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Armed Conflict and Children's Health – Exploring new directions: The case of Kashmir

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Abstract: The exposure to violence in utero and early in life has adverse impacts on children's age-adjusted height (z-scores). Using the experience of the Kashmir insurgency, I find that children more affected by the insurgency are 0.9 to 1.4 standard deviations smaller compared with children less affected by the insurgency. The effect is stronger for children who were born during peaks in violence. A robust finding in the health literature is that shorter children perform worse in schools, in jobs, and are sicker throughout their life. Here, children already negatively affected by the insurgency in their height, are also more likely to be sick in the two weeks prior to the survey.

Key words: Armed conflict; health; children

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1 Introduction

Children exposed to negative external shocks in utero, or early in life, have higher mortality rates, lower birth weights and are shorter for their age. These shocks can include recessions (Cutler et al. 2002), famines (Stein et Al. 1975, Almond et Al. 2008), droughts (Akresh and Verwimp 2006), pandemics (Almond 2006), wildfires (Jayachandran 2008), or radioactive fallout (Almond, Edlund and Palme 2009, Danzer and Danzer 2011)

A new dimension to these external shocks are armed conflicts. Armed conflicts and their effects on human capital formation have been in the focus of empirical research since the mid 2000's. This includes education (Shemyakina 2011, Yuksel-Akbulut 2009, Swee 2009), displacement (Deininger et Al. 2004), labor force participation (Menon and van der Meulen 2010) and the two main predictors of health later in life: low birth weight (Camacho 2009) and height early in life (Akresh and Verwimp 2006, Bundervoet, Verwimp and Akresh 2009, Guerrero-Serdan 2009, Akresh, Lucchetti and Thirumurthy 2010).

Previous research mostly explored the negative effects of civil wars and wars on health. Here, I focus on a less violent form of an armed conflict: an insurgency. The Kashmir insurgency in the state of Jammu and Kashmir (J&K) is an ongoing conflict which started in 1990. The insurgency has three distinct phases, making it possible to identify groups by their geographical as well as cohort exposure. Furthermore, the Kashmir insurgency is embedded in the conflict between India and Pakistan over the territory of J&K. Different geopolitical interests are the reason that research based on households living in this region is very limited. The overall picture drawn in official Census reports, and health survey reports, is a positive one about trends in the state of Jammu and Kashmir. This may be true for the entire state of J&K, but once focusing on different groups within the state, negative effects, not just on health, but also on education (Parlow 2012), can be identified.

It is a well-known fact that children short for their age will perform worse in schools and in their jobs as adults. This has been repeatedly found for developing and developed countries (Currie and Madrian 1999, Strauss and Thomas 2008, Victora et Al 2008). Examples for developing countries include delayed school enrollment in Ghana (Glewwe and Jacoby 1995) or lower test results in rural India (Monk and Kingdon 2009).

I utilize the National Family Health Survey for India (NFHS) to identify the effects of the insurgency on children's height for age z-scores (HAZ). To estimate the (local) average treatment effect on children age 0 to 36 months and their height, I combine event data on violence with the location of a household during the insurgency. These children experienced violence in utero and in their first years of life. In the districts and regions more affected by the insurgency, I find negative effects on height for age z-scores. Children more affected by the insurgency are 0.9 to 1.4 standard deviations shorter than children less affected by the insurgency. In addition to standard mother and household controls, I also use information on birth size, and on mother's health during pregnancy. The link between mother's health during pregnancy, children's health at birth and height later in life has not been fully researched yet in the context of negative external shocks early in life. Due to the lack of data for developing countries, previous work only included information on the mother, living conditions of the household, and the negative shock. In this paper, I can utilize a more detailed household survey including information on health.

Finally, I explore briefly other channels of health. I test, if more conflict-exposed children are also more likely to have diarrhea in the two weeks prior to the survey interview.[1] Children already shorter for their age, are indeed more likely to be sick.

The paper is organized as follows. Section 2 introduces to the literature. Section 3 briefly describes the phases of the Kashmir insurgency and the identification strategy. Section 4 discusses the data and my empirical strategy. The results are presented in section 5. In section 6, I present robustness checks. Other dimensions of health are explored in section 7 and the paper concludes in section 8.

2 Related Literature

2.1 Health and external shocks

Research on the effects of external shocks on health of children originates in the public health and development economics literature. These shocks can include famines, droughts, recessions, pandemics, smog and more. Through reduced

[1] In the appendix, I also test if they were more likely to have a cough or are anemic.

childhood health, schooling and work productivity later in life are affected. Detailed literature reviews on this can be found in Currie and Madrian (1999), Strauss and Thomas (2008), Victora et Al (2008) and Almond and Currie (2010).

