Conflict and Children's Health

A study on Palestinian children living in the Occupied Palestinian Territories

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Master thesis

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[October 2013]

[Conflict and Children's Health]

An empirical study on the effect of conflict on children's health in the Occupied Palestinian Territories.

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IV

Abstract

Civil wars do not only generate high death tolls, but also significantly affect the general population at large. Studies show that the effect of conflict on health is particularly large in civil wars and pertains over time. This paper uses an independently pooled cross sectional method to measure the effect of conflict on children's health in Palestine. Overall, my analysis suggests that conflict has a negative impact on the health of children living in the affected areas; my results show that an increase in average deaths of 1000 over the lifetime of a child increases the chances of being stunted by 10 %.

VI

Acknowledgments

Contents

1 Introduction

Conflict continues to be one of the major concerns for the international community. Reduction in interstate wars has largely been replaced by intrastate wars. Civil wars have shown to have a larger death toll and more severe long-run effects than interstate wars. (Fearon & Laitin, 2003) In addition, there seems to be a new change in states and conflict: the involvement of a third party supporting one side in the conflict, and internationalizing the war. Involvement by another state often has the effect of prolonging conflicts as well as increasing casualty rates. (Stockholm International Peace Research Institute)

The Israeli-Palestinian conflict is one of the conflicts in the world that have seen the most media attention over the last decades. The reasons for this might be many, but the involvement by other states in the conflict is thought to be one of them. The history of Jews and Palestinians go back to the beginning of time (Jericho, the oldest city in the world is located in Palestine), but there was no particular history of conflict between the two people, or between Arabs and Jews until the last century. (Harms & Ferry, 2005, s. 3) The conflict between the two groups started in the 20th century with the Zionist movement and the persecution of Jews in Europe, the first Great War and the fall of the Ottoman Empire. (Waage, 2013, s. 12) The history of the two people before the start of the conflict is important in its own ways, and many books have been written on this topic. However, an in-depth history of Arabs and Jews before the years of conflict is beyond the scope of this paper.

Since the inception of the state of Israel, the Palestinian economy has been heavily dependent on the Israeli economy; also, the cost of the occupation for both parties involved has been enormous. (Israel has seen greater loss in more recent years) (Hever, 2010) Falling employment and GDP levels in the Palestinian territories have been remarkably large and variable after the intensification of the conflict in the beginning of 2000. Also, it became the case that international aid to the Palestinian territories dominates the national budget.

Civil wars do not only generate high death tolls, but also significantly affect the general population at large. Studies show that the effect of conflict on health is particularly large in civil wars and pertains over time. (Ghobarah, Huth, & Russett, 2003) The effect of conflict on non-participation groups in the population is therefore important to study. In Palestine 40% of the population is, women of reproductive years and children under five. (Rahim, et al., 2009) Data from the Palestinian Central Bureau of Statistics show that stunting, low height for age, in children under five has increased from 7.5% in the year 2000 to 10.3% in 2010.[1] The Gaza Strip had a 5% increase in stunting between the year 2000 and 2006. (Palestinian Central Bureau of Statistics, 2013)

I use an independently pooled cross sectional method to measure the effect of conflict on children's health in Palestine. With data on district level ranging from before the Intifada in 2000 until the year 2010, I am able to exploit the fact that there have been some periods with low conflict intensity, and others with high conflict intensity; moreover, this varies across the different districts. The amount of conflict children in each district is exposed to will therefore differ from district to district and also over time.

My results show that an increase in average deaths of 1000 over the lifetime of a child increases the chances of being stunted by 10 %. Factors like unemployment, illiteracy, and number of family members also affects a child's health in a negative way. If the head of household is unemployed, the chance of the child being stunted increases by 1.4%. Higher education for the head of the household has a positive effect on a child's health. A child residing in a household where the head of household has a bachelor degree or higher have a less probability of being stunted of 2.4 percentage points.

Overall, my analysis suggests that conflict has a negative impact on the health of children living in the affected areas. This finding may not be surprising; but this certainly serves to

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[1] A child is stunted when the height is less than normal for the age. Stunting is a measure of growth failure, due to long term malnutrition. Source : (UNICEF) Can be found on:
http://www.unicef.org/nutrition/training/2.3/20.html

2

draw our attention to the fact that the costs of current conflict are (at least partly) borne by the next generation. In a way, this highlights the inter-generational issues involved in the "production" of conflict which are analogous – in principle – to concerns regarding climate agreements and environmental degradation.

Section 2 gives a historical background on the Israel-Palestine conflict, which starts with the end of the First Great War and the fall of the Ottoman Empire. Section 3 gives a short overview of Palestinian socio-economic indicators in relation to the conflict. Section 4 summarizes related literature on the effect of conflict on children's health. Section 5 introduces the methodological framework along with descriptive statistics. Section 6 shows the results of the empirical analysis and section 7 concludes.

2 Historical Background on the Israel-Palestine Conflict

The Israel-Palestine conflict has been going on for about 100 years. There are six key historical, cultural and contemporary factors that have shaped the region as we know it today: Islam, the Ottoman Empire, European Colonialism the foundation of the state of Israel, oil and the role of the USA. (Smith, 2006) It is not my idea, in this thesis, to go through all of these factors, but a glimpse of recent history is important to shape the foundation for understanding the relationships between Israel and Palestine. I will start this chapter by giving a short introduction to how the conflict started, and how it has progressed. Many events have been left out because of relevance and because an in-depth analyses of the conflict and neighboring countries is beyond the scope of this thesis.

2.1 The fall of the Ottoman Empire (1918-1947)

The Palestinian territories were under the Ottoman Empire before the first Great War (1914-18). Ending the war in defeat to the western powers, the Ottoman Empire was divided and given to the victors; France and Great Britain. Palestinians living in the area had been promised a sovereign state if they helped the British and French defeat the Turks. Great Britain had, in the Balfour Declaration, also promised the same territory to the Jewish population[2]. (Harms & Ferry, 2005, ss. 69-71) After the war ended in 1919, the areas in the middle East was divided between Great Britain and France, with the idea that they would withdraw from the region giving the local population the power. Great Britain governed Palestine under a League of Nations mandate from 1920-1947, but with its promise to both the Jewish and Palestinian population they soon ran into difficulties in the region. In 1947 Britain gave the territory to the United Nations (UN), leaving it up to them to find a solution to the dispute of the territory. (Harms & Ferry, 2005, ss. 86-89)

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[2] The Balfour declaration came in the form of a letter from the British foreign secretary, Arthur Balfour, to a leader in the British Jewish community, Lord Rothschild. It states that Great Britain favored the establishment of a national home for the Jewish People in Palestine. The Balfour declaration is viewed as the most controversial document in the history of the conflict between Israel and Palestine. (Harms & Ferry, 2005)

2.2 Creation of Israel (1948)

The Jewish population wanted a Jewish home state, Eretz Israel, while the other Arab nations, especially king Abdullah of Jordan wanted an Arab great-kingdom existing of Transjordan, Syria, Lebanon and Palestine. (Waage, 2013, s. 102)While different solutions were put on the table, Palestinians and Jews fought to gain control of important cities, road networks, military areas and resources that the British military left when they withdrew. The situation was about to escalate to a Civil War in the area. (Waage, 2013, s. 108)

Resolution 181 on the future government of Palestine was finalized by the General Assembly and proposed to the two parties. The Jewish population accepted the partition plan, while the Arab population did not. An extract of the resolution states:

"Independent Arab and Jewish States and the Special International Regime for the City of Jerusalem, set forth in part 3 of this plan, shall come into existence in Palestine two months after the evacuation of the armed forces of the mandatory Power has been completed but in any case not later than 1 October 1948." (General Assembly, UN, 1947)

David Ben-Gurion (the first prime minister) proclaimed the state of Israel on 14th of May 1948 with support from the two superpowers the United States and the Soviet Union. The Arab Liberation Army did not support the creation of an Israeli state on the land of Palestine, and immediately proclaimed war on the newly established state.[3]

In the beginning of the political history of Israel, there was one dominant part; the Mapai party, (The Worker's Party of the Land of Israel) later known as the labor party. The Mapai party was a centrist, secular party and its leader Ben-Gurion, positioned himself in the middle of the political map. (Sandler & Mollov, 2004) Every Israeli prime minister came from Labor until 1977, when Menachem Begin, founder of the Likud party, won the elections. (ibid)

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[3] The Arab Liberation Army, lead by Fawzi al-Qawuqji, was an army of volunteers from Arab countries that fought on Palestinian side in the 1948 war. (Wikipedia)

2.3 Expansion of land (1948 war)

The war in 1948 between Israel and the Arab nations was the first official war between Arabs and Jews. The Palestinians, or any of the surrounding states, did not accept the solution of dividing the land into two sovereign states. The Jewish population on the other hand accepted the division, but was not happy about the amount of land they had received in the partition. (Waage, 2013, ss. 100-104) This was the start of a continuous conflict between the two people: a conflict of land, resources, demography and survival.

