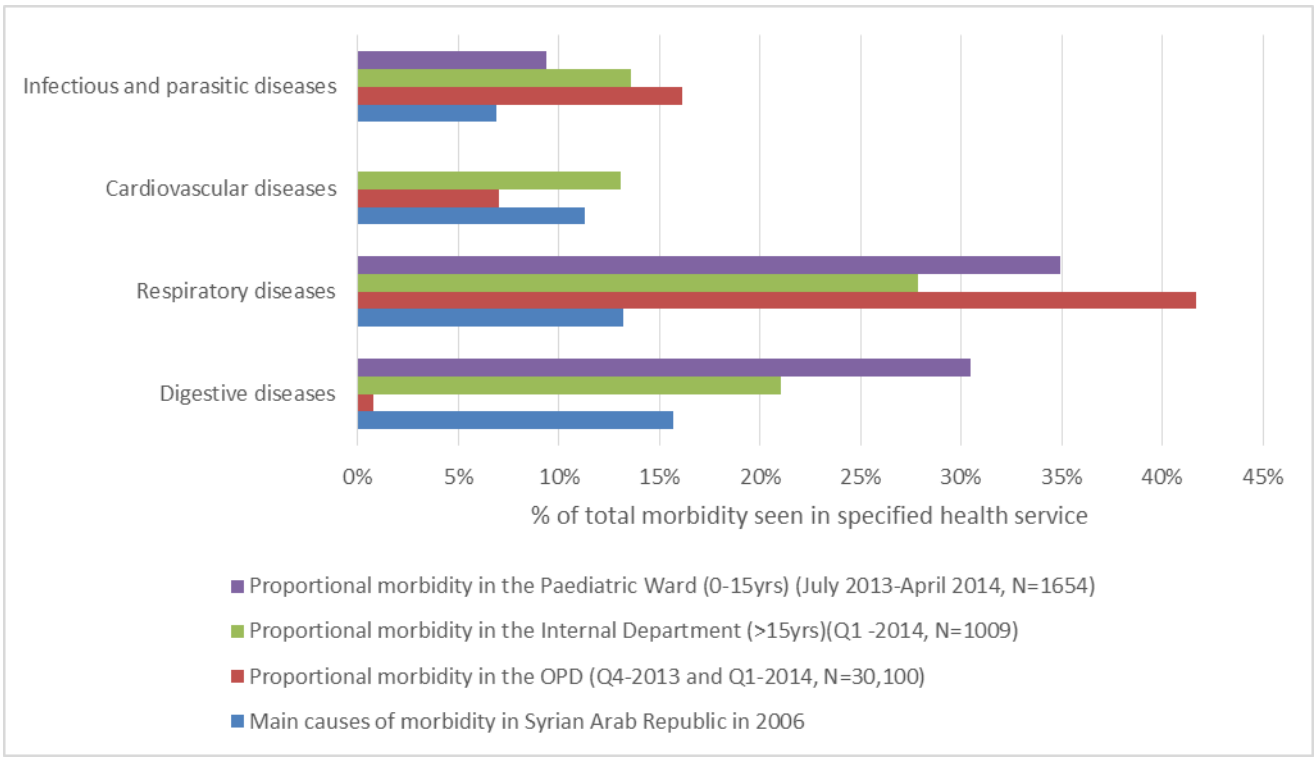

Figure 11: Main causes of morbidity in Syria 2006 and current main morbidities in analyzed data of OPD, IPD and pediatric ward in Tal Abyad and Al-Raqqah districts

It is important to note that the medical landscape, in terms of availability of medical services and therewith links in the health system, changed. Tal Abyad did not have an ICU pre-war, and used to refer difficult cases to Al-Raqqah town. Currently 5% of the patient on the internal ward and 11% of the patients on the ICU in Tal Abyad are coming from Al-Raqqah, due to the limited functioning of the referral hospital there. Severe cases that cannot be treated in Tal Abyad (around 2 patients/week for the internal medicine and 1-2 for the paediatric ward) are referred to Turkey for further specialized treatment.

5.2 NON-COMMUNICABLE DISEASES

NCDs continue to be a major burden of disease and persons > 50 years proportionally represent the largest population group for OPD consultations for these diseases (52%) [Figure 8]. This high burden makes this group particular vulnerable in the current context.

Complications of NCDs are the main causes of admissions in the ICU [Figure 12]. It is impossible, with the data available, to determine if the number of NCD-complications has increased as result of insufficient or unavailable/inaccessible treatment.

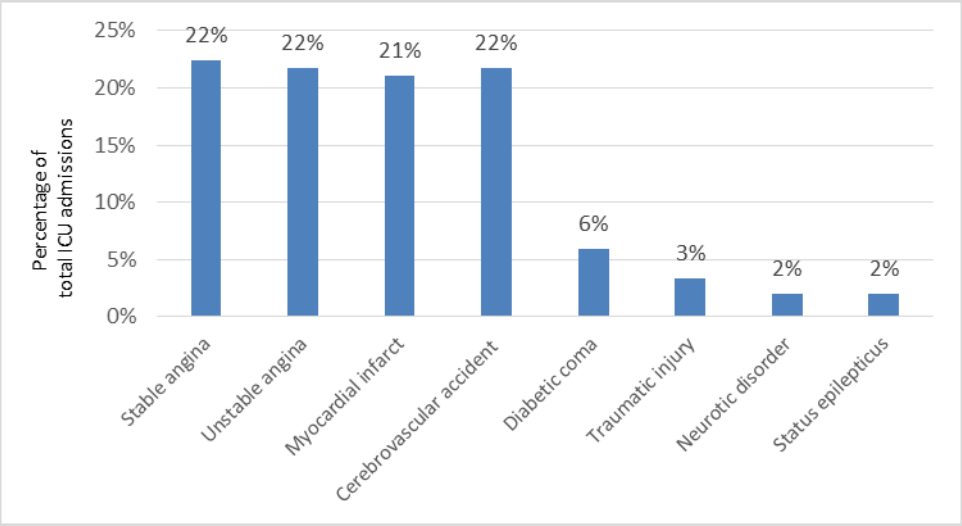

Figure 12: Main morbidities of patients admitted at the Intensive Care Unit, Tal Abyad hospital, Q1-2014 (N=152)

Comparing the main morbidities amongst males and females in the OPD, males show a higher rate (25.9% versus 21.2%) in consultations for chronic diseases, which is probably related to smoking and other lifestyle habits [Figure 22, Figure 23 in annex].

Also IDP patients show a proportional higher percentage of NCD-consultations (28.6%) in comparison with the host population (21.7%) [Figure 9]. The health burden of chronic diseases might be higher in the area's where the IDP population comes from, it also indicates that the IDPs are increasingly vulnerable and depended on the public (free) health system to acquire care for their chronic diseases, while host populations might still have access to private care.

5.3 INFECTIOUS DISEASES

5.3.1 RTIs

The proportion of RTI is higher amongst the host population compared to the IDP population [Figure 9]. The reason for this trend has to be further investigated, but it seems that the host population is more prone to seek health care in the public system for RTI's.