Although the links between childhood health and external shocks are manifold[2], the consensus is that fetal health and the environment in the first 36 (to 59) months of life program future health outcomes. The idea of in utero programming goes back to Barker (1998) with a focus on birth weight. Gluckman and Mark (2004) suggest a life-course model where the combination of in utero health and early life conditions work together; for instance birth weight and height can be linked (Luo et Al 1998, Finken et Al 2006).

Empirically, health (H) is modeled as a function of mother characteristics (X), household characteristics (e.g. social economic status (SES), access to health services and external shocks). Rosenzweig and Schultz (1983) introduce the idea of estimating a health production function with $H = f$(X, SES, health services). In the context of life-course models, health will be a function of previous health and of shocks.

Health production functions are widely estimated in the public health literature with a focus on birth weight, but not as such in the development literature. The health outcome used for developing countries is children's height. My goal is to estimate a health production function for children's height.

2.2 Armed conflicts and health

Another variation of external shocks are armed conflicts. During pregnancy the access to health services including vaccinations, prenatal and antenatal care, and micro-nutrients needed for the fetus development, is limited because of armed conflict. Camacho (2007) adds stress during pregnancy as another channel. Stress changes the production and distribution of hormones, including intrauterine growth hormones. Stress can reduce the gestation time of the fetus. Furthermore, the access to health care, food, micro nutrients and vaccination is as important as during the pregnancy, after birth and early in life for the development of the child. Given that access to health services in developing countries is a problem to begin with, armed conflicts worsen the situation.

Armed conflict has different forms according to the level of violence and

[2]These links can include lack of micro nutrients, stress during pregnancy, infections early in life, mother's characteristics, household wealth and more.

actors involved. They can range from wars, over civil wars to insurgencies. One example for a war can be found in Akbulut-Yuksel (2009). She estimates the long-term effects of WW II on the German population. Individuals more affected by allied bombings and in school-age during WW II, earn less as adults, but are also shorter and less satisfied with their health. Guerrero-Serdan (2009) estimates the regional-variation in height for age z-scores for children in Iraq after the US invasion. Children in more war-affected regions are shorter. Akresh, Lucchetti and Thirumurthy (2010) examine the effect of the Eritrean-Ethopian border war on height of children. Children close to border regions are shorter in both countries.

Akresh and Verwimp (2011) focus on the civil war in north Rwanda and the crop failure in south Rwanda. Children born between 1987 and 1991 are shorter because of these two external shocks. Bundervoet, Verwimp and Akresh (2009) find for the civil war in Burundi, that children in rural areas are shorter. Camacho (2007) assumes that stress during pregnancy affects birth weight and gestation time through land mine explosions in Colombia. She finds that babies born between 1998 and 2003 are more likely to have low birth weight and are prematurely born.

An example for an insurgency can be found in Galdo (2010). He estimates the long-run effects on adult earnings of the "Shining Path"-insurgency in Peru (1980 to 1995). He identifies groups who were in utero, infants or in pre-school age during the insurgency. As adults these individuals earn less in their jobs.

Literature on the effects of the Kashmir insurgency on children's health is limited. Official Census reports (Census of India 2001, 2011) and reports based on the National Family Health Survey (NFHS) draw a positive picture for the entire state of Jammu and Kashmir in terms of mortality rates, fertility and vaccination programs but ignore district or regional variations.

3 The Kashmir insurgency and identification

3.1 The Kashmir insurgency

The Kashmir insurgency started as a movement for independence in the late 80's.[3] In December 1989, the daughter of the Indian home minister of Kashmir

[3] A more detailed discussion of the Kashmir insurgency and its background can be found in Parlow (2012).

affairs, Rubaiya Sayeed, was kidnapped by the Jammu and Kashmir Liberation Front. India responded, sending in a few ten thousand security forces into the valley of Kashmir in January 1990. This marks the official beginning of the insurgency. Within a short period of time, India stationed a few hundred thousand security forces throughout the valley, with a focus on major cities. Violence committed against civilians by militants, as well as security forces unfamiliar with the territory and fighting militancy, were the norm early in the 90's (Joshi 1999, Schofield 2001).[4] Furthermore, 75.000 to 100.000 Hindus migrated from the valley of Kashmir in 1990, because of the violence, to camps around Jammu and New Dehli and left behind an almost Muslim only population (Asia Watch 1993). By the mid 1990's the movement for independence became a pro-Pakistan movement with new militant groups organizing the uprising.[5] Violence died out slowly throughout cities in the valley. By 2001/02, violence peaked again because groups behind the militancy changed in fighting a "Jihad" against India (Meyerle 2008).