Figure1: Resolution 181; partition plan for Israel and Palestine. The Arab population did not agree on the plan. Soruce: (BBC News)

Figure 2: New borders after the 1948 War.Source: (BBC News)

Most of the wars between Israel and Palestine have very different narratives. The war in 1948 is called the Nakba (the catastrophe) by Palestinians, and the Milkhemet Ha'atzma'ut (the independence war) by Israelis. The one narrative is about Palestinian loss of land, and creation of the refugee problem, the other of a war of independence and creation of a safe homeland for Jews without persecution. Both narratives are important and interesting in its own ways, but because of limitations and the topic of this paper, I will focus on the Palestinian narrative.

6

The war left many Palestinians as refugees. Either internally displaced within the Palestinian territories, or as refugees in surrounding countries.[4] The area of the West Bank came under Jordanian control, including East Jerusalem with its religious places. The Gaza Strip came under Egyptian control. No sovereign Palestinian state was created. (Harms & Ferry, 2005, ss. 96-99)

The essential problems created in this first war between the two nations are still today the main issues that keep peace processes at a stand still: the Palestinian refugee problem, demographic challenges of upholding a majority of Jews in Israel, the political, economic and religious center of Jerusalem, and safety and sovereignty.

2.4 The six-day war (1967)

In 1967, Israel and Palestine had been in peace for 11 consecutive years. The borders looked more or less the same as they did after the war in 1948. The six-day war changed this reality and gave the new borders, as we know them today. It also secured Israel's position of power in the Middle East. (Waage, 2013, s. 332)

The Palestinian people had not achieved much in regards of creating statehood after 1948. The refugee's from 1948 had not been given the opportunity to go back to their villages, and the land that they had lost was still under Israeli control. The UN begged international actors for support to handle the big masses that had been forcefully removed from their homes during the war in 1948. (Waage, 2013, s. 334) The Palestinians felt they had no support locally or internationally, and wanted to create their own liberation movement. The Palestinian Liberation Organization (PLO) and the Palestine Liberation Army (PLA) were established in 1964 under the supervision of the Egyptian president, Gamel Abdel Nasser. Moreover, the resistance came from the Palestinian people through the political party, Fatah. Established in 1959, Fatah was inspired by guerilla warriors in Algerie and Vietnam and

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[4] During the 1948 war, 700 000 Palestinians left their land; this was the origin of the refugee problem. There is a big dispute about whether they left by choice or were forced of their land by Israeli troops. What is not in dispute though, was that they were never allowed to return after the war ended. (Harms & Ferry, 2005, s. 99)

wanted to provoke the Israeli government and force the Arab nations to liberate Palestine. Several attacks were executed on Israeli land from the beginning of 1965 until the war started in June 1967. The attacks from Fatah were retaliated by Israel with great force in neighboring countries where there were a great number of Palestinian refugees. This created unrest and tension in the region, especially within Arab countries where the Palestinians felt they had no support. (Waage, 2013, ss. 336-338)

Israel attacked Egypt on June 5, 1967. It took Israel four days to gain control of Gaza and the Sinai dessert, two days to fight Transjordan and gain control of the West Bank and Jerusalem, and five days to fight Syria and gain control of the Golan Heihgts. Palestine had lost all its land to Israel, had a new wave of refugees and had lost their policial, religious and economic center: Jerusalem. (Waage, 2013, ss. 352-355)

UN resolution 242 was the outcome of the peace talks after the six-day war. After many attempts, the resolution was passed, but did not in any way solve the problems. An extract of the resolution explains the lack of solutions:

> *(i) Withdrawal of Israel armed forces from territories occupied in the recent conflict*
>
> *(ii) Termination of all claims or states of belligerency and respect for and acknowledgment of the sovereignty, territorial integrity and political independence of every State in the area and their right to live in peace within secure and recognized boundaries free from threats or acts of force;*
>
> *2. Affirms further the necessity*
>
> *(b) For achieving a just settlement of the refugee problem*
>
> *(UN, 1967)*

The resolution does not indicate from which territories Israel needed to withdraw. It does not state the Palestinians as the refugee problem, or give a solution to the problem. The

8

Figure 3 Map of Palestine/Israel after the 1967 war. Sinai was later given back to Egypt in a peace agreement. Source: (BBC News)

possibilities of interpreting this resolution in several ways make it clear that it was impossible to make a clear defined resolution that all parties involved would sign.

The conflict was for the most part relatively calm between 1968 and 1986 in the West Bank and Gaza. However, this was not true for Israel and the Arab states that kept fighting through the entire period.

(Harms & Ferry, 2005, s. 141)

2.5 The first Intifada (1987-1993)

The first Palestinian uprising against the Occupation since the start in 1967 came in 1987. The Intifada (which means "shaking off" in Arabic) was characterized by civil disobedience.[5]

Mass arrests of key leaders within the different organized groups eventually calmed down the situation in 1991. During the time of the uprising 1987-1993, Israeli military forces had killed more than 1000 Palestinians, with many more wounded. Palestinian militants suspected for collaborating with the Israelis had killed 250 people. (Middle East Research and Information Project, 2001)

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[5] Hundreds of thousands of women, men and children demonstrated in the streets, refused to pay taxes, introduced massive boycott of Israeli products, and threw stones and Molotov Cocktails (Petrol bombs) towards the Israeli military. The uprising started in Gaza, but spread quickly to the West Bank and Jerusalem. (Middle East Research and Information Project, 2001)

2.6 The Oslo accords (1993-2000)

The peace process that was a direct effect of the first intifada was a series of negotiations between PLO and the Israeli leadership. There are two agreements that are important to mention to understand the conflict: Oslo 2 and the Paris economic protocol of 1994. These agreements give many of the answers to how the Palestinian economy has been affected by the Occupation. Neve Gordon, an Israeli senior professor has renamed the Oslo years: "Outsourcing the Occupation". By this, he means that Israel turned from a policy of direct occupation to a policy of indirect occupation, using new Palestinian leadership as a control organ. (Gordon, Israel's occupation, 2008, s. 169)

Israel changed its policy and methods of negotiations in three important ways. For the first time ever, since the start of the Occupation in 1967, PLO was part of the negotiations. Second, Israel formally recognized "legitimate and political rights of the Palestinian people". (Rynhold, 2007)This is an important part of the protocol as it states that Palestinians have the right to an autonomous state. Third, a new security doctrine based on the European Community model institutionalized full integration of the two economies (1994 Paris Protocol), and joint security operations (Oslo 2 Interim Agreement). (ibid)

Oslo 2 Interim agreement gave birth to the Palestinian Authority (PA)[6]. Israel agreed to withdraw from a few places in the West Bank and Gaza strip (WBGS) and give the Palestinians self-rule over these areas. Over a five-year time-period Israel would withdraw from more and more areas, giving the newly founded government a chance to build and grow. New negotiations would then take place to agree on a final peace agreement with the remaining obstacles of Jerusalem, final borders, the refugee issue, the discussion of settlement-withdrawal from WBGS and the decision of whether Palestinians would have an independent state. The West Bank was divided into areas: A (3%), B (25%) and C (72%). A, was fully controlled by the PA. B, had Israeli military control and PA civil administrative

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[6] The Palestinian Authority was designated to be the governing body in the West Bank and Gaza. It was formed in 1994 pursuant to the Oslo accords between the PLO and the government of Israel. The status of the governing body has yet to been reached due to lack of completeness of the peace process between Israel and Palestine. The Palestinian Authority no longer governs the Gaza Strip, following the elections in 2006 where Hamas won the votes in Gaza. (Wikipedia)

10

control and C, had full Israeli military and civil administrative control over the area. Up until today, these area codes exist: They give a new dimension to the conflict, with a growing problem of the settlement population and closures between areas, people and land. (ibid)

2.7 The second Intifada (2000-2003)

The second intifada, like the first intifada was an uprising against the Occupation. The difference between the two intifadas was the political and diplomatic context of which they took place. Since the Oslo accords, much had changed on the political level: The Palestinian people had a governing body, which ruled small enclaves throughout the Palestinian territories. The event that started the intifada occurred in Jerusalem, when Ariel Sharon on September 28th 2000 entered the Al-Aqsa mosque on Haram al-Sharif, with more than thousand soldiers by his side[7]. Fighting broke out and seven Palestinians were killed in the clashes between security forces guarding Sharon and Palestinians guarding the Al-Aqsa mosque. (Waage, 2013, s. 462)

The al-Aqsa intifada was a response to lack of economic development promised in the Oslo accords, lack of access to Jerusalem, denial of basic rights, and the problem of refugees and their homeland. (Al Jazeera, 2003)

2.8 The Gaza War (December 2008 - January 2009)

The Gaza war, or Operation Cast Lead, was an Israeli military attack on Gaza that happened between 27 December 2008 and 18 January 2009. This has been one of the bloodiest attacks in the conflict ridden history, and the power imbalance between the two sides gave massive international attention. 1389 Palestinians were killed, with 25% of these being children under

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[7] The Al-aqsa mosque on the Haram al-Sharif (location) is the third holiest place for Muslims. For Palestinians, this is the most famous and important mosque for Friday prayers (Wikipedia)

the age of 18. More than 3 500 were wounded, and according to UN figures, 20 000 people left homeless. (B'Tselem, 2011)

The background for the military attack was several years of rocket firing and artillery shells between Israel and Gaza. Since the beginning of the second intifada, and later with Hamas seizing power[8], the restrictions on movement of goods and people in and out of Gaza have been severe. Since Israel's Disengagement Plan (moving Israeli settlers and military out of Gaza) was completed in 2005, they also issued an order declaring the end of military rule, which left the government no longer responsible for the population living in Gaza. (B`Tselem, 2011)

The closure on Gaza has created a division in the Palestinian territories; physically by distance and restrictions on movement, but also on a political level between Hamas and Fatah. While previous times show a collective resistance against the Occupation, recent episodes have showed a less united strategy.