5.3.2 Cutaneous Leishmaniasis

CL accounts for 6.8% of all IDP consultations, compared to 0.7% of the host population [see Figure 9 and Figure 20-21]. The IDP population comes from areas with a higher incidence of CL than Al-Raqqah [see 3.4.5]. An increasing trend in the proportion of consultations of skin diseases and CL is visible in the general OPD data [Figure 13]

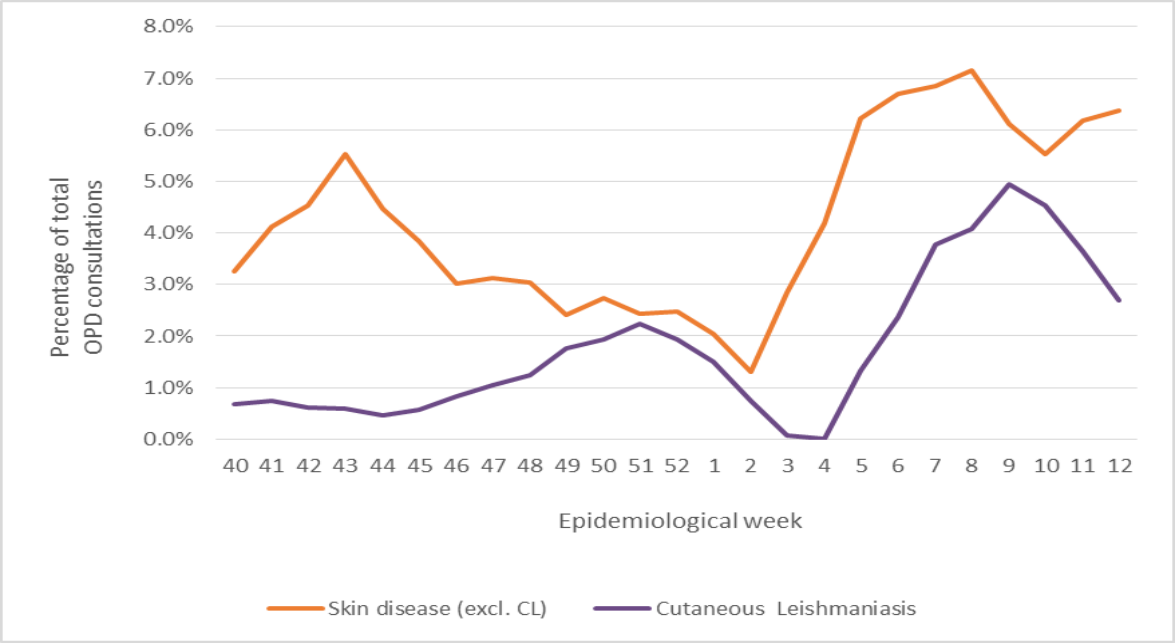

Figure 13: Trend in skin diseases and cutaneous leishmaniasis, amongst consultations (all ages) in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014 (N=30,100)

5.3.3 Sexually Transmitted Infections (STIs)

STI's account for 4.4% of the total OPD consultations in Q4-2013 and Q1-2014. Consultations in the host population show a significantly higher number of consultations for vaginal discharge compared to IDPs ($p<0.001$). In contrast the IDP population show a significantly higher number for genital ulcer disease (GUD) ($p<0.001$) [Table 2]. These categories are based on syndromic management of STI's as etiological diagnosis is problematic in the OPD setting. Vaginal discharge is commonly caused by a vaginal infection and is not necessarily related to STI's [107]. GUD can be caused by different STI's like syphilis, cancroid and herpes simplex virus, depending on local patterns [107]. It might be that IDPs come from an area where certain STI's are endemic, it might also be that IDPs are at higher risks for STIs, in which different risk factors should be considered. Unfortunately the data is not sufficient to provide any further insight into these aspects.

	IDP population n (%)	Host population n (%)
STI-Urethral discharge syndrome (UDS)	11 (0.2)	47 (0.2)
STI-Vaginal discharge (VDS)	165 (2.6)	874 (3.7)
STI-Genital Ulcer Disease(GUD)	79 (1.2)	78 (0.3)
STI-Pelvic inflammatory Disease (PID)	32 (0.5)	31 (0.1)
STI-Ophthalmic Neonatorum	11 (0.2)	4 (0.0)
STI-Congenital Syphilis	0 (0)	0 (0)

Table 2: STI consultations amongst IDP and host population, in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014 (N=30,100)

5.3.4 Vaccine preventable diseases

In the fall of 2013 an outbreak of polio occurred in Syria. The first polio case dated back to the 20th of August, followed by a spike in suspected polio cases in Deir al-Zour governorate (neighbouring Al-Raqqah) in September 2013. In week 44, the WHO declared a polio outbreak in Syria [33, 78, 108].

There is a noteworthy discrepancy between the number of cases reported by the MoH/WHO and by the ACU[13], linked to their specific coverage area and (political) links [33]. So far, two cases of acute flaccid paralysis has been reported in Al-Raqqah governate[14] [97, 98]. Three polio mass vaccination campaigns have taken place in Al-Raqqah, and have been reported to be successful [109]. However, other sources note that the first round in January 2014 was disrupted due to active conflict [22].

In 2013 a measles epidemic occurred in Al-Raqqah with 4,573 cases reported by MSF over the period from March until end June 2013. The epidemic declined following mass vaccination campaign and returned to baseline levels [110]. Sporadic measles cases are still reported in the ACU surveillance, however their numbers stay low [97].

5.3.5 Brucellosis

Only 70 cases of brucellosis have been reported in the clinical data (Q4-2013 and Q1-2014). The ACU and WHO epidemiological reports do not show indications from other outbreaks in Al-Raqqah in the studied period [97, 98]. There is no other information available to analyze whether the conflict has further impacted on the transmission of this disease in the governate. Considering the decreased diary consumption and the reduced livestock sector [4.1.2] risk factors might have decreased.

5.4 CHILD HEALTH

Forty-three percent of all OPD consultations for infectious diseases are amongst children under five. Moreover 86% of all OPD consultations and 76% of all hospital admissions in this age-group are due to infectious diseases [Figure 7, Figure 14].

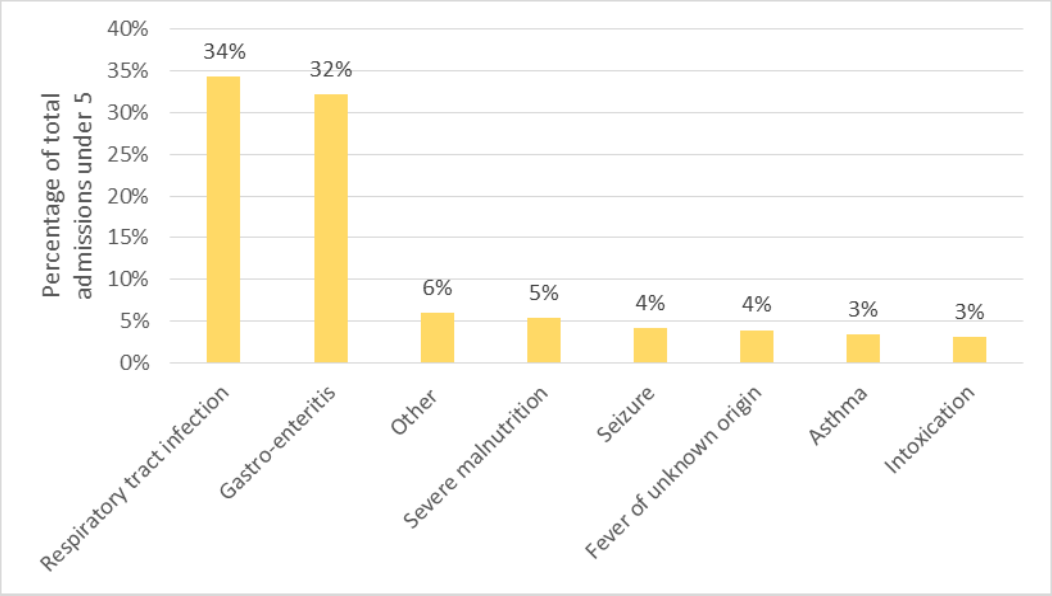

Figure 14: Main morbidities amongst children < 5 years admitted at the paediatric ward of Tal Abyad hospital, July 2013-April 2014 (N=1349)

[13] MoH/WHO reported 17 positive polio cases end November 2013 and ACU reported 61 AFP cases [97, 98]

[14] 1 AFP case in Al-Raqqah noted in ACU EWARN report of week 48 (2013), one case of AFP in Al-Raqqah in MoH EWARS report of week 7 (2014) [97, 98].