3.2 Identification strategy based on phases of violence

Based on a novel event-dataset constructed from various reports and books written about the insurgency (table 1) and crime data (INSCR 2012), I can identify districts more affected by violence, as well as three distinct phases of the insurgency. The state of Jammu and Kashmir has three regions: Jammu, Kashmir and the barely populated Laddakh region. The insurgency is concentrated in the Jammu and Kashmir region only. The Jammu region itself includes six districts (Jammu, Doda, Udhampur, Kathua, Rajouri and Poonch). The Kashmir region, also known as the valley of Kashmir, includes also six districts (Anantnag, Pulwama, Srinagar, Badgam, Baramula and Kupwara).[6] Given the harsh winters in J&K, the state has two capitals. Srinagar city is the summer capital, while Jammu city is the winter capital. Figure 1 shows the districts of J&K.

The first phase of the insurgency is from 1990 to 1996. Militancy focused on urban areas of Kashmir, especially the Srinagar district and the summer

[4] This includes murder, kidnapping, bomb explosions, sexual abuse, and torture.

[5] I will not discuss the role of Pakistan's involvement in the Kashmir insurgency here. The reader should note that the insurgency is also embedded in the Indian-Pakistani conflict over the territory of Jammu and Kashmir resulting in three short wars (1947,1965,1999).

[6] Note that in 2011 Jammu and Kashmir was reorganized into 22 districts. The NFHS surveys and my analysis are based on the old district structure.

capital Srinagar city. To a lesser extent, the winter capital Jammu city in the Jammu region was also affected by violence (table 1). The reason is that in both capitals the local government and its agencies are present, which are targets for militants (or terrorists) in general (Kalyvas 2006, Justino 2009).

The second phase is from 1996 to 2001/02 with a peak in violence around 2001. Militancy moved away from Srinagar (city) to smaller cities of Kashmir, and to districts of Jammu (Doda, Rajouri and Poonch) located closer to the Line of Control (LoC) because of the massive presence of security forces in urban areas of Kashmir. The LoC also separates India from Pakistan and most infiltration through militants originates there. During the 2001 peak in violence, Hindus were specifically targeted, for example multiple massacres against Hindus were committed (SATP 2012). Before these massacres, most civilian victims were Muslims.

The third phase starts after the peak in violence and can be described as a low-intensity conflict with no major incidences against civilians in Jammu and Kashmir. In some sense the population got used to the presence of a massive amount of security forces (up to 350.000) and the fear of violence. Most victims of the insurgency are actually militants (see figure 2).

Figures 2, 3 and 4 illustrate number of victims and murder rates for the entire state of Jammu and Kashmir and selected districts. Peaks in violence can be clearly identified around 1995/96 and 2001. After 2001, violence died out slowly.

[Figure 1,2,3 and 4 about here]

[table 1 about here]

4 Data and descriptive statistics

I utilize the National Family Health Survey (NFHS) for India, a national and representative household survey, to analyze the effects of the Kashmir insurgency on children's height. The NFHS has three individual rounds: NFHS-1 (1993), NFHS-2 (1998/99) and NFHS-3 (2005/06). Ever-married women, age 15 to 49, were interviewed, and information on their demographic, household and health background, mainly utilization of health services and use of contraception, were collected. Their children, age 0 to 59 months (NFHS-1, NFSH-3)

and 0 to 36 months (NFHS-2), were measured in height and weight. The three survey rounds for Jammu and Kashmir cover different phases of the insurgency, and different districts because of security reasons. The NFHS-1 was only conducted in the Jammu region. The NFHS-2 covers the entire Kashmir valley and three out of six districts in Jammu. The NFHS-3 covers the entire Jammu and Kashmir region. This variation can be used to identify children exposed differently by the insurgency in utero and early in life.

Table 1 summarizes basic descriptive statistics for each NFHS survey round. Height for age z-scores for children are computed according to the WHO 2006 growth standards. The reference population are children in the same age in a well-nourished population: the US. Children in J&K are shorter on the average and close to being stunted.[7] The sample of children is n=666 (NFHS-1), n=962 (NFHS-2) and n=1226 (NFHS-3).