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[8] Hamas is a political party in the West Bank and Gaza Strip (WBGS). Hamas won the elections in WBGS in 2006, but due to lack of recognition by the international community does not govern the West Bank. It is on the other hand the governing body in Gaza. (Waage, 2013, ss. 472-476)

3 Short overview of Palestinian socio-economic indicators

Wars and peace processes have not only shaped the degree of conflict directly through higher deaths, injuries and restriction of people and goods, but indirectly through social economic indicators like poverty, health and unemployment. The link between the conflict and the economy is therefore crucial for understanding the effect of the Occupation on the Palestinian people. A short overview of Palestinian socio-economic indicators will be given in this section.

3.1 Early years (1948-1990)

The internal borders of the 1948 war (borders between Israel and the Palestinian territories) were erased and new external borders between Israel and neighboring countries were drawn. This was especially true for the "economic borders" in the region, where the Palestinian economy was much more directly linked to the Israeli economy. (Arnon, 2007) Shir Hever, an Israeli economist and researcher points at five main reasons for the boom in Palestinian economy.

1. Israel followed an "open bridges" policy to minimize cheap exports to the Israeli market. Palestinians were enabled to keep trading with neighboring countries like Egypt and Jordan.
2. Israel modernized the Palestinian economy by implementing innovations in forestry and water-systems, vaccinations of livestock, and land reclamation.
3. An influx of Israeli consumers, due to cheap local products, raised the sales of goods in the territories.
4. Palestinian labor was employed in Israel, with considerably higher wages than could be obtained in the Occupied Palestinian Territories (OPT).
5. The oil-boom in 1973 gave opportunities for Palestinians to do skilled work in the wealthy neighboring countries. Remittances from these workers were often sent to family in the OPT, and promoted growth in the Palestinian economy. (Hever, 2010, ss. 8-9)

The growth in GNP per person was 4% in the West Bank and 6% in the Gaza Strip (1973-1979). From 1980-1987 the growth rate in both areas were 2%. (Arnon, 2007)

Together with these positive effects, came a number of restrictions. A system of permits, which still exists today, was put in place to control the movement of goods and people. Limitations were set on competing activities such as manufacturing to not endanger the Israeli industry. Israel also controlled the financial market, and financial institutions were not allowed in the OPT. (Hever, 2010, s. 10)

This system of permits and control of goods and services, together with the limitations on economic activity have similar features to the colonial era in Europe from the 1500s to the mid-1900s.

3.2 The Oslo Process (1993-2000)

With the Paris protocol in place, the Israeli-imposed economic policy on the territories ended. This did not, on any means, give the Palestinians the opportunity to choose freely its economic policies. After the Interim Agreement (where Israel was to withdraw from certain areas of the territories) Israel opposed any defined borders. While the PLO preferred a Free Trade Area (FTA) between the Palestinian territories and Israel, Israel rejected any systems other than a customs union. The PLO eventually agreed to a customs union, on the condition that Palestinian laborers could still work in Israel. In the agreement it states that labor flow between the territories should be as normal as possible. (Arnon, 2007) Given the decrease in oil prices, the Israeli labor market was an important factor in the Palestinian economy.

With the signing of the protocol, the involved parties anticipated an increase in economic integration between the two economies. The reality, though, was that many more restrictions were put in place by Israel, and the movement of goods and people between the territories was drastically reduced. Just one year after the Paris protocol, the number of Palestinian workers in Israel had dropped drastically. In the West Bank, 30% of the labor force had

worked in Israel before 1994. In 1995-6 only 18% was able to keep their work permits. In Gaza, the numbers dropped from 40% in 1994, to 6% in 1995-6. (Arnon, 2007)

The Palestinian economy has been deeply dependent on the Israeli economy. Prior to the second intifada, more than 90% of Palestinian import came through Israel. The Israeli government also collects taxes for the Palestinian Authority, which by the time of the second intifada made up about two-thirds of total government revenues. (The World Bank, 2011) These taxes have several times been withheld during peaks of the conflict or during times of political disagreement.

In the late 1990s, as can be seen in figure 4, the Palestinian economy seemed to be increasing at a steady pace. Easing of closures and restrictions was one of the important factors for this increase. Another factor was the PA´s ability to strengthen its tax administration capabilities, which resulted in an increase of 14% of GDP between 1994 and 1999. (ibid) The start of the second intifada changed this reality. Curfews and restrictions on movement between cities limited economic activity and restricted laborers to reach their workplace. (ibid) The situation intensified even more in Gaza, when Israel withdrew its military and Israeli settlers. Though Gazans could move more freely within the Gaza Strip, the movement of goods and people in and out of Gaza was severely restricted. The lack of freedom of movement for Gazans pertains even today, and the gap in socioeconomic indicators between the West Bank and Gaza keep increasing as an effect of the different policies put by Israel on the different regions.
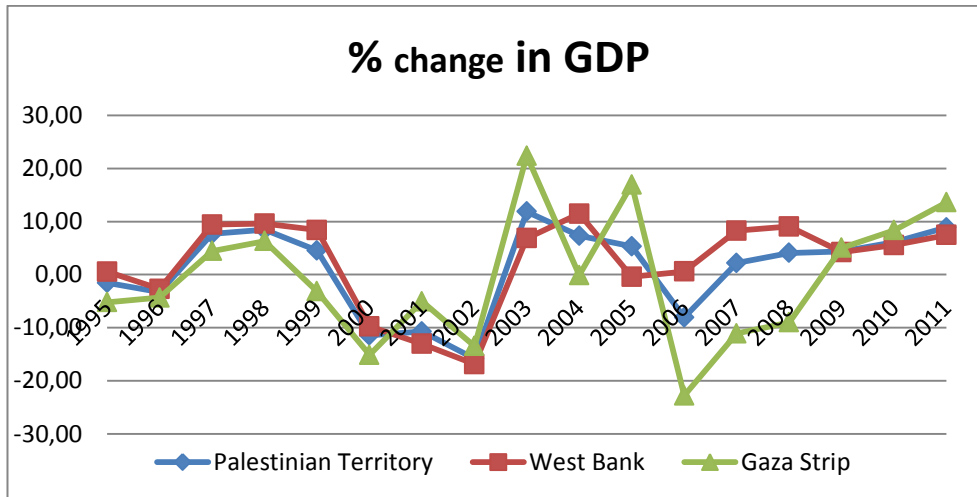
% change in GDP

Figure 4: Real change in GDP in Gaza and the West Bank between 1995 and 2011, in real 2004 prices.
Source: Palestinian Central Bureau of Statistics

3.3 International aid

A large part of the GDP in the Palestinian economy comes from international donors. Until the 1990s, the main source of income from abroad came through the UN agency for refugees: United Nations Relief and Works Agency (UNRWA). Since the 1948 war, UNRWA has offered shelter, food, health clinics and schools in refugee camps both in Gaza, the West Bank and surrounding Arab countries. During the years of "direct occupation" from 1967 to the beginning of the Oslo negotiations, almost nothing was donated to the territories. The main reason for the lack of international aid to Palestine was the view that aid would indirectly support the occupying power, Israel. (Hever, 2010) Since the agreements in the Oslo accords intended a sovereign state for the Palestinians, it also legitimized foreign support directed at nation building. Even though the aid was directed at state building, many donors early saw the need to shift the funding to a more emergency assistant based approach. The social impact of the severe economic and budgetary crisis led to this shift. (Le More, 2005)

Between 1994 and 1999, the West Bank and Gaza Strip received about $2.8 billion in aid disbursements. This amounts to about $200 per capita per year, which makes the West Bank

and Gaza Strip one of the largest recipients of aid in the world.[9] (Fischer, Alonso-Gamo, & Ericson, 2001)

Aid disbursements to the West Bank and Gaza, 1994-1999 in $US million

	1994	1995	1996	1997	1998	1999	1994-99
Disbursements through the development plan*	484	416	512	513	400	449	2 775
Disbursements outside the development plan **	127	131	135	141	153	160	847
Total disbursements	611	547	647	654	553	609	3 622
Donor financing (in percent of GNI)	15,4	13,2	15,8	14,7	11,6	11,9	13,4

Figure 5: Source: (Fischer, Alonso-Gamo, & Ericson, 2001)

* Include all disbursements reported by Ministry of Planning and International Cooperation

** UNRWA's operational budget

Between 2001 and 2008, donor assistance to the Palestinian government increased by 500%. In 2009, 71% percent of all Gazans were beneficiaries of social assistance. In the West Bank only 12% of the population, or 20% of the poor, had access to social assistance. (The World Bank, 2011)Most of the aid that is given to Gaza does not go through governmental bodies, as most donors see the Hamas government as a terrorist organization. In the West Bank, the aid is channeled through NGO's and the Fatah government.