The pediatric ward had a mortality rate of 1.1%, with 74% of deaths amongst the under-fives (July 2013- April 2014). Complicated severe acute malnutrition was the main cause of mortality (21%) followed by RTI and intoxication (both 10.5%). Of the total deaths there was an underlying congenital disorder in 26% of the cases, of which 60% died of an infection and 40% due the consequences of organ failure (heart, liver).

Between July 2013 and May 2014, 70 critically ill children were referred to Turkey for specialized care, the majority for specialized neonatology care followed by severe respiratory tract infections [Table 3]. Four children were referred with acute fulminant liver failure and later diagnosed with hepatitis A, which, in combination with a suspected over-medication, caused liver failure (personal observation). It is probable that the majority of these referred cases were not a direct result of the conflict as they are conditions present in the general population even before. However, these cases exemplify how pre-existing health burdens can increase and cause significant mortality if appropriate and timely health care is not available during times of conflict.

Referral diagnosis	**#**	**%**
Premature + complications	17	24.3%
Severe respiratory tract infections	10	14.3%
Status epilepticus	8	11.4%
Meningitis/Encephalitis	6	8.6%
Severe malnutrition + complications	4	5.7%
Acute fulminant liver failure	4	5.7%
Severe Dehydration	3	4.3%
Accidents	4	5.7%
Blood diseases	3	4.3%
Heart diseases	3	4.3%
Severe infections	2	2.9%
Renal diseases	2	2.9%
Others	4	5.7%
Total referrals	70	

Table 3: Main diagnosis for referral of patients (0-15y) from Tal Abyad hospital to specialized care in Turkey, July 2013-May 2014 (N=70)

In the morbidity profile of children from five to fifteen years, admitted in the paediatric ward, NCDs and notably thalassemia, play a more important role [Figure 15]. The trend in admissions for supportive care of thalassemia patients (mainly blood transfusions) in the paediatric ward of Tal Abyad has fluctuated over the analyzed months. This is probably due to the mobility of patients, constantly seeking where the needed medical care is available, as the main thalassemia treatment center in Al-Raqqah was closed regularly due to lack of medical supply and security problems in the same period (personal observation).

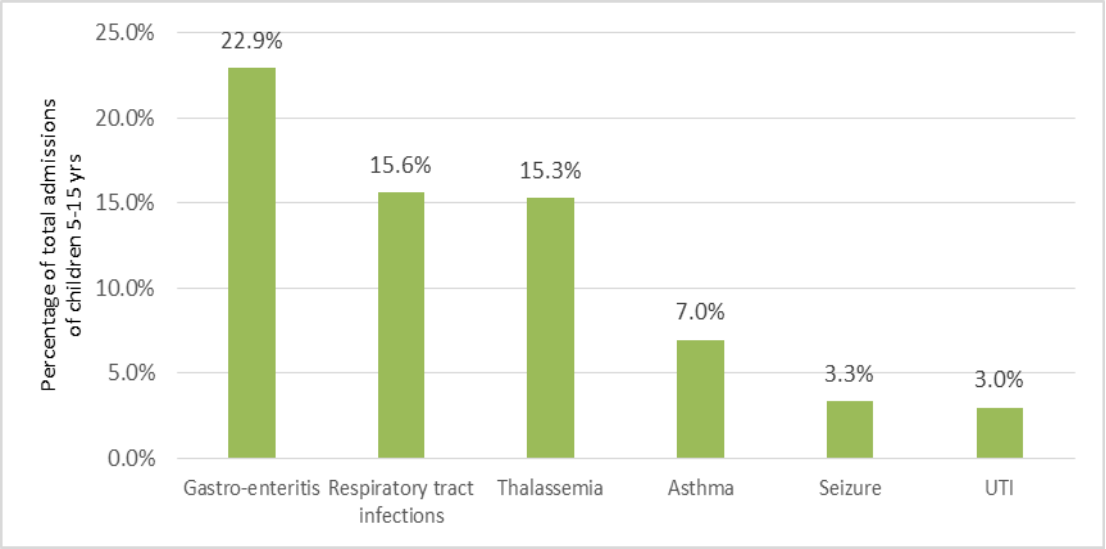

Figure 15: Main morbidities amongst children 5-15 years admitted in the paediatric ward of Tal Abyad hospital, July 2013-April 2014 (N=305)

5.5 NUTRITION

The proportion of consultations for anaemia is significantly ($p<0.001$) higher in IDP population (7.7% versus 4.9% amongst host population) [Figure 9 and Figure 20-Figure 21] which might be linked to an increased food insecurity amongst this population. Women have 6% more consultations for anemia compared to mean, which probably relates to their reproductive health [Figure 22-23].

Between July 2013 and May 2014, the paediatric ward in Tal Abyad admitted 120 children with severe acute malnutrition (SAM). Data concerning the ages of these children is available for January to April 2014, where 57% of the children were under 6 months of age. This clearly illustrates the link between malnutrition and absence of or non-appropriate infant feeding. There was no data available with regards to host/IDP population status of these children.

Severe acute malnutrition was the main cause of mortality (21%) in the pediatric ward (July 2013-April 2014). All deaths from malnutrition were in children under 6 months of age. With the low (exclusive) breastfeeding rates in Al-Raqqah governate, the limited availability and high price of infant formula severely challenges infant feeding practices. Furthermore, high stress levels are reportedly affecting the ability for the mothers to breast feed [34].

5.6 REPRODUCTIVE HEALTH

The IDP population was responsible for 33% of the antenatal visits, which is higher than the IDP utilization rate of the OPD (21%) and IPD services (10%) and probably indicates that the host population continues to make significant use of private gynecologists in the area.

The number of spontaneous abortions over the total number of pregnancies (proxy # of first ANC visits), is significantly higher amongst IDP population (12.7%) compared to the host population (7.0%) ($p<0.01$) [Table 4]. Although it might be that the health seeking behavior amongst host population is different in case of spontaneous abortions, it is probable that this data shows an increased vulnerability of IDP population due to deteriorated living circumstances and possibly higher stress levels leading to miscarriage.

The percentage of first ANC visits for pregnancies in women under 18 years of age is high amongst both population groups (21%). In the MICS of 2006, the percentage of girls 15-19 years married in the different governates was 10.7% in Aleppo, 8.2% in Hama and 10.1% in Homs were most IDPs derive from, and 3.8% in Al-Raqqah [44]. The high percentage of under 18 pregnancies in the clinic data (21%), compared to pre-conflict data, might indicate a trend of women marrying relatively younger due to their impoverished circumstances (as a direct result of the conflict). Pregnancies in young age carry more risks and furthermore do these women tend to bear more children, which increases risks for the mother and the children.

	IDP			Host		
	< 18 years	**≥ 18 years**	**Total**	**< 18 years**	**≥ 18 years**	**Total**
	n (%)	*n (%)*	*N*	*n (%)*	*n (%)*	*N*
First antenatal visits	112 (21)	424 (79)	536	242 (21)	900 (79)	1142
Number of spontaneous abortions (n)	24	44	68	27	53	80
% of spontaneous abortions/# of first ANC visits	21%	10%	13%	11%	6%	7%

Table 4: Antenatal consultations 3 health clinics in Tal Abyad and Al Raqqah districts, Q4-2013 – Q1-2014 (N=2,325)

The clinics reported 101 deliveries during Q4-2013 and Q1-2014 of which 86% deliveries took place in the clinics. The majority of deliveries were in women from the host population (n=65, 67%) [Table 5]. Out of the 91 newborns that were weighted, 6.6% (n=6) had a low birth weight (LBW) (<2.5kg). This is below the pre-conflict governate prevalence of LBW of 11% (MICS 2006). However, due to the small sample size of this data, it is hard to compare these figures to pre-conflict levels. LBW represented 13.8% (n=4) of all deliveries in the IPD population compared to 3.2% (n=2) of all deliveries in the host population [Table 5]. This difference is not statistically significant (p=0.058). However, it does suggest that the nutritional status of the IDP population has deteriorated, also contributing to the undernourished status of newborns.