The urban-rural differential in children's height is typical for developing countries, where health services are more available in urban areas. Mothers in rural areas have less access to health services during pregnancy and after the child is born. These health services can include checkups, access to doctors, and micro-nutrients needed for the development of the child. Furthermore, mothers are less educated in rural areas and more households belong to a scheduled tribe. Members of a scheduled tribe or caste (former "non-touchables") are the poorest in India. Access to health services degraded during the 90's in rural Kashmir. Basic health services could not be delivered to rural areas because of the violence (Asia Watch 1993), which can explain the decrease in HAZ scores for the NFHS-2 round (table 2).

Differences in health, in general, can also be attributed to the structure of the health system in India. Health services are mainly organized by a large private sector, e.g. trained doctors but also traditional healers, competing with a smaller public health sector (Streefkerk and Moulik 1991). Most health services have to be paid out of pocket. Given that the rural population is poorer, it creates an extra burden on households. Streefkerk and Moulik (1991) note that health services are also underutilized in rural areas, e.g. because of less education. Furthermore, health insurance schemes are available increasingly but only in urban areas of India and not affordable for most (Academy for International Health Studies 2008).

[7] Stunted is defined as two standard deviations less than the reference population.

The public health system itself is organized as a three tiered system in rural areas, while private and public hospitals are available in urban areas (Ministry of Health 2012). The first contact point in communities is the "sub-centre" manned with one female and male nurse. Their task is to provide basic health services, and services regarding maternal and child health. The second contact point is the "primary health centre" (PHC) manned with one doctor and with few beds available. The last contact point are "community health centres" (CHC) including specialized doctors, lab equipment and being able to perform surgeries.

All three forms of rural health care have been increasing in absolute numbers in India (Ministry of Health 2012), but the picture is different in Jammu and Kashmir. Figure 4 shows trends in the number of doctors and PHCs per 1000 for the entire state of J&K. PHCs increased over time but fall in numbers after 1995. Given that only two nurses provide services, if their security is not given anymore, they simply stay home. Furthermore, there is a sharp decline in the number of doctors in 2001 when Hindus were targeted by militants (Figure 4) . According to Habibullah (2008) most public sector jobs went to Hindus, including the position of doctors in hospitals.

[Figure 4 and table 2 about here]

4.1 Trends in HAZ scores

Trends in height scores for children can be visualized using kernel weighted local polynomial graphs. The overall trend for developing countries should be, that younger children have lower HAZ-scores than older children because of improvements in health services over time if the development process is not interrupted (WHO 2012).[8] To conserve space, I only show urban-rural differentials for the NFHS-1 and Kashmir-Jammu differentials for NFHS-2 and 3 (Figure 5).[9]

The NFHS-1 only includes the Jammu region. Children in urban areas have slightly less HAZ-scores than children in rural areas, which could be attributed to the insurgency. Children in Kashmir are shorter than children in Jammu using the NFHS-2 sample. Furthermore, the older cohort has slightly better scores

[8] Note that this means lower in absolute values because they average HAZ score is negative.

[9] Although it is possible to identify possible treatment groups by breaking down the graphs to the district level, I will do without it to conserve space. Instead, I present difference in difference tables based on mean HAZ-scores later.

which fall sharply. The trends for the NFHS-3 are mixed. Younger children in Jammu (up to 24 months) are more affected by the insurgency than children in Kashmir. One reason could be, that Hindus were targets of militants during 2001/02. Hindus live in the Jammu region of the state only, especially after almost the entire Hindu community left the valley because of the insurgency.

[Figure 5 about here]

4.2 Simple DID tables

As a first step, I compare average height for age z-scores of children more affected by the insurgency with z-scores of children less affected by the insurgency. This already allows me to test if assumed treatment and control groups have significant differences in HAZ scores on average. For the NFHS-1, I assume the Jammu district as more conflict-affected. For the NFHS-2 and 3, my focus is on urban Kashmir and districts more affected by violence in Kashmir. Control groups include children living in less affected areas of Jammu. In Table 3, I summarize HAZ scores for each NFHS survey round.

For the NFHS-1 children born between 1990 and 1993 should be affected the most by violence in the Jammu district itself, mainly Jammu city. Comparing mean values does not reveal any negative and significant differences between Jammu and other districts.

The NFHS-2 includes only children age 0 to 36 months born in Kashmir, as well as safe districts in Jammu.[10] These children were born and in utero between 1995 and 1998 which marks the end of the first phase of the insurgency. Militancy peaked around 1995/96 in Kashmir, especially Srinagar, and moved afterwards to other urban areas of Kashmir and more rural areas of Kashmir, where less security forces were present. During this period, rural health providers stopped delivering their services. Children in rural Kashmir have significantly lower HAZ scores than children in rural Jammu, but the younger cohort could improve compared to the older cohort. Children in the Srinagar district are not negatively affected by the militancy compared to children in other Kashmir districts. Although militancy peaked in this district, given the amount of security force stationed, violence did not affect children's HAZ scores

[10]The Doda, Rajouri and Poonch districts were excluded from the survey because of the militancy.

negatively. "Normalcy" (Joshi 1999) in daily routines returned to Srinagar by the mid 90's because of the presence of security forces.