Figure 6 show the aid disbursements to the Palestinian Territories in $US million dollars from 2003-2011. There has been a sharp increase in aid since the beginning of 2000.

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[9] Only Israel and Jordan receives aid in the same magnitude as the Palestinian Territories, based on per capita per year. (Fischer, Alonso-Gamo, & Ericson, 2001)
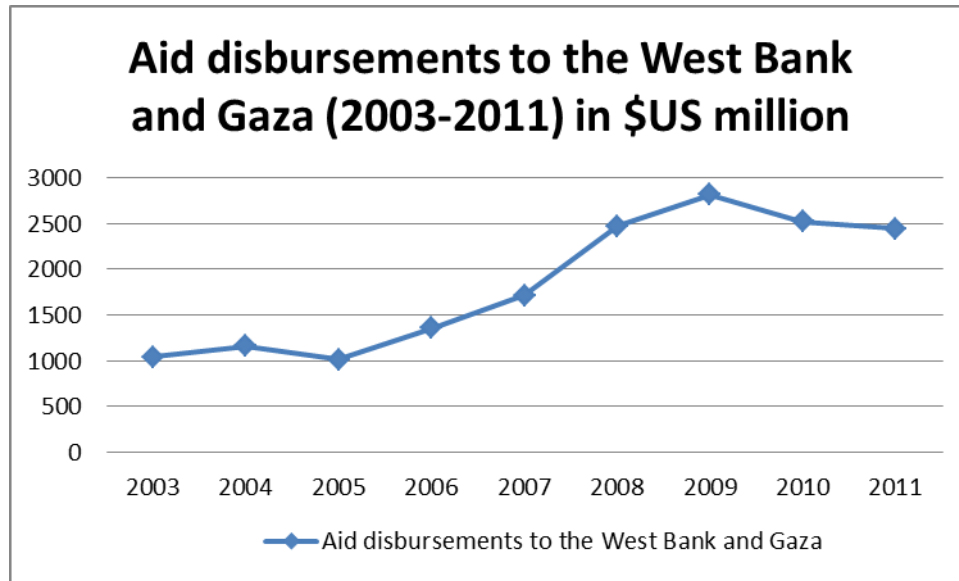
Figure 6: Aid disbursements to the Palestinian Territories between 2003 and 2011. Source: (OECD.STAT)

3.4 Situation today

The Palestinian Authority (PA) in the West Bank and Gaza has an ongoing fiscal crisis that severely limits their ability to provide basic services to the population. Though the PA is making an effort to raise domestic revenues and control expenditures, they are strongly dependent on supportive actions of the Israeli government and international aid to keep basic services functioning. The private sector in Palestine is still weak due to lack of access to resources and markets. There is a need of both internal reforms in the PA and external reforms by the Israeli government to secure the growth of the economy. In 2010, the West Bank were back at its per capita GDP levels from 1999, while in Gaza, individual income still remains lower than it was in the late nineties. (The World Bank, 2012)

Figure 7 shows the unemployment rates in the Palestinian territories between 1999 and 2011. Labor force participation is low and unemployment rates are still high in the territories. They have decreased since the Intifada years in 2000-2003, but are still above 20%. In Gaza, the unemployment rate was almost at a peaking 30% in 2011, though it has decreased from previous levels at around 40% in 2008.

Figure 7: West Bank and Gaza Strip Unemployment from 1999-2011. For Gaza and West Bank the average is taken from municipality levels. (Palestinian Central Bureau of Statistics, 2013)

4　Conflict and health

About 16.2 million people are estimated to have died in battle during civil wars over the period 1945-1999. This is about five tim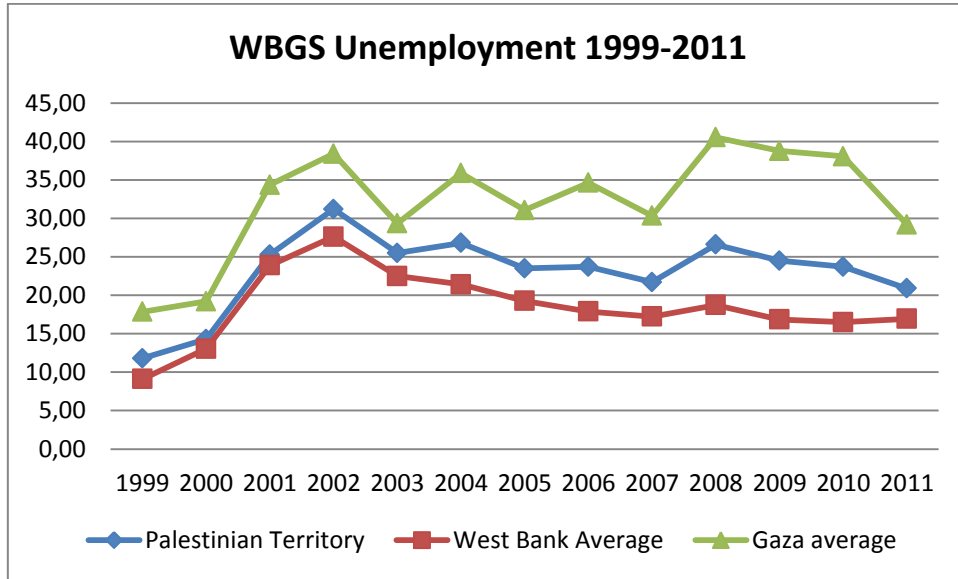es the death toll compared to interstate wars in the same period. Civil wars have produced more refugee problems, and economic devastations are far greater, than during interstate wars. (Fearon & Laitin, 2003) Though there are challenges in describing the Palestinian-Israeli conflict as a civil war, there are also good reasons to treat it as such. This is particularly evident given the discussion on the Palestinian dependency of the Israeli economy, the refugee problem that has been created since the beginning of the conflict and because they both claim ownership over the same piece of land. Another important aspect is the lack of statehood for the Palestinian territories.

There have been a number of studies on the relationship between economic performance and civil war as well as the driving forces, and continued prevalence, of conflict. Miguel et.al (Miguel, Satyanath, & Sergenti, 2004), Esteban et.al. (Esteban & Ray, Linking conflict to Inequality and Polarization, 2011) and Collier et.al (Collier & Hoeffler, 2004) There has been paid less attention to the effect of conflict on children's health, though there is a large literature confirming the long-run effects of conflict on health outcomes. (Ghobarah, Huth, & Russett, 2003)

The indirect effects of conflict on children's health are less obvious. Identifying these causes are often empirically challenging, and relatively little research have been done to find the effect of children's exposure to conflict on health outcomes. (Akresh, Luchetti, & Thirumurthy, Wars and child health: Evidence from the Eritrean-Ethiopian conflict, 2012)

In Palestine 40% of the population is, women of reproductive years and children under five. (Rahim, et al., 2009) Data from the Palestinian Central Bureau of Statistics show that stunting, low height for age, in children under five has increased from 7.5% in the year 2000

to 10.3% in 2010.[10] The Gaza Strip had a 5% increase in stunting between the year 2000 and 2006. (Palestinian Central Bureau of Statistics, 2013)

A number of studies have been done on children's mental health after a war. Thabet et.al showed that during the Al-Aqsa intifada, children who had experienced bombardments and home demolitions were more likely to have post-traumatic stress syndrome. Exposure to the war was the strongest socioeconomic predictor of post-traumatic stress. (Thabet, Abed, & Panos, 2002) Mental health is an important factor determining the overall health of a child, but physical health is also an important factor. Papers, books and reports on several socioeconomic indicators such as unemployment, education and health flourishes in both academia and popular literature. Many point to the conflict as an important indicator of falling development indexes, but there is a need for more research on the effects of conflict on child health. My contribution fits well with this need for more research.