	IDP					Host				
	< 18 years		≥ 18 years		Total	< 18 years		≥ 18 years		Total
Deliveries	Home	Clinic	Home	Clinic		Home	Clinic	Home	Clinic	
Live births	0	4	9	19	32	2	2	4	57	65
Still births	0	0	0	1	1	0	1	1	1	3
Total newborns weighted	0	4	7	18	29	2	2	5	53	62
# Low Birth Weight (< 2500g)	0	1	2	1	4	0	0	0	2	2

Table 5: Deliveries in communities around 3 health clinics in Tal Abyad and Al Raqqah districts, Q4-2013 – Q1-2014 (N=101)

There were 132 referrals for delivery; probably due to the high percentage of women with previous caesarian-sections as well as young pregnancies.

5.7 MENTAL HEALTH

Psychiatric disorders are responsible for 4.7% of admissions in the IPD, additionally there is an important percentage (8.3%) of patients admitted for 'fatigue', which might have physical causes (eg. hypothyroidism) but also seems to indicate psychological problems [Figure 10]. These figures suggest that there is an important mental health burden amongst patients hospitalized in Tal Abyad.

MSF started up a mental health program in October 2013. From the start of this program until April 2014, 579 individual and 217 group counselling sessions took place. Program data between January

and April 2014 was available for analysis. The main reason for patients to present was anxiety (24%) and mood related (23%) complaints [Figure 16]. Of the exiting patients 69% reported that their complaints had resolved, 22% decreased and for 2% complaints remained stable. The program attendance and outcomes illustrate that a mental health program can be successful in the Syrian context. We were unable to assess trends in the number of consultations for mental health problems due to the short time period covered by the data.

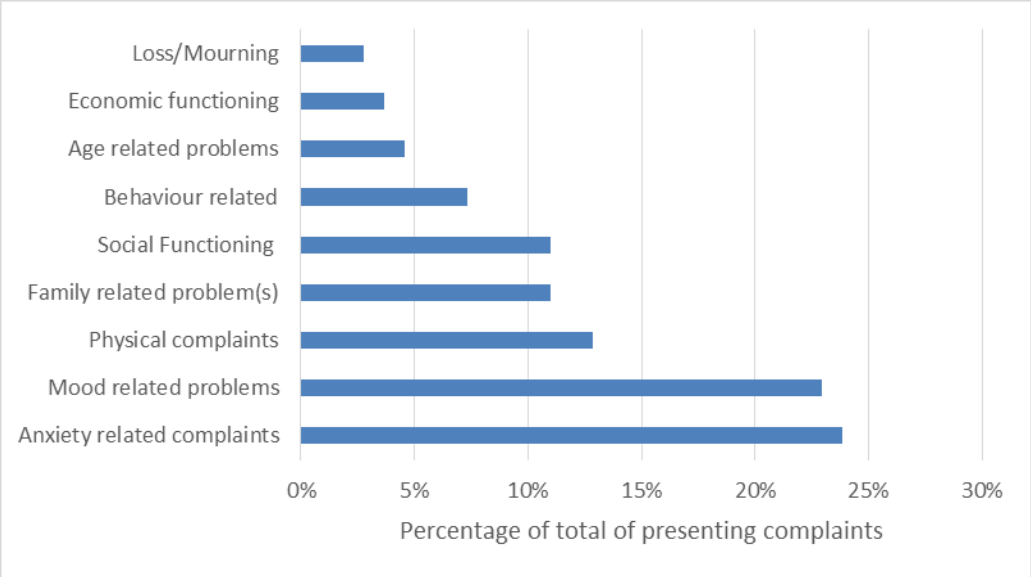

Figure 16: Presenting complaints amongst patient admitted in mental health program in Tal Abyad (January 2014-April 2014)

5.8 KILLED, DISABLED AND INCREASED VIOLENCE

5.8.1 Deaths

According to the Violence Documentation Center [111], 1,330 people have been killed in Al-Raqqah between April 2011 to 25th of May 2014. Of these 1,330 victims, 732 were civilians amongst who 180 children (25%).

5.8.2 Injured and disabled

There are no figures on the number of injured in Al-Raqqah province, on top of the pre-existing burden of disability in the governate[15]. Most injured and disabled patients require long-term health care and support. Additionally, their disabilities inhibit their abilities to undertake daily activities and to access supportive services thereby adding to their vulnerability.

The analysed medical data also captured the impact of violence. Between epidemiological weeks 1 and 3 of 2014 there was an important increase in patients presenting with injuries, related to the active conflict in the area [Figure 17].

[15] An estimate of 15.3% of the world population lives with a moderate or severe disability. In conflict affected populations this percentage can increase [129].

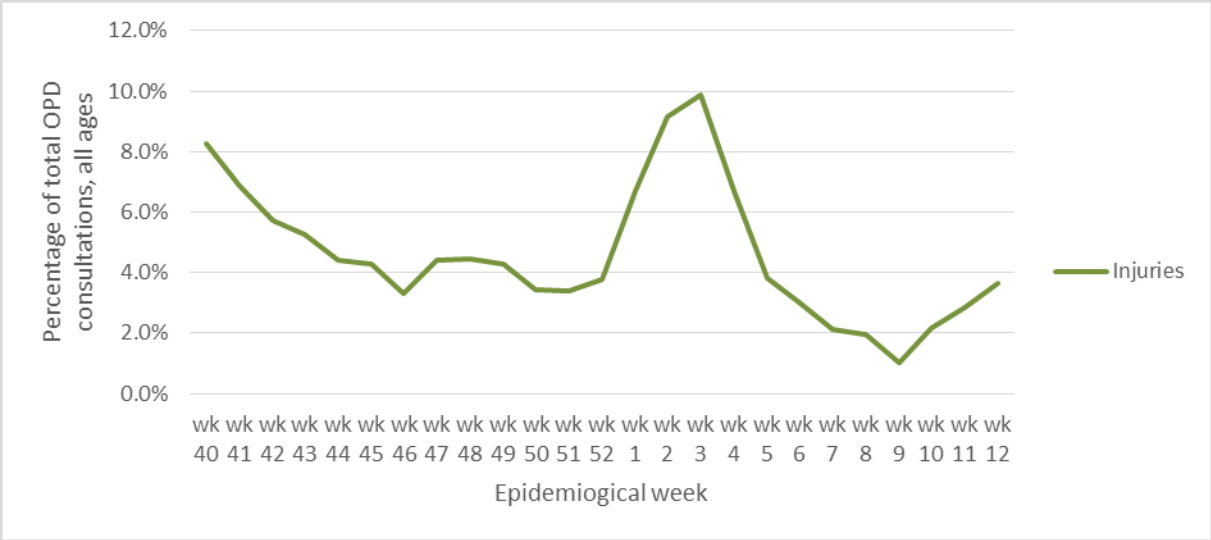

Figure 17: Trend in injuries, amongst consultations (all ages) in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014 (N=30,100)

5.8.3 Sexual and intimate partner violence

Forced early marriage, sexual violence (SV) and other types of violence and exploitation are commonly reported within Syria [78]. Crowd mapping from rape reports by the 'Women Under Siege Project' shows that sexual violence continues to be a problem in present-day Syria and mainly takes place in prisons, checkpoints and during home raids [112].

In the data acquired for this study there is one case of SV reported in the IRC data (Q1-2014) and 11 cases of sexual violence are reported in MSF data (period October 2013-April 2014). Two of the survivors (17%) were male. It can be assumed that these reports are just the tip of the iceberg, as there is a vast stigma on sexual violence in the country and the majority of incidence probably go unreported and undetected [112–114].