The NFHS-3 does not include district identifiers, but I can use language spoken to identify Kashmir and Jammu (see Parlow 2012). Kashmiri is almost exclusively spoken in the valley. The older cohort (36 to 59 months) was in utero and born during the 2001/02 peak in violence. Furthermore, militancy moved to Jammu districts where Hindus were targeted by militants which could weaken the negative impact on HAZ scores of children in Kashmir. I test if children in the Kashmir region are more affected by the insurgency than children in Jammu. I find negative but not significant differences in HAZ scores for some age groups in Kashmir.

[table 3 about here]

4.3 Empirical Strategy and DID regressions

The Kashmir insurgency, as any other external shock, allows me to divide children into treatment and control groups in a natural experiment setting. The actual treatment is the insurgency itself, e.g. the experience of violence in utero through stress experienced by the mother, less access to health services in general, and children exposed to violence early in life.

My empirical health production function is the following:

$$H_{ijt} = \alpha + \gamma(\text{war}_{ijt}) + \beta_1 X_{1ijt}^{child} + \beta_2 X_{2ijt}^{mother} + \beta_3 X_{3ijt}^{SES} + \rho_j + \theta_t + \delta_t + \epsilon_{ijt} \quad (1)$$

H_{ijt} is the HAZ score of children i living in district or region j and born in year t. The average treatment effect is γ where *war* is a binary variable, indicating children born and living in a more conflict-affected region. I can only account for the annual variation in violence, due to a lack in district variation in my event data set, if I break down variation in violence into birth quarters.[11] X_1 is a vector describing children's characteristics like age in months, sex, birth order, and if the child was small at birth. X_2 includes mother's characteristics, including age, education and height in cm. Furthermore, I use information on health service utilization and if the mother ever experienced a still-birth or had

[11] For instance, some districts only have very few observations per quarter once accounting for birth quarters which could reduce the validity of results.

an abortion. Previous research mostly ignored the link between mother's health and children's health at birth because of the lack of data. Akresh and Verwimp (2006) use current BMI of the mother to proxy for her health status during pregnancy and at birth. Although it is possible to assume, that current BMI could also have been the BMI before pregnancy and shortly after because of little changes in household wealth and behavioral choices, I will use information on iron-deficiency anemia. Anemia is a chronic diseases and known to start during childhood because of the lack of iron in food in developing countries (WHO 2012). X_3 is a vector describing the socioeconomic status (SES) of the household. This includes land- and livestock ownership, as well as belonging to a scheduled caste or not.[12] ρ_j includes district fixed effects, and city size effects, common to every children. θ_t includes quarter and year of birth fixed effects. Finally δ_t includes state fixed effects for children born at time t, e.g. the number of hospitals and CHCs.

5 Results

5.1 Results for the NFHS-1

The NFHS-1 differs from the NFHS-2 and 3 in two major points. First, it only includes the Jammu region, and second, it does not include anthropometric measurements for the mother nor tests for hemoglobin levels. Height of the mother is one of the main predictors for children's height and could create an omitted variables bias, but this should not affect the treatment variable *war* itself.

Table 4 summarizes the results for different treatment and control groups. First, I show results for children living in the Jammu district, as the group more affected by violence. The control group lives in less affected districts of the Jammu region. Similarly, I use urban Jammu and rural Jammu as the more affected region (column 3).[13] Children are negatively affected in their height by the insurgency for the Jammu district overall and rural areas of the Jammu

[12] I do not use information on father's occupation or education, because HAZ scores are usually only affected by mother's characteristics. Another reason is that almost all fathers work in low-skilled jobs. Note that Jammu and Kashmir is one of the least developed states in India. Almost everyone works in professions requiring little educational skills.

[13] The results for urban Jammu are not presented to conserve space. The treatment effect is negative and smaller in magnitude but not significant.

district. These children are up to 1.4 standard deviations shorter because of the insurgency.

There are almost no significant gender differences in HAZ scores between boys and girls. Furthermore, older children are shorter than younger children. Mother's age has a positive effect on children's height, which can be attributed to more experience in raising children.