4.1 Related literature on conflict and child health

The effect of conflict on children's health has been studied in other countries and regions. In Eritrea, Akresh et.al (2012) find that the war between Eritrea and Ethiopia had a large negative effect on children's height-for-age z-scores[11]. (Akresh, Luchetti, & Thirumurthy, Wars and child health: Evidence from the Eritrean-Ethiopian conflict, 2012), In Nigeria, Akresh et.al (2012) find that the consequences of the war some 30-40 years ago are still being realized. They find that adults being exposed to war in early childhood exhibit reduced stature later in life. (Akresh, Bhalotra, Leone, & Osili, 2012) A study by Bundervoet et al. show that children exposed to the civil war in Burundi have on average 0.515 standard deviations lower height for age z-scores than children who have not been exposed to the war. (Bundervoet, Verwimp, & Akresh, 2009)

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[10] A child is stunted when the height is less than normal for the age. Stunting is a measure of growth failure, due to long term malnutrition. Source : (UNICEF) Can be found on:
http://www.unicef.org/nutrition/training/2.3/20.html

[11] Height-for-age z-scores are a measure of stunting in children. Stunting happens when a child is under nourished for a longer period of time. (Akresh, Luchetti, & Thirumurthy, Wars and child health: Evidence from the Eritrean-Ethiopian conflict, 2012)

Akresh et.al use height-for-age z-scores to find the effect of conflict on children's health. They use a difference-in-difference estimation by war region and war intensity. War intensity measured as internally displaced individuals and war region as regions directly affected by the war or not. They also use months of war exposure to see the effect on children's z-scores of one more month of exposure. The main results in the paper, shows that children born during the war and living in a war region has 0.42 standard deviations lower height for age z-scores than children living outside a war region. (Akresh, Luchetti, & Thirumurthy, Wars and child health: Evidence from the Eritrean-Ethiopian conflict, 2012)

Health is widely recognized as being multi-dimensional with a combination of factors: Physical, mental and social well-being, genotype and phenotype influences[12] as well as expectations and information. An individual's behavior throughout the life course, together with health and socioeconomic environment are important factors that shape the health outcome of a person. (Strauss & Thomas, 2007)

Height is positively correlated with cognitive achievement and schooling outcomes, such as enrollment at younger ages, less absent school days, more grades completed and better performance on tests. (Behrman, 1996) Behrman points out in his article, *"The impact of health and nutrition on education",* that finding good results are difficult due to unobserved variables and the lack of experimental research on the topic. One should have less confidence in findings, given that the results are most likely to be biased. More information and better research material is needed to continue the search for the causal effects of health and nutrition on education. (ibid)

Alderman et.al finds in a study done in Zimbabwe that improvement in height for age in children under five leads to increased height as young adults. They also find that children tend

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[12] A person's genotype is the set of the genes that it carries. A person's phenotype is all of that person's observable characteristics. The phenotype is often influenced both by the genotype and the environment a person is brought up in.

to start school earlier, and complete more years of schooling. They get results that suggest a 14% reduction in lifetime earnings due to less education and potentially reduced work experience. (Alderman, Hoddinott, & Kinsey, 2006)

In a paper by Mendez and Adair, results show that children being stunted at early ages (2 years or less) have lower test scores on cognitive ability tests later in life. They assess the relationship between stunting and cognitive development in Filipino children with anthropometric data collected between birth and age two and later by a cognitive ability test at ages 8 and 11. Findings show that the deficits on results by stunted children were less at age 11 than at age 8, which might indicate that effects of early childhood stunting diminishes over time. (Mendez & Adair, 1999)

The long run effects of stunting might differ depending on the environment and the society the child is brought up in. Both the severity of stunting and persistence of stunting might affect the long run effects. The society's ability to handle children that are stunted and governmental programs or schools that can catch it at an early stage might influence the long run effects as well.

4.2 A framework of potential determinants for poor anthropometric status

A framework of potential determinants for poor anthropometric status is taken from a paper by Wamani et.al (Wamani, Åstrøm, Peterson, Tumwine, & Tylleskär, 2006) Similar frameworks have been used in other papers, like (Frongillo, De Onis, & Hanson, 1997) and (Willey, Cameron, Norris, Pettifor, & Griffiths, 2009) and give a good overview of which determinants can potentially lead to stunting.
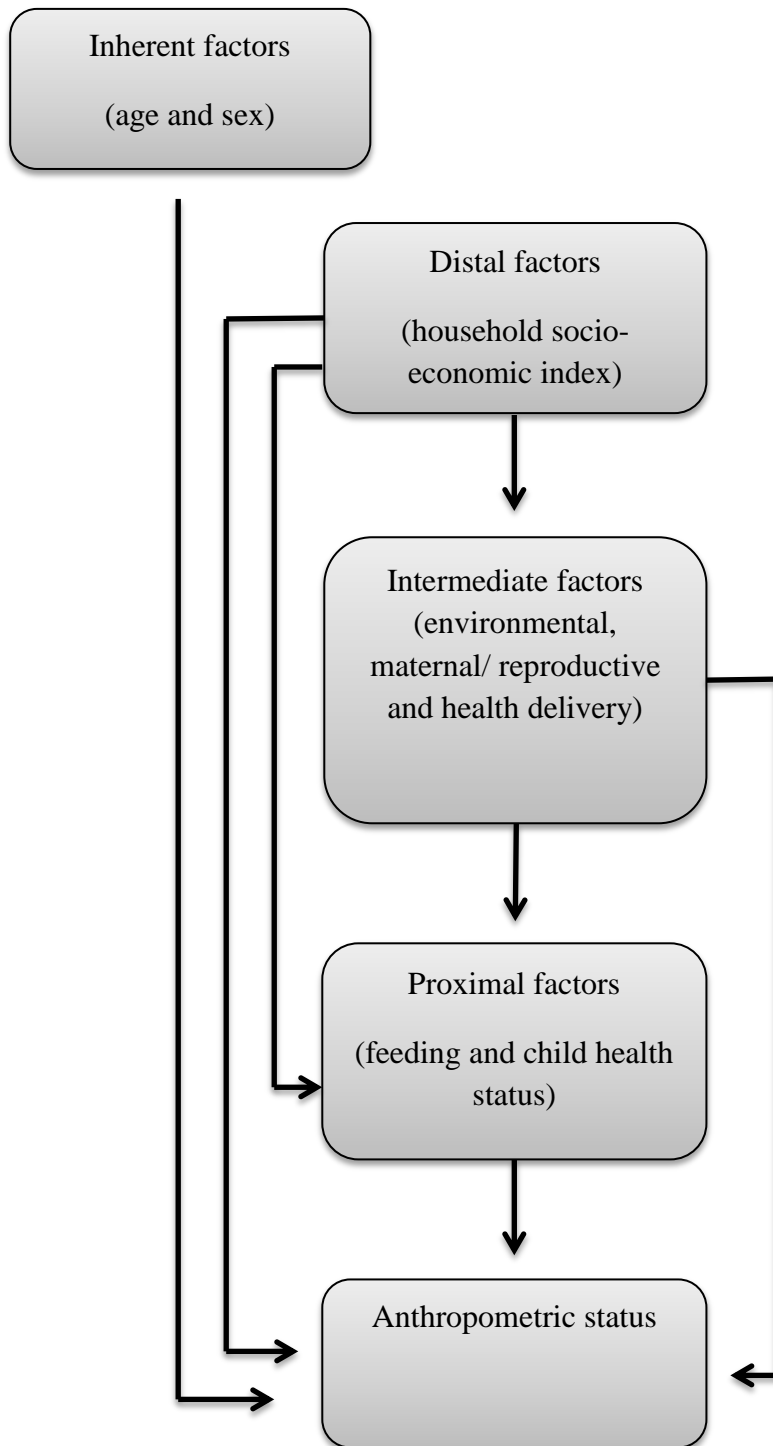
Figure 7: Framework of potential determinants for poor anthropometric status, from the paper by (Wamani, Åstrøm, Peterson, Tumwine, & Tylleskär, 2006). Show the relationship between different factors and anthropometric status.

Distal factors, intermediate factors and proximal factors are all determinants that are thought to affect a child's health. Distal factors have an indirect and a direct effect on anthropometric status.The study by Wamani et.al showed that stunting was determined by all three factors, while wasting and underweight were determined by proximal factors. (Wamani, Åstrøm, Peterson, Tumwine, & Tylleskär, 2006) This would suggest a higher emphasis on distal factors, combined with intermediate- and proximal factors when identifying the effect of determinants on stunting when data on these are available. I use mainly distal factors as controls in this paper, given that these factors both have a direct and indirect effect, and previous research indicates that these factors affect a child's prevalence of stunting.

5   Data and Methodology

5.1 Data and Methodology

Two categories of datasets have been used in this paper. One is obtained from the Palestinian Central Bureau of Statistics (PCBS) and contains individual data on children's anthropometric data. The other is obtained from B'Tselem a human rights organization and contains data on fatalities in the Palestinian territories between 2000 and 2010.