Additionally, the habituation to the brutality of war, the changing roles in society, psychological trauma's and frustrations are known to lead to an increase in domestic and intimate partner violence (IPV) [102, 115]. In wartime, rates of IPV tend to be much higher than sexual violence outside the marriage [116]. These patterns are also becoming visible in the Al-Raqqah community (personal observation, personal communication; T. Alhusain)

6 LIMITATIONS

This study did encounter some limitations. The literature review was limited to English and online sources. Therefore sources in Arabic or not reported online were probably missed. There was a potential bias in the selection of key informants as they were identified through my own professional contacts. Also, mine and their own biases about the situation in Syria could have entered through these interviews.

The current health profile of the population in Al-Raqqah presented in this dissertation is limited due to the fact that is based on medical data from different organizations, with different catchment areas, and different definitions and disease capture systems. The data predominantly reflects on Tal Abyad district where these projects were based, but also where access to health care was higher compared to other areas in Al-Raqqah governate. I did not have access to data from the private healthcare system which might have revealed a different epidemiological picture than that described here. There is no medical data available that describes the situation of minority groups (eg. Kurdish population), whose health status is possibly more precarious.

The analysis of changes in the health profile is based on an extrapolation of the pre-war health profile and determinants for health to all the population of Al-Raqqah at present, which includes a sizeable proportion of IDPs from other areas of Syria. It is possible that the conclusions are therefore not completely representative of all these groups as IDPs might have different underlying health profiles compared to persons from Al-Raqqah.

Despite all these limitations the data analysis and literature review do identify important patterns and vulnerable groups, which can support medical actors in defining their intervention priorities.

7 DISCUSSION AND RECOMMENDATIONS

The adapted framework of analysis that was used for this study has shown clearly that conflict in Syria, since March 2011, has impacted greatly on the social, economic, physical, social environment and lifestyle of individuals in Al-Raqqah governate. These factors are all entangled, inter-linked and interact with health outcomes. They play an important role in determining the health profile of the residents of the governate. Unfortunately, in the current context of active conflict and the established rule of ISIL in this part of Syria, it is close to impossible to meaningfully and structurally improve the determinants that contribute to ill health in the short term. Addressing the acute health consequences of the conflict and preventing further deterioration of the health status of the population are therefore the foundation of the current medical focus.

By understanding the complexity of the health determinants, how they have changed in recent years and how they interact with the population's health helps us to identify patterns in Al-Raqqah governate [117]. In turn, these patterns facilitate the development of the components of the complex health response that is needed; targeting the main health needs and vulnerable groups, taking into account main health risk factors, environment, social context and lifestyle of individuals.

The health care system in Al-Raqqah has essentially collapsed [4.1.6] with 70% of the public health facilities currently non-functional [34, 78]. The fluidity and complexity of the context demand a flexible approach from medical actors, in which they are able to react to the main needs in the given circumstances. PHC encompasses the medical activities that are the priority for the population in Al-Raqqah. In the absence of the formal health system, alternative ways to address the medical needs of the population must be identified in order strengthen, support and expand PHC within the governate and thus reach large numbers of people including the most vulnerable. This will reduce excess morbidity and mortality from treatable conditions and has the ability to adapt to the changing context. Complex and specialized health care could be supported and established in more stable areas in or outside Syria, while mechanisms to support referrals to these secondary and tertiary healthcare structures are developed and facilitated.

As social mechanisms in Al-Raqqah are mainly derived from the tribal structures and (extended) family links [3.2], medical interventions should be built on these pre-existing structures and include different gatekeepers (representing all population groups) to acquire information, develop and implement activities, and assure that interventions are culturally sensitive and reach all population groups, including the most vulnerable.

In the pre-war health care system both public and private providers played an important role. The private system was perceived to provide better quality [3.1.4]. Although dependency on the public health care has increased due to decreased purchasing power since the conflict, the population with economic means will still make use of the private providers. As health seeking choices have become increasingly influenced by security, availability and affordability of services, the movements of patients between different healthcare providers, already common pre-conflict [3.3] has been further amplified.

The above mentioned factors demand a stronger collaboration between the current different medical actors, including the public healthcare providers, national and international NGO's and private healthcare providers. Medical data collected in the different private and public programs should be shared and analysed, in order to develop an overall picture of the health profile, spot diseases trends and outbreaks. Better collaboration also offers possible alternatives to expand publicly accessible health care. Whilst some actors (eg. INGOs) might not be able to intervene in some areas, other medical actors (eg. private providers that are low-profile and have the confidence of community) likely do have the possibilities to provide health care in these areas. They could be supported in making their services accessible free of charge.

The following paragraphs will describe areas for special attention resulting from the main morbidities, vulnerable groups and challenges detected in this study, in order to inform medical actors working in the Al-Raqqah and wider Syrian context.

7.1 NON-COMMUNICABLE DISEASES

Non-communicable diseases played a major role in the morbidity profile pre-conflict and still do currently. People with NCD's are dependent on medication, monitoring and good nutrition, to which the access is getting more and more limited. Additional risk factors, like high levels of psychological stress, increases risks on acute complications, which can lead to lifelong complications or even mortality [38]. As shown in the data analysis, elderly and IDPs carry the highest burden of NCD and have therewith become particularly vulnerable.

Increasing the access to adequate monitoring and provision of medication for patients with chronic diseases, and therewith prevention of deterioration and complications is indispensable. Care for main NCD's (diabetes, hypertension, bronchial asthma, epilepsy) should be included in every PHC package, with a special focus on reaching the elderly and IDPs.

Collaboration between different health actors, patient education and development of tools like a health passport for chronic patients will be important, in order to support continuation of the same treatment while the patient might be forced to access different health providers depending on the availability and accessibility.

7.2 INFECTIOUS DISEASES

Infectious diseases, which had made a significant decline in pre-war Syria [3.4.5] are on the rise due to deteriorated living circumstances and the collapse of preventative services, with the under-fives most vulnerable to the consequences.

RTIs, often associated with asthma exacerbations [118, 119] and watery diarrhea are important morbidities in all age groups. PHC interventions directed to the adequate and early treatment of RTIs, diarrhea and dehydration could have a significant influence on the general morbidity and mortality of the population of Al-Raqqah.

CL supposed an important morbidity amongst IDPs in Al-Raqqah. With an increasing reservoir of infected people, a higher exposure due to inadequate shelter and increasing individual risk factors (eg. insufficient nutrient intake) there is a high probability that the CL burden will grow and also increasingly will start to affect the host population. While possibilities to execute preventative strategies focused on reducing the vector might be limited due to the ongoing armed conflict, an increased attention should be target on reaching the affected population (mainly IDP's) to provide CL treatment in order to limit morbidity as well as spread of the disease.

We can assume that the majority of the children under the age of four years in Al-Raqqah have not completed their vaccination schedule. Consequences are evident with the occurrence of outbreaks of vaccine-preventable diseases like measles and polio. Strategies to increase the vaccination coverage targeting children up to four years, through integration in PHC and specific campaigns, are relatively easy to implement (low-complexity) and will have a significant impact on reducing morbidity and mortality and should therefore be prioritized in the current setting.

7.3 NUTRITION

Under-nutrition and anaemia have always been problems in pre-war Syria. The described shift in the agriculture and food security indicates that there is a high risk of further deterioration of the nutritional status of the population.
Under-fives are in need of high energy, micronutrient rich foods to facilitate their fast growth and development of immune system. Poor nutrition increases the risk on infections, while infections deteriorate the nutritional status of an individual [120]. Due to the low (exclusive) breastfeeding rates, in combination with a limited access to infant formula, infants are at particular increased risks for infections and malnutrition.

Also pregnant and lactating women have an increased energy and micronutrient need. Under-nutrition can lead to higher risks deliveries due to anaemia, neonates with low birth weights,

associated risks and lactation problems [28]. In the long term, there is a link between malnutrition during pregnancy and early development of the child, and the incidence of chronic diseases in adult life [58]. Data suggest that the nutritional status of the IDP is increasingly affected by their current status [5.6].