To test the impact of health at birth on height later in life, I use information on birth size. Birth size is measured as being small at birth or not. This sheds light on the link between in utero experience and early life environment. Size at birth, e.g. birth weight or stature, is affected by in utero experience. Children, who were small at birth, are shorter in some specifications. Although children could catch up in growth during their first years in life, if the environment is optimal (nutrition and health care), here they remain shorter.[14]

There is one unexpected finding, which I also find repeatedly in later NFHS survey rounds. Vaccinations and checkups during pregnancy and afterwards have no significant effect on HAZ scores, although a majority of mothers had access to these services. This finding contradicts the goal of health programs promoting checkups and vaccinations in developing countries in general. An explanation could be, that the negative effect of the experience of violence during pregnancy outweighs the positive effects of these health services.

In table 6, I also compare children of age 0 to 36 with an older cohort of age 37 to 59 months ("cohort models"). The older cohort was born before 1990 and is not affected by the insurgency in utero. These two cohorts live in the same region: the Jammu district. In developing countries, the younger cohort usually has better height scores than the older cohort because of improvements in health over time. Here, younger children are shorter compared an the older cohort because of the insurgency.

[table 4 about here]

[14] A possible limitation is endogeneity of the small at birth measurement. Small at birth could be affected by the same experience of violence in utero, but small at birth is not endogenous in my HAZ models. I use a test for exogeneity based on an instrumental variable model (Wu-Hausman test). To instrument for small at birth in the first stage, I use iron and vitamin A supplements during pregnancy. Furthermore, I excluded small at birth from the HAZ model without having a significant effect on the remaining variables in the model, especially the treatment variable *war*. Results can be requested from the author.

5.2 Results for the NFHS-2

The NFHS-2 was conducted in 1998/99 and includes only children of age 0 to 36 months.[15] Compared to the NFHS-1, it covers the entire Kashmir region but only safer areas in the Jammu region. Additionally, I have information on mother's height and her health during pregnancy, measured as iron-deficiency anemia, to includes as control variables in my regressions. I define women having anemia with hemoglobin levels of less than 10 grams per deciliter blood as a lower bound at the time of the interview. Anemia is chronic and starts early in life in developing countries (WHO 2012). Therefore, I can safely assume that these women were also anemic during pregnancy. I will use the same definition for the NFHS-3 later.

I test if children in urban and in rural Kashmir are shorter than children in urban and rural Jammu because of the insurgency. Given that the sample contains only safer areas of Jammu, these children developed without being exposed to violence and make an ideal control group. The reason why I test if children in rural Kashmir are negatively affected by the insurgency is that I want to know, if the interruption in health care delivery to rural areas during the first phase of the insurgency has a long-lasting impact on children living in rural areas of Kashmir. Most drugs and materials are delivered from district hospitals located in major cities to rural areas.

I find that children in rural Kashmir are not significantly negative affected by the insurgency (table 5). Instead, children in urban areas of Kashmir, excluding Srinagar, are affected the most.[16] Violence moved away from Srinagar to other districts in Kashmir, namely: Anantnag, Badgam and Kupwara. Most of the violent events for 1996 to 1999 coded in table 1 were committed in these three districts.

As expected, mother's height is the main predictor of children's height. Taller women have taller children. Anemic women have shorter children, because of higher energy requirements during pregnancy. Antenatal care has a negative impact on children's height. Antenatal care is measured as the number of health facility visits. Mother's having complications during pregnancy are

[15] This is why, I do not present cohort models here, because it would result in too small samples.

[16] I also compared HAZ scores for children in Srinagar with safer regions and find that these could catch up in their growth. Results can be requested.

more likely to visit health facilities. This can also explain why doctor's assistance at birth has a negative impact on children's height, though not significant in most specifications. In India birth is assisted by "mid-wifes" or other experienced persons (Streefkerk and Moulik 1991). Calling for a doctor can be a sign of expected complications at birth. Furthermore, children small at birth have significantly lower HAZ scores.

There is another unexpected finding.[17] Surprisingly, breastfeeding has a negative effect on children's height.[18] It is surprising, because the standard assumption is that breastfeeding improves children's health, especially weight but also height (WHO 2012). Though in some cases mother's relying on breastfeeding only, lack in complementary nutrition (Fawzi et Al 1997). In a situation, where nutrient-rich food for the mother is scarce and supplemental nutrition for infants is sparsely available, breastfeeding is not enough to improve health outcomes.

Children's height is therefore mainly predicted by mother's height and the experience of violence in utero and early in life.