Demography and Health surveys have been used by the Palestinian Authority to map the demographic and health situation in the Palestinian territories from 1996 to 2010. Five different surveys have been conducted to map this change. I have used four of these surveys, mainly the year 2000, 2004, 2006, and 2010 for this analysis. The year 1996 has been excluded, since the variables and precision of location on households vary from the remaining years. Only parts of the surveys have been used: anthropometric data for children under five and household characteristics, as they give persistent variables for the four time periods. The health surveys are individually sampled, but the same stratification method has been used in all four surveys. The target population of the surveys is Palestinian families that usually reside within the Palestinian Territories. Palestinian refugees in camps outside the territories or in the diaspora are therefore not included in this sample. [13]

B'Tselem, an Israeli human rights organization has collected data on the fatalities that are due to the conflict between Israel and Palestine. All fatalities are measured as deaths to civilians by Israeli military or border police. Data include women, men and children, but no distinction has been made between these groups in this paper. Fatalities are used as a measure of "conflict intensity" and are categorized by area, region and locality. Region is categorized as West Bank or Gaza, and area is categorized as North West Bank, Central West Bank, South

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[13] Palestinians are often categorized as follows: West Bankers (Palestinian living in the West Bank), Gazans (Palestinians living in Gaza), Palestinian-Israeli (Palestinians living inside the borders of 1948), refugees (Palestinian or descendants of Palestinians fleeing in the wars in 1948 and 1967) Palestinians in the diaspora (Palestinians living outside the Middle East).

West Bank, North Gaza and South Gaza.[14] Locality describes whether the individual's place of residence is rural, urban or city. The same layout has been used for the data on health, and from now on, the term "district" will be used to describe an individual's place of residence. There are no districts in the Palestinian territories that have not been affected by the conflict at one point or another between 2000 and 2010. Definitions on region, area and locality are taken from the Demographic and Health Survey in 2000, and comparability has been obtained in merging.

I use anthropometric data from the Demographic and Health Surveys to compute height-for-age z scores for children less than five years. Height-for-age z scores are often used to assess whether or not a child is under nourished. (Strauss & Thomas, 2007) Other measures of undernourishment are weight-for-height and weight-for-age, or wasting.[15] Wasting is often due to severe acute malnutrition, while height-for-age z-scores (HAZ) measures chronic malnutrition for children under five. (Seoane & Latham, 1971) There are few indications of acute malnutrition in the Palestinian population, and prevalence of wasting is therefore not considered in this paper.

Height-for-age z scores are computed using "The WHO Child Growth Standards" (World Health Organization (WHO)) from 2007[16], and are computed as follows:

$$z - \text{score}(i, q, m) = \frac{Height(i, q, m) - mheight(q, m)}{SD(q, m)}$$

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[14] The areas include the following governorates: The North of West Bank include; Jenin, Tubas, Tulkarm, Nablus, Qalqiliya and Salfit. The Central of West Bank include; Ramallah and Al Bireh, Jerico and Jerusalem. The South of West Bank include; Hebron and Bethlehem. The North of Gaza include; Gaza North and Gaza City, and finally the South of Gaza include; Deir Al-Balah, Khan Yunis and Rafah.

[15] High weight loss is often due to acute malnutrition, and is measured in several different ways. The most commonly used measure is the weight-for-height, but measure of mid-upper arm circumference is also an indicator used to classify a child with wasting. (UNICEF)

[16] The WHO Child Growth Standards can be found on the organizations webpage: http://www.who.int/childgrowth/standards/height_for_age/en/index.html

Where Z-score$_{iqm}$ is the z-score for child$_i$, at age in months$_m$, given sex$_q$. Height$_{iqm}$ is the height of child$_i$ at age$_m$ given sex$_q$, mheight is the standard mean of height from WHO standard (not from my sample) for a child given sex$_q$ and age in months$_m$. The SD$_{qm}$ is the standard deviation from the WHO standard (not from my sample) for a child given sex$_q$ at age in months$_m$.

The z-score tells us how an individual's height compares to the average height of an individual of the same age in the WHO Growth Standards The Z-score calculates the deviation from the mean WHO standard height, and is negative when the height of the child is below the mean height from the standard and positive when the child's height is above the mean height from the standard. A child is considered *stunted* if it is more than 2 standard deviations below the standard mean, and severely stunted if it is more than 3 standard deviations below the standard mean.

Data on fatalities are used as a measure of conflict. A child's health is most likely affected by the number of fatalities in the region where it resides. Stunting is a measure of relative long term under nutrition, and average deaths affecting a child's health is therefore most likely dependent on the age of the child and the district where it resides. This assumes that previous deaths in the district do not affect the younger children in the sample; while for older children fatalities in previous years as well as fatalities in current years affect their height-for-age. Let c_{ind} be the measure of exposure to conflict for child$_i$ in district$_d$ in year$_n$. Let $(n-n_{0(i)})$ be the child's age computed as year$_n$ (of the survey) subtracted by birth year $n_{0(i)}$. Let N_{jd} be the summation of fatalities in district d in year j. j ranges from birth year of the child to year$_n$ of the survey:

$$c(i,n,d) = \frac{1}{(n-n0(i))} \times \sum_{j=n0(i)}^{j=n} N(j,d)$$

C_{ind} therefore captures the average exposure of conflict for a child given their age and the district they reside.

To control for socio-economic factors that might affect the health of a child, I include family specific characteristics. In particular, I include the size of the family, the education level, and employment status of the head of household. There is reason to believe that it is the head of household's socio-economic status that has the biggest effect on a child's health. Of course, there could be a gender bias depending upon cultural values in society. (For example, there is evidence of son preference in both India and China) However, this would not make any difference in my study as I use micro-data on one fairly homogenous cultural group, namely, Palestinians.

5.2 Descriptive statistics

Table 1 gives a description of the pooled cross sectional variables used in this study. Table 2 and Table 3 give a description of variables divided by regions: West Bank and Gaza.[17] Table 4 provides a test of differences across several variables for West Bank and Gaza.

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[17] Descriptive statistics divided by survey year can be found in Appendix 1.

Variable description pooled across all years						
Variable description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	stunted	32309	.1115479	.3148142	0	1
Avergage deaths in the district, given child's age	average death	32309	60.27826	96.29282	0	417.67
Child's age in months	age in months	32309	29.93593	17.30583	0	60
Number of family members in the household	family members	39503	7.351087	3.152286	2	27
Dummy for h.h being unempmloyed or not	unemployment	39419	.2448058	.4299775	0	1
Dummy for h.h being illiterate or not	illiteracy	39503	.0348581	.1834227	0	1
Dummy for h.h having higher education or not	Higher education	39467	.1228621	.3282831	0	1
Dummy for h.h having high-wage labor or not	High wage labor	39503	.1677341	.3736347	0	1

Table 1: Variable description from the Health and Demographic surveys and the conflict data pooled across four years. For variable description per year, see Appendix 1

Head of household is abbreviated to h.h in table 1. The first variable is a *dummy for whether or not a child is stunted*. It takes the value 1 if the height-for-age z-score is less than -2 (2 standard deviations below WHO growth standards) and 0 for all other z values. The *average death in the district, given child's age* ranges between 0 and 417.67 in the sample, with a mean value of 60.3. The *child's age in months* ranges between 0 and 60, with a mean value of 30. This indicates that the distribution of children by age is not unevenly distributed. *Number of family members in the household* is measured as number of individuals living in the same house, with only one head of household. In some cases, the number of family members is

quite high, and this is typical for the Bedouin population in Palestine, where men often have more than one wife, and families tend to be quite large. (Abu-Bader & Gottlieb, 2009)

Dummy for h.h being unemployed or not takes the value 1 if the head of household was unemployed at the time of the survey, and 0 otherwise. *Dummy for household being illiterate or not* takes the value 1 if the head of household is illiterate and 0 otherwise. Only 3.5% of the sampled population is illiterate, and this fits well with statistics from the Palestinian Central Bureau of Statistics. The illiteracy rate in the sample would most likely be higher had more women been registered as head of household in the sample. The illiteracy rate for Palestinian women was 11.1 percentage points higher than men's illiteracy rate in 2000, (Palestinian Central Bureau of Statistics, 2013) and the percentage of female led households in the sample is only 1.84%.

Dummy for h.h having higher education or not takes the value 1 if the head of household has a bachelor degree or higher. For all other levels of education it takes the value 0. 12.2 % of the sampled population has a bachelor's degree or higher. *Dummy for h.h having high labor or not* takes the value 1 if the head of household had a high-salary occupation.[18] 16.7 % of the sampled population had a high-salary occupation at the time of the survey.

Table 2 and table 3 show a division of the data into the two districts West Bank and Gaza.

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[18] A high salary occupation is categorized by using the framework from the "International standard Classification of Occupations" ISCO08. *High labor* includes professions in category (1) to (3): Legislators and managers, professionals, technicians and associate professionals. The ISCO08 can be found on this webpage: http://www.ilo.org/public/english/bureau/stat/isco/isco08/

Variable description pooled across all years for the West Bank

Variable Description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	Stunted	18768	.098945	.2985961	0	1
Avergage deaths in the region, given child's age	Average Death	18768	15.54745	22.46283	0	135.33
Number of family members in the household	Family Members	23112	6.865048	2.739099	2	27
Dummy for h.h being unempmloyed or not	Unemployment	23042	.2004166	.4003208	0	1
Dummy for h.h being illiterate or not	Illiteracy	23112	.0318882	.1757062	0	1
Dummy for h.h having higher education or not	Higher Education	23080	.0939775	.2918037	0	1

Table 2: Variable description pooled across all years for the West Bank.