In order to reduce the vulnerability of the under-fives, pregnant and lactating women and IDPs, strategies of selective food distributions should be considered to improve diet quality and prevent acute malnutrition. To prevent diarrhea and malnutrition in children under 6 months, breastfeeding-support, -counselling and -promotion strategies should be developed and integrated in the reproductive health and pediatric services.

7.4 REPRODUCTIVE HEALTH

Societal norms, low educational level, a high fertility and caesarian-section rate made women a vulnerable group in pre-war Syria. Currently, due to the deteriorated food security, high stress levels, increased numbers of pregnancies under 18, the lack of availability and hampered access to (reproductive) health services (from financial constraints and limited mobility under the imposed restrictions of ISIL), women's vulnerability has increased even further.

Assuring availability and access to emergency obstetrics will save lives. Delivery services have to be strengthened and expanded in the PHC settings, while establishing referral mechanisms. As the data shows more vulnerabilities amongst the IDP population [5.6], special attention should be made to reach this population.

7.5 MENTAL HEALTH

Mental health problems formed an important burden of ill-health in pre-war Syria [3.4.9]. Following the conflict, traumatic events have increased, but also the psychological effects of stressors like displacement can lead to somatic problems[16] as well as psychological and psychiatric disorders [121]. Indications of the occurrence of these somatic and mental health problems can be found in the described data [5.7]. The actual mental health burden can be suspected to be far higher than reflected in the data considering the pre-conflict stigma. Without appropriate psychological treatment and support, mental health problems can have long term consequences like self-medication with psycho-tropics, substance abuse[17] and an increased incidence in chronic diseases, therewith posing a heavy burden on the functioning of society [102, 122, 123].

It will be recommendable to implement mental health interventions in the PHC setting. Training different (health)workers in recognizing mental health problems and psychological first aid can be an effective intervention in combination with establishing a referral network for psychiatric cases [124, 125]. Furthermore, setting up community self-help groups could be helpful in the current context, where many families, the basis of the traditional social network, have become separated due to displacement, frontlines and insecurity.

[16] Stressors like displacement can lead to somatic problems such as a-specific pains, gastro-intestinal problems and syndromes of hyperventilation [121]

[17] In Iraq 60% of depressive patients where reportedly addicted to psychotropics, like sleeping pills and tranquilizers, which are freely available in pharmacies. In Libanon 8-10.000 young people became addicted to alcohol and/or drugs during the war [123]

7.6 VICTIMS OF VIOLENCE

The number of deadly victims of direct warfare that we are aware of are relatively low in Al-Raqqah governate [see 5.8]. Although there are no specific figures on the number of injured and disabled, this number can be expected to be much higher, creating another vulnerable population group.

The burden of violence spreads through the whole community causing a weight of IPV and SV [5.8]. The sensitivity of this subject and current context make it extremely challenging to implement directed interventions. Health workers should be trained on the care for SGBV survivors and be provided with the means to treat these victims. Mental health care should be available [7.5] for SGVB/IPV victims, and to help (possible) perpetrators to cope in an alternative way with feelings of loss, anger and frustration.

8 CONCLUSION

The indirect consequences of the ongoing Syrian conflict on health in Al-Raqqah are significant, as the war impacted greatly on social, economic, physical, social environment and lifestyle of individuals in the governate, elements which play an important role in determining their health.
While medical needs are increasing, the health care system has essentially collapsed through fleeing of health workers, damaged infrastructure and broken supply-lines as well as the militarization of health care, in which health facilities as well as health workers are deliberately targeted and powerful groups are interfering in humanitarian activities through restriction of movements of (I)NGO's and obstruction of access for beneficiaries.

Medical data illustrates an increase in infectious disease on top of an important existing burden of non-communicable diseases, mental health and nutritional problems, with children under five years, pregnant and lactating women, elderly, IDPs and the disabled becoming increasingly vulnerable in the current context.

The medical landscape has changed; patients who were previously able to afford private health care are becoming more and more dependent on public health services and health seeking choices are influenced by security, availability and affordability of services.

Understanding the complexity of the health determinants facilitates the development of components of the complex health response that is needed. It is vital to increase access to health care and find creative ways to address the medical needs of the population, even in a complex context as Syria.

In order to reach the majority of the population, including the most vulnerable and to remain flexible to the changing context, the main focus should be on finding ways to strengthen, support and expand the PHC. Complex and specialized health care could be supported and established in more stable areas in or outside Syria, while mechanisms to support referrals are developed and facilitated. Interventions necessitate durable links within the community and demand strong collaboration between the different medical actors, including the Syrian public healthcare providers, national and international non-governmental organizations and private providers.

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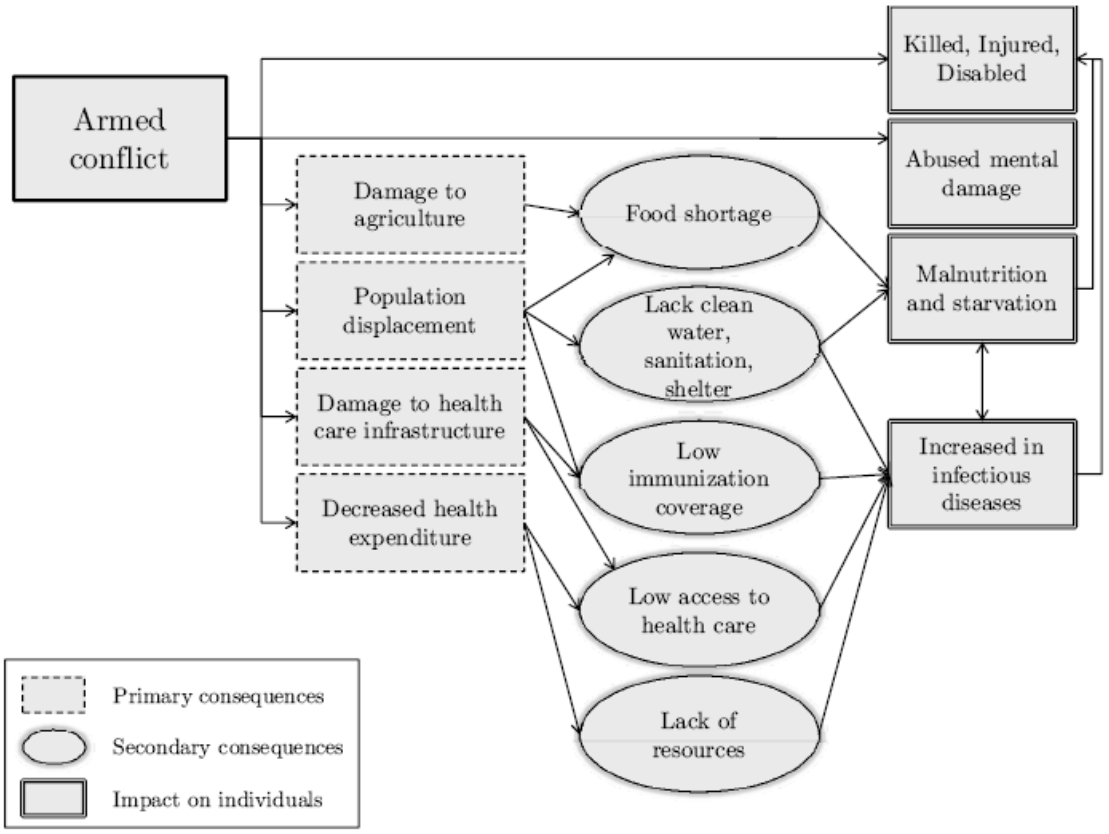
ANNEXES

ANNEX 1: CONCEPTUAL FRAMEWORK ON THE IMPACT OF ARMED CONFLICT ON HEALTH.