[table 5 about here]

5.3 Results for the NFHS-3

The NFHS-3 was conducted in 2005/06 and covers the beginning of the last phase of the insurgency. My focus is on the youngest cohort (age 0 to 35 months) for Kashmir overall and urban areas of Kashmir. I use children in Jammu as my control group. Furthermore, I test if Hindus in Jammu are negatively affected by the insurgency. During the 2001/02 peak in violence Hindus were specifically targets of violence. Finally, I compare HAZ scores for a younger cohort (0 to 35 months) with an older cohort (36 to 59 months).[19] The NFHS-3 has no district identifiers. Instead, I will use language spoken to identify the Kashmir (Kashmiri) and the Jammu region. Kashmiri is almost exclusively only spoken in Kashmir.

Children in Kashmir are shorter compared to children in Jammu (table 6).

[17] Recall, the first unexpected finding was that utilizing health care service during pregnancy has no effect on HAZ scores.

[18] I found similar results for the NFHS-1 sample in using breastfeeding but including breastfeeding reduces the sample size drastically. Results can be requested.

[19] As a robustness check, I will show average treatment effects in 12 month intervals later.

The treatment effect becomes significant once focusing on urban areas of Kashmir. After 15 years of insurgency the Kashmir region lacks behind the Jammu region in development permanently. Even children in rural areas of Kashmir remain shorter compared to children in rural areas of Jammu.[20] Hindus in Jammu (*War*Hindu*) are negatively affected by the peak in violence, and are up to 0.48 standard deviations shorter compared to Non-Hindus.

Anthropometric measurements and the experience of violence remain the main predictors for children's height. Variables indicating health care utilization are insignificant as I have found in previous survey rounds. One reason can be that the experience of the insurgency weakens the effect of health care utilization. Another reason is the reduced access to health care services during armed conflicts in general.

[table 6 about here]

6 Robustness checks

There are possible concerns limiting the validity of my results, including the issue of household migration, differences between birth cohorts, gender differences and the measurement of violence exposure.

Migration itself is unlikely to affect the results, because most of the households have been living at their current residence for more than 10 years. Households in Jammu and Kashmir are poor on the average, and only move, in the case of women, if they marry. Even then, most marriages remain local and out of district, or even village (or town), migration is limited. Nonetheless, I excluded women living at their residence for less than three years, and five, from my analysis without having significant effects on the estimated treatment effects for the NFHS-2 and 3 (table 7). The treatment effects change for the NFHS-1. At the beginning of the insurgency households migrated from the valley because of the violence to the less-affected Jammu region.

Another concern is that birth cohorts are differently affected by the insurgency. I split the sample into 12 month intervals for children up to the age of 36 months and into an older cohort 37 to 59 months where available.[21] I assume

[20] Results are not reported here to conserve space. The treatment effect is negative but not significant.

[21] Note that the samples reduce.

the same districts or regions as above. To conserve space, I only report the coefficients for the average treatment effects in table 8. Treatment effects vary by age cohorts as expected. For the NFHS-1, I find that children (age cohort 24 to 35 months) who were in utero during, or born, in 1990 are affected the most. These children are up to four standard deviations shorter. Similarly, I find for the NFHS-2 that children in utero or born around the 1996 peak in violence are affected the most for the urban Kashmir region. For the NFHS-3, there are no negative and significant treatment effects across birth cohorts. The effect of the insurgency on children's height is also smaller in magnitude compared to before.

In India, boys and girls are differently treated by their parents because of sex preferences, usually boys are preferred. Rose (1999) shows that in times of need, health outcomes for girls are worse in rural India, because Hindu parents focus their resources on boys.[22] It is possible, that during an armed conflict, parents focus on boys as well because of sex preferences. Preferred treatment of boys by parents could be less pronounced in Jammu and Kashmir because Muslims are majority. Especially the Muslims in the valley of Kashmir follow the Sufi school of the Islam, which does prefer girls over boys (Kadian 1993, Wolpert 2010).

I break down the baseline models by sex and use the same treatment groups as before (table 9). In most models, I find no differences in treatment effects between boys and girls with three exceptions. For the NFHS-1, I find that boys in Jammu are significantly shorter than boys in other districts, while girls are not negatively affected. Girls in rural Kashmir are only negatively affected for the NFHS-2. The control group are girls in rural Jammu. Child labor is common in rural areas of India, where boys do make the better labor working outside in the field. Both sexes are similar affected by the insurgency in urban Kashmir. There are no differences in the magnitude of the treatment effect for more conflict-affected districts in Kashmir (*other*). Finally, girls are more affected by the insurgency compared to boys for the NFHS-3.