Variable description pooled across all years for Gaza

Variable description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	Stunted	13541	.1290156	.3352296	0	1
Avergage deaths in the region, given child's age	Average Death	13541	122.2757	121.6884	0	417.67
Number of family members in the household	Family Members	16391	8.036422	3.545015	2	27
Dummy for h.h being unempmloyed or not	Unemployment	16377	.3072602	.4613723	0	1
Dummy for h.h being illiterate or not	Illiteracy	16391	.0390458	.1937099	0	1
Dummy for h.h having higher education or not	Higher Education	16387	.1635443	.3698728	0	1

Table 3: Variable description pooled across all years for Gaza

Comparing the descriptive statistics for the two regions show that *the dummy variable for children being stunted or not* seems to be quite different in the two regions. For West Bank, the average prevalence of stunting is 9.8%, while it is 12.9% in Gaza. The *average deaths in the region, given child's age* also show the same indications as prevalence of stunting, with mean of average deaths for a child being 15.5 in the West Bank compared to 122.3 in Gaza.

For the socio-economic indicators of the head of household, we see that the mean *number of family members* is lower in the West Bank compared to Gaza. The sampled unemployment rate is 20.0% in the West Bank, while the corresponding number of unemployment for Gaza is 30.7%. The *dummy for h.h being illiterate or not* have a mean value of .032 in the West Bank which is a bit lower than the corresponding mean value for Gaza of .039. The rate of

head of households with higher education in the West Bank is .094, while the comparable number for Gaza is .164.

I want to test whether or not there are significant differences in stunting, conflict and the socio-economic indicators between the West Bank and Gaza. I use a two sampled t-test, where I test the hypotheses H_0: there is no significant difference between variable x in the two regions. Table 4 gives the t-tests for significance between the two regions.

Two sampled t-test for different variables in West Bank and Gaza				
		Mean		
Variable description	Variables	Gaza	West Bank	t-test
Dummy variable for children being stunted or not	stunted	0.1290 (.0029)	0.0989 (.0022)	8,48***
Number of deaths	conflict	122.28 (1.0457)	15.547 (0.1640)	1,20E+02***
Dummy for h.h being unempmloyed or not	unemployed	0.3073 (.0036)	0.2004 (.0026)	24,49***
Dummy for h.h being illiterate or not	illiterate	0.0390 (.0015)	0.0319 (.0012)	3,82***
Dummy for h.h having higher education or not	higher education	0.1635 (.0029)	0.0940 (.0019)	20,85***
Number of family members in the household	family members	8.0365 (.0277)	6.8650 (.0180)	37,01***

Table 4: Two sampled t-test for selected variables checking for signification between the regions West Bank and Gaza. *significant at 10%, **significant at 5%, *** significant at 1%.

From table 4, we can clearly see by the last column showing the t statistics, that all variables tested are significantly different (at the 1% level) between the West Bank and Gaza. Whether a child resides in Gaza and whether a child is born before or after the second Intifada might

have an effect on stunting. Descriptive statistics in table 5 show the division of observations between the two regions West Bank and Gaza, and before and after the intifada in 2000.[19]

Variable description pooled all years for both Gaza and the West Bank						
Variable description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy for whether a child resides in Gaza or not	gaza	32309	.4190783	.4934159	0	1
Dummy for whether a child was born after the war or not	after war	32309	.6595685	.4738616	0	1

Table 5: Descriptive statistics for children by region West Bank or Gaza, for whether or not they are born before or after the second Intifada

5.3 Methods

The demographic and health data that is collected by the Palestinian Central Bureau of Statistics do not include the same households or individuals over time. A random sample is taken from the population at different times, and because of that I am not able to follow the individual's history over time; this rule out using a panel data structure at the individual or household level. I pool the cross sectional data over the four time periods to obtain a dataset with observations on 32 309 children and their household characteristics. For each of the observations, I match the district conflict for where the child resides.

There is reason to believe that children's health within the same household are correlated. There is also reason to believe that children's health within the same district is correlated. To control for this, I cluster the standard errors separately, in turn by household and by district when running the regressions. Both methods give similar result, and I therefore only report

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[19] The survey from year 2000 is collected before the outbreak of the intifada in September 2000, and should therefore not be affected by the number of deaths during the Intifada.

the results clustering the standard errors by households in this paper. I use logit for most of my regressions given that my dependent variable is a binary outcome variable (0/1), but I also report the results when using OLS.

Specification regression for the effect of conflict on children's health is therefore:

$$Y_i = \beta_0 + \beta_1\, conflict_{di} + \gamma X_i + \tau_t + \varepsilon_i$$

Where Y_i is a dummy for $child_i$, taking the value 1 if the child is stunted, zero otherwise. $Conflict_d$ is the average amount of conflict in district $_d$ for $child_i$, dependent on the age of the child. X_i are the household level characteristics for $child_i$, τ_t is time dummies for different survey years, and ε_i is the standard errors.

6 Results

First I report the results from the pooled independent cross sections data. Afterwards, I report results using the division of West Bank and Gaza to look at differences between the two regions. Table 6 shows the results of conflict on individual level, while table 7 shows the results of the two regions West Bank and Gaza.

6.1 Results using pooled cross sectional

Table 6 shows the results on individual level using pooled cross sectional data. The first 6 columns report logit regressions while OLS is reported in the last column. All regressions have time-dummies and dummies for whether or not the father of the child is alive. The dummy for father alive or not is included to control for fatalities within the household that might directly affect a child's health. The dependent variable is a dummy, *Stunted*, which takes the value 1 if the child is stunted and 0 otherwise.

	(1) Logit	(2) Logit	(3) Logit	(4) Logit	(5) Logit	(6) Logit	(7) OLS
Average death	0,001***	0,001***	0,001***	0,001***	0,001***	0,001***	0,0001***
	(0,000)	(0,001)	(0,001)	(0,001)	(0,000)	(0,000)	(0,000)
Age in months		0,001	0,001	0,001	0,001	0,001	0,000
		(0,313)	(0,248)	(0,235)	(0,262)	(0,391)	(0,314)
Family members		0,030***	0,026***	0,026***	0,024***	0,026***	0,003***
		(0,000)	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Dummy for unemployment			0,168***	0,158***	0,134***	0,147***	0,014***
			(0,000)	(0,001)	(0,004)	(0,005)	(0,005)
Dummy for h.h Illiteracy				0,121	0,105	0,143	0,012
				(0,237)	(0,306)	(0,309)	(0,323)
Dummy for higher Education					-0,266***	-0,249***	-0,024***
					(0,000)	(0,001)	(0,000)
Dummy for well paid job							0,001
							(0,929)
Year dummies	YES	YES	YES	YES	YES	YES	YES
Dummy for father alive	YES	YES	YES	YES	YES	YES	YES
Adjusted R2	0,005	0,007	0,008	0,008	0,009	0,009	0,006
Number of observations	32 309	32 309	32 241	32 241	32 213	29 628	32 213

Table 6: Pooled cross sectional results. The dependent variable is the dummy *stunted* in all regressions. Time dummies included in all regressions and robust standard errors clustered at family level. Corresponding p-values are reported in brackets. *significant at 10%, **significant at 5% and ***significant at 1%. Children with a height for-age z-score below -2 is considered stunted.

The positive and significant coefficient for *average death* in all columns in table 6 indicates that the average fatalities from the conflict have a positive effect on a child's probability of being stunted. This is also true when controlling for household characteristics as is evident from column (2) to (7). The coefficients for all regressions are significant at the 1% level. If fatalities over the lifetime of a child increase by 1000 deaths, the probability of being stunted increases with 0.1 points or 10%, which is apparent in column (7). Recall that the probability of being stunted from the descriptive statistics was 0.11. With an increase of fatalities by 1000, the new probability of being stunted will be 0.21. There is no significant effect of the age of the child in any of the regressions in table 6.

The coefficient of family size is positive and significant at the 1% level. Comparing this results with a paper by Sonalde Desai on the disadvantages children face coming from large families suggest that this can be expected. This is especially true if the birth-interval between siblings is short, and the government does not have public social and economic benefits for large families. (Desai, 1995)

Whether or not the head of household is employed also has a positive and significant effect on the prevalence of stunting. A child living in a household where the head of household is unemployed has a 1.4% higher risk of being stunted everything else being the same, and all variables included as controls, as is evident from table 6 column (7).

The effect of illiteracy of head of household has little effect on a child being stunted or not. The coefficients are not significant in any of the regressions. The reason for this is most likely the correlation between illiteracy and unemployment and illiteracy and higher education. There is reason to believe that by controlling for unemployment and higher education, illiteracy is implicitly controlled for already.

Head of household's with higher education show a negative and significant effect on a child's stunting. A child has 2.4% less probability of being stunted if the head of household has a higher education. All variables controlled for, and everything else being the same, which is evident from column (7) in table 6.