Source: Guha-Sapir and van Panhuis (2002)

Figure 18: Conceptual framework of the impact of armed conflict on health

ANNEX 2: THE MAIN DETERMINANTS OF HEALTH

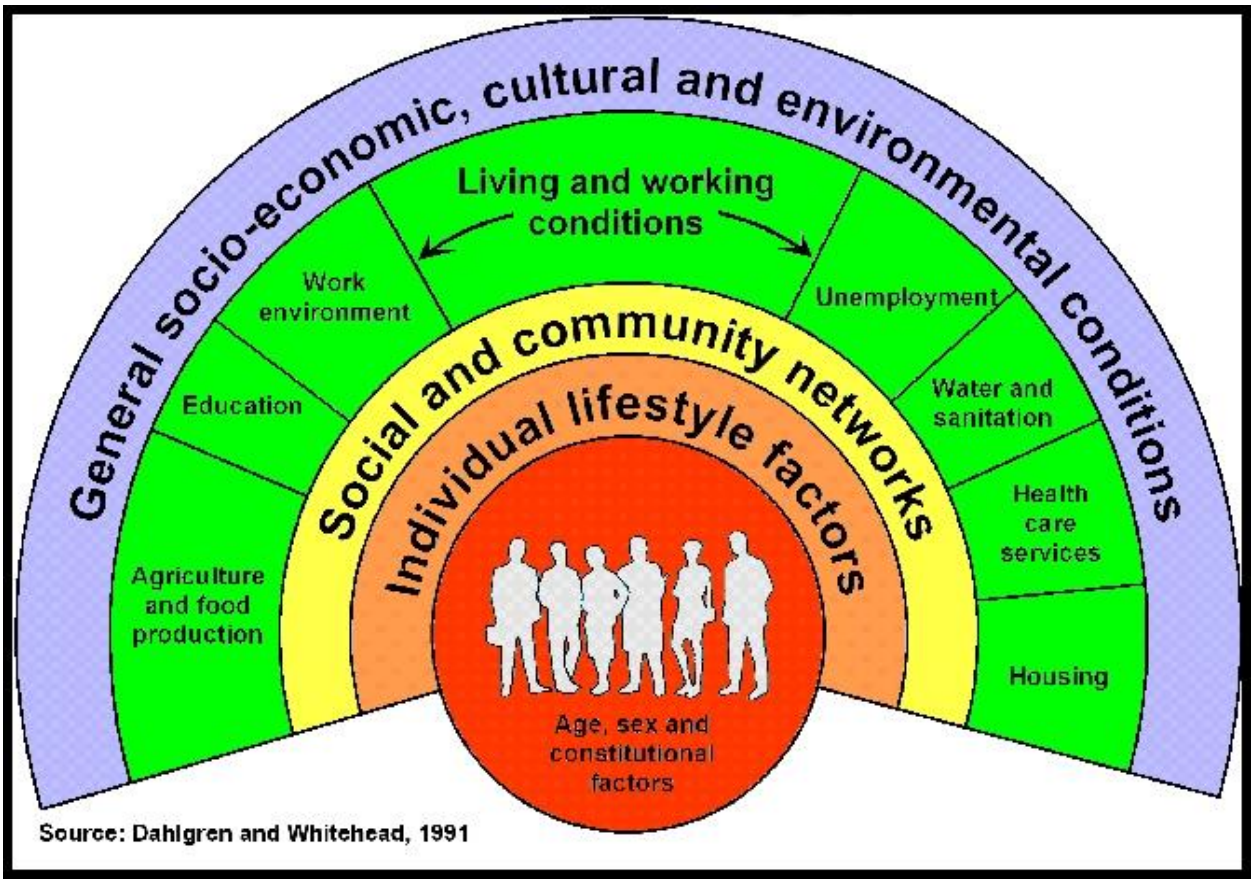


Figure 19: The main determinants of health

ANNEX 3: MAIN MORBIDITIES AMONGST IDP AND HOST POPULATION IN OPD

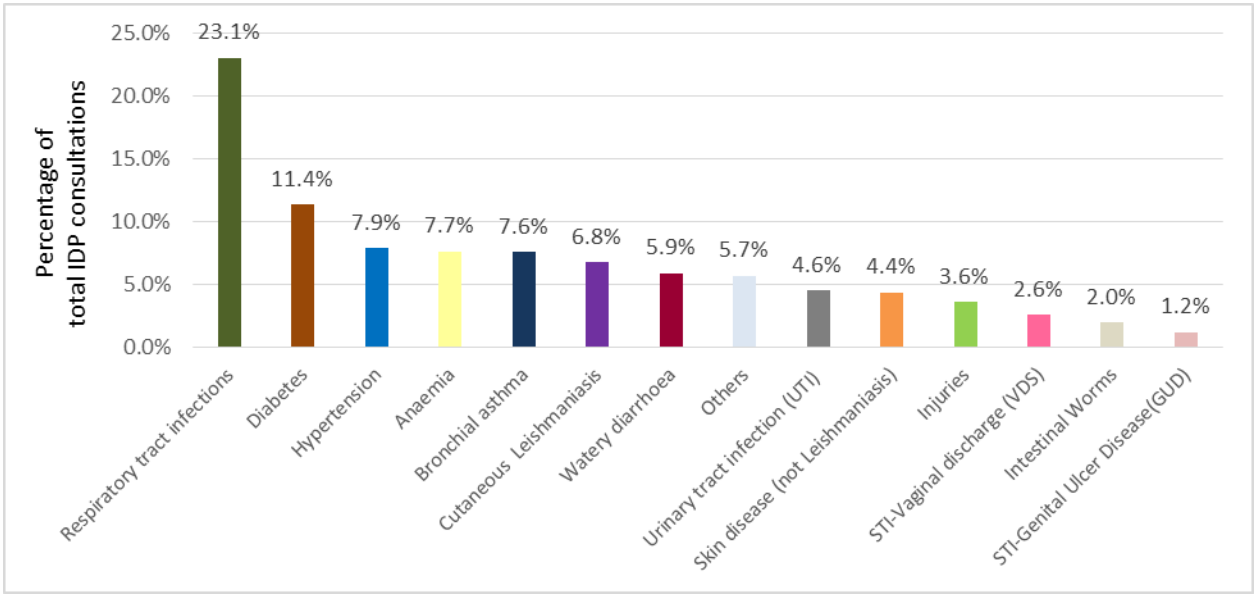


Figure 20: Main morbidities amongst IDP population in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014