The effect of head of household having a well paid job is not significant for any of the regressions.

6.2 Results using regional differences

Table 7 shows the results for differences in height-for-age z-scores and prevalence of stunting for children between the West Bank and Gaza Strip. Recall from the descriptive statistics in chapter 5.2 that there were significant differences between stunting, conflict and household characteristics between the two regions. The results were reported in table 4, and showed that the test for significance between the two regions were significant for all variables tested.

I use the height-for-age z-scores to see if there is any difference in the z-scores of children between the two regions, and before and after the Intifada which happened in year 2000[20]. For the first four regressions, I have used OLS on the dependent variable *haz* (height-for-age z-scores) while the last column shows an OLS regression for the dummy variable *stunted*.

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[20] The data from the 2000 survey was collected before the Intifada broke out, and should therefore not capture the effects of the Intifada.

	(1)	(2)	(3)	(4)	(5)
	HAZ	HAZ	HAZ	HAZ	STUNTED
Gaza	0,090**	0,091**	0,075**	0,097***	0,014**
	(0,011)	(0,010)	(0,036)	(0,007)	(0,013)
After war	0,103***	0,098***	0,091***	0,080***	-0,006
	(0,001)	(0,001)	(0,002)	(0,007)	(0,208)
After war*Gaza	-0,282***	-0,281***	-0,292***	-0,274***	0,023***
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Illiteracy		-0,234***	-0,192***	-0,143**	0,015
		(0,001)	(0,005)	(0,037)	(0,109)
Higher education			0,330***	0,304***	-0,031***
			(0,000)	(0,000)	(0,000)
Number of family members				-0,028***	0,003***
				(0,000)	(0,000)
Adjusted R2	0,003	0,003	0,007	0,009	0,005
Number of observations	28 751	28 751	28 724	28 724	32 281

Table 7: The table shows the results for differences in height-for-age z-scores and prevalence of stunting between West Bank and Gaza after the Intifada in 2000. The dependent variable for column (1)-(4) is height-for-age z-scores, while the dummy *stunted* is the dependent variable in column (7). Standard errors are clustered at family level. Corresponding p-values are reported in brackets. *significant at 10%, **significant at 5%, and ***significant at 1%.

I first examine the effect of residing in Gaza, as opposed to residing in the West Bank. The specification equation of the differences by region can be shown as:

$$Y_i = \beta_0 + \beta_1 \, gaza + \beta_2 \, after \; war + \beta_3 \, after \; war^*gaza + \gamma X_i + \mu_i$$

Differentiating with respect to Gaza will give us the effect on y_i of a child residing in Gaza. The effect of residing in Gaza on z-scores or probability of being stunted is therefore given by:

$$\frac{dy}{d(gaza)} = \beta_1 + \beta_3 * after\ war$$

Measure of after war was given in the descriptive statistics chapter, and reported in table 5. From the table, it is shown that 0.6595, or 66% of the observations were from the after war period. Calculating the effect of a child residing in Gaza on z-scores or stunting, therefore gives the following results:

	(1) HAZ	(2) HAZ	(3) HAZ	(4) HAZ	(5) STUNTED
dy/d(gaza)	-0.083	-0.087	-0.102	-0.101	0.010

Table 8: Effect of residing in Gaza as opposed to the West Bank on height-for-age z-scores and prevalence of stunting.

From table 8, it is clear that residing in Gaza after the Intifada in 2000 has a negative effect. This is also apparent when including household characteristics as shown in column (4) and (5). A child that resides in Gaza has 0.1 lower height-for-age z-score than a child residing in the West Bank. Looking at column (5) in table 8 show that a child has a 1% higher probability of beings stunted than children living in the West Bank.

Higher education and family members are still significant controls, with same signs as expected given the previous results from the pooled cross sectional regressions. Given that column (5) shows results for stunting, the opposite signs are in line with the results from regression (1)-(4).

6.3 Concerns

There are two main concerns which arise when using this kind of an empirical strategy: First, is the omitted variable bias that might exist due to lack of data, possibility of misspecification in the model and endogeneity. Second, is the possibility of reverse causation.

Research has shown that severe grievances such as inequality and low income can lead to conflict. (Collier & Hoeffler, 2004) (Esteban, Mayoral, & Ray, Ethnicity and Conflict: An empirical study, 2012) (Esteban & Debraj, Linking conflict to Inequality and Polarization , 2011) There is also reason to believe that inequality and income have an effect on stunting. The lack of measures of inequality or income in my dataset can therefore lead to biased estimators. The lack of income measures in the dataset has been controlled for by using educational attainment and labor status as proxies for income. Inequality measures on household level or proxies for inequality for the entire period researched was not possible to attain.

Because I measure the effect of conflict on children's health and not general health in the Palestinian population, I do not see a reason to worry about the reverse causation problem in this paper. There is no reason to believe that children as young as five years participate in conflict, and the effect of stunting on civil war is therefore negligible.

7   Conclusions

In my empirical investigation, I find that the effect of conflict on a child's health is negative and significant using an independently pooled cross sectional analysis, based on the data from the Palestinian Territories. This is true also after including different socio-economic factors that might directly affect a child's health. I use a measure of stunting, i.e. low height-for-age scores to measure a child's health. A child has negative health outcomes when their height for age drops 2 SD below a standard mean given by the World Health Organization. I use z-scores to calculate how much a child deviates from the standard mean, and a child is stunted whenever this z-score drops below -2.

My results show that an increase in average deaths of 1000 over the lifetime of a child increases the chances of being stunted by 10 percent. Factors like unemployment, illiteracy, and number of family members also affects a child's health in a negative way. If the head of household is unemployed, the chance of the child being stunted increases by 1.4 percent. Higher education has a positive effect on a child's health. A child residing in a household where the head of household has a bachelor degree or higher have a less probability of being stunted of 2.4 percentage points.

After the Intifada in 2000, I find that there are regional differences between children residing in the Gaza Strip and children residing in the West Bank. A child growing up in Gaza after the Intifada have a 1% percent higher chance of being stunted compared to children living in the West Bank in the same period.

More research on the effect of conflict on health outcomes for children is needed. Research on long-run effects of stunting indicates that there are also long-run effects on educational status, work efficiency and adult stature. More research on the long-run economical consequences of conflict due to stunting is therefore needed. Another aspect that also needs more research is the effect of conflict on non-participatory parties like women. Given the link between young children and women, this is particularly important.

44

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Appendix 1

Variable description year 2000						
Description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	stunted	6175	.1110931	.3142729	0	1
Avergage deaths in the region, given child's age	avgdeath	6175	11.25729	11.72565	0	51
Childs age in months	age_month	6175	29.78057	17.44236	0	60
Number of family members in the household	family_mem~s	7486	7.469944	3.051303	2	32
Dummy for h.h being unempmloyed or not	unemployed	7486	.1553567	.3622686	0	1
Dummy for h.h being illiterate or not	illiterate	7108	.3811199	.4856961	0	1
Dummy for h.h having higher education or not	higher_educ	7486	.0882982	.283747	0	1

Variable description year 2004						
Description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	stunted	4824	.1017828	.3023937	0	1
Avergage deaths in the region, given child's age	avgdeath	4824	74.69682	68.71218	0	232
Childs age in months	age_month	4824	28.68595	17.46514	0	60
Number of family members in the household	family_mem~s	5981	6.813576	2.833364	2	30
Dummy for h.h being unempmloyed or not	unemployed	5981	.3029594	.4595762	0	1
Dummy for h.h being illiterate or not	illiterate	5833	.3109892	.4629381	0	1
Dummy for h.h having higher education or not	higher_educ	5949	.1195159	.3244218	0	1

Variable description year 2006						
Description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	stunted	10246	.1362483	.3430688	0	1
Avergage deaths in the region, given child's age	avgdeath	10246	65.49234	80.91147	0	332
Childs age in months	age_month	10246	30.14581	17.21776	0	60
Number of family members in the household	family_mem~s	12483	7.775855	3.763273	2	34
Dummy for h.h being unempmloyed or not	unemployed	12404	.3061916	.4609289	0	1
Dummy for h.h being illiterate or not	illiterate	12052	.3142217	.4642244	0	1
Dummy for h.h having higher education or not	higher_educ	12488	.1225977	.327988	0	1

Variable description year 2010						
Description	Variable	Obs	Mean	Std. Dev.	Min	Max
Dummy variable for children being stunted or not	stunted	11064	.0931851	.2907048	0	1
Avergage deaths in the region, given child's age	avgdeath	11064	76.52246	130.9956	0	417.6667
Childs age in months	age_month	11064	30.37328	17.21626	0	59
Number of family members in the household	family_mem~s	13548	7.132344	2.667518	2	20
Dummy for h.h being unempmloyed or not	unemployed	13548	.2123561	.4089906	0	1
Dummy for h.h being illiterate or not	illiterate	13133	.3051854	.4605034	0	1
Dummy for h.h having higher education or not	higher_educ	13544	.1436799	.3507778	0	1