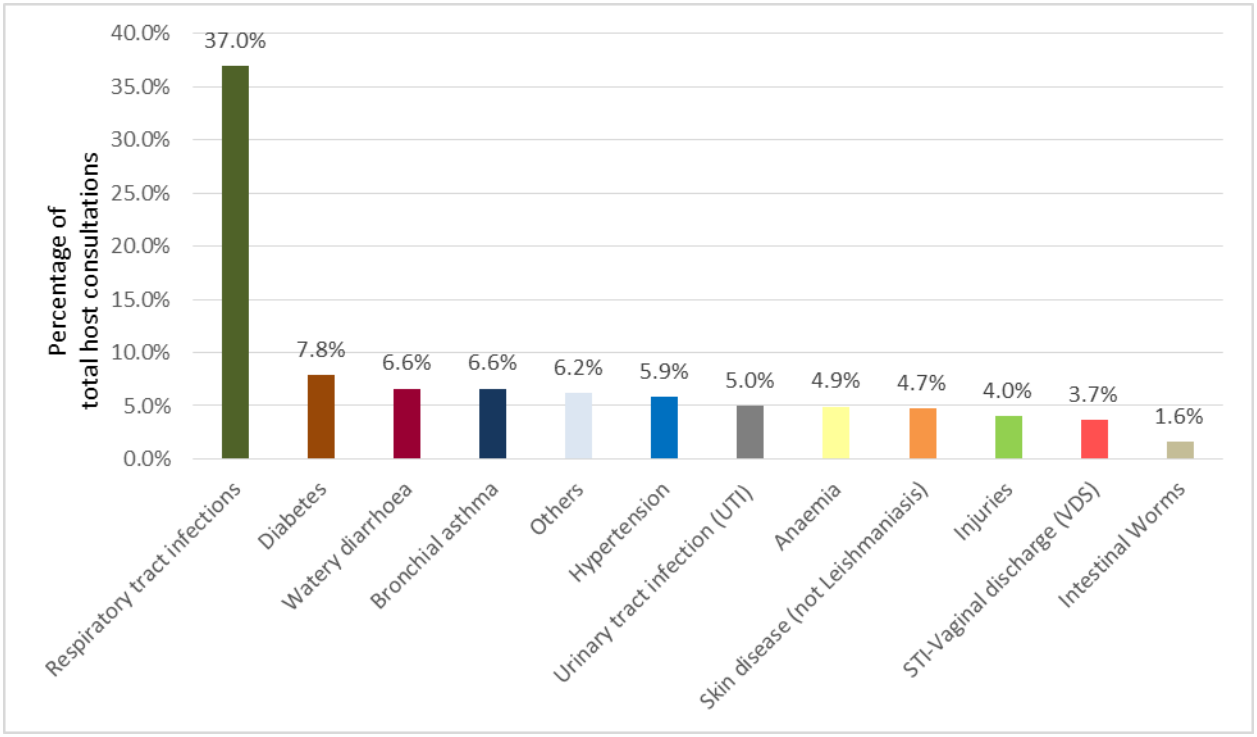


Figure 21: Main morbidities amongst host population in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014

ANNEX 4: MAIN MORBIDITIES AMONGST MALE AND FEMALE POPULATION IN OPD

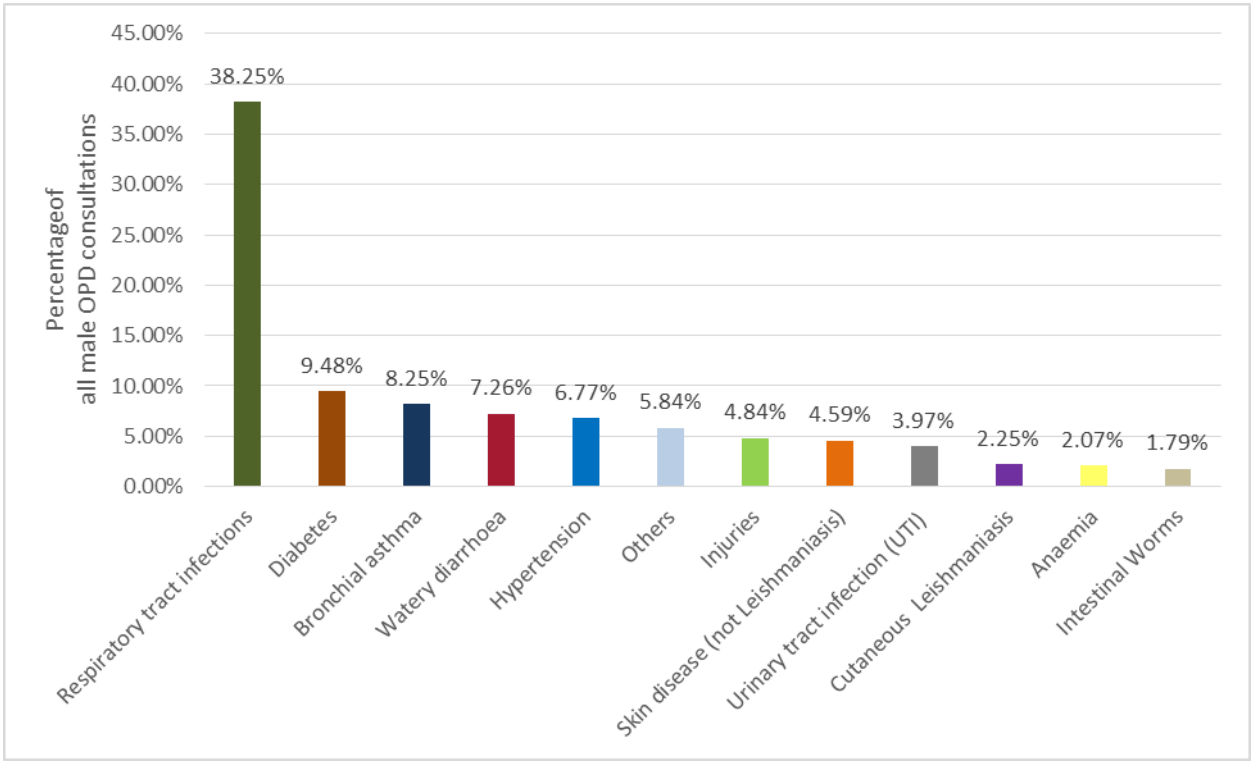


Figure 22: Main morbidities amongst male population in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014

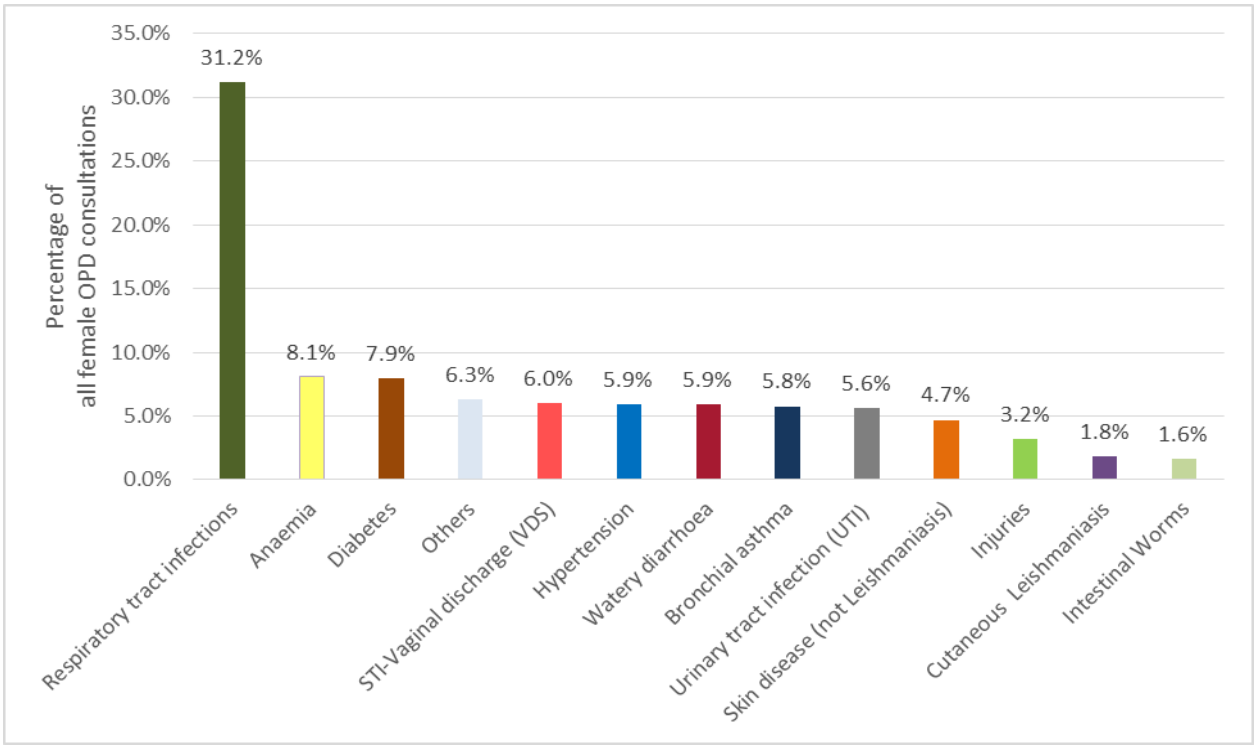


Figure 23: Main morbidities amongst female population in 3 OPD's (Tal Abyad and Al-Raqqah districts), Q4-2013 and Q1-2014