Girls are indeed more affected by the insurgency compared to boys in more conflict-affected regions of Jammu and Kashmir. This can be interpreted as different sex preferences of the parents. Furthermore, the NFHS-2 and 3 surveys

[22] Rose (1999) uses rainfall shocks, and shows how these affect households consumption decisions.

ask the mother about the ideal number of boys and girls, and most parents want to have more boys on the average.[23]

Finally, instead of using a binary variable to identify children more affected than others by the insurgency, I use continuous measurements. These measurements include people killed or murder rates per district in a given year.[24] I use following empirical model:

$$H_{ijt} = \alpha + \gamma(\text{killed}_{jt}) + \beta_1 X_{1ijt}^{child} + \beta_2 X_{2ijt}^{mother} + \beta_3 X_{3ijt}^{SES} + \rho_j + \theta_t + \delta_t + \epsilon_{ijt} \quad (2)$$

Table 10 summarizes the results for the continuous violence exposure measurements. I do not break down the models to district levels, because the samples are getting very small, which introduces high levels of multicollinearity. Overall, the effect of violence exposure on children's height is not significant. Only for the NFHS-1, I can find negative impacts on HAZ scores in using individuals killed by the insurgency. Murder rates have no significant effect on height in my models.[25] Compared to previous results, my findings likely understate the true effect of the insurgency on HAZ scores of children in using the entire Jammu (or Jammu and Kashmir) region, instead of using district variations.

[table 7 to 10 about here]

7 Channels to health

A known result in the health literature is that children shorter for their age because of negative external shocks, have (slightly) worse health outcomes throughout their life, and perform less in schools and in their jobs as adults, compared to children not affected by negative shocks in their growth development. Here, I test if the same children who are already shorter for their age, are more likely to be sick in the two weeks prior to the survey. I assume the same treatment and control groups as before. The health outcome I focus on is: diarrhea.[26]

[23] For the NFHS-3 the "desired" number of boys is 1.29 and for girls .93. Similarly, for the NFHS-2 it is for boys 1.34 and for girls .95.

[24] I took official murder rates from the crime in India database available through the INSCR project (2012).

[25] Note that murder rates are likely to be endogenous during an armed conflict, which is not the best indicator for violence during an insurgency.

[26] In the appendix, I also test if they are more likely to be anemic or have a cough.

Diarrhea itself is caused by living conditions, e.g. access to clean water, food and hygiene in general (WHO 2012). These living conditions worsen during an armed conflict.

I estimate a reduced form model for equation (1) focusing on living conditions and health service utilization early in life. To control for hygiene, I use information on the availability of any type of toilet facilities in the household, or if they are shared with others. Furthermore, food can be contaminated through many channels, e.g. the water, the storage of food or the food itself. I use access to water through a pipe leading to a house or not, and if the child gets plain water or not. I also control if the household owns a refrigerator, and types of food given to the child regularly. Certain types of food can spoil easily if not stored properly. Most of these controls are only available for the NFHS-2 and NFHS-3.

I find that children living in more conflict-affected areas are also more likely to have diarrhea in the two weeks prior to the survey (table 11). Children in the Jammu district (NFHS-1) and in rural Kashmir (NFHS-2) are indeed sicker on the average. For the NFHS-3, I cannot find significant differences. Surprisingly, Muslims are less likely to have diarrhea which could be attributed to religious cleansings throughout the day and the preparation of food. Controls for hygiene and contamination of food are in most specifications not significant, for instance only a minority of households owns a refrigerator.[27]

[table 11 about here]

8 Conclusion

Health of children, proxied by height for age z-scores (HAZ), is negatively affected by the insurgency in the state of Jammu and Kashmir (India). Children who experienced violence in utero and early in their life, are 0.9 to 1.4 standard deviation shorter than children who experienced less or no violence early in their life. The magnitude is similar to results found in the literature for stronger forms of armed conflicts.

The Kashmir insurgency has three phases with different geographical ex-

[27] I get stronger results for the NFHS-2 with 32.38 % of the children having diarrhea, compared to 22.02 % for the NFHS-1 and 9.91 % for the NFHS-3 which also follows the phases of the insurgency.

posures to violence. I identified these phases based on an event dataset on district-level militant acts I created, the literature about the Kashmir insurgency, and district-level crime rates. For each phase, I have one round of the National Family Health Survey available, allowing me to identify cohorts of children differently exposed to the insurgency.

In my models, I use typical mother and household background information, but also shed light on the link between health at birth and later height. This link has not been fully explored in the (armed conflict-) development or health literature. In the development literature, children's height is the determinant for health but due to the lack of data, past health or mothers health during pregnancy, is not controlled for. Height is mostly explained by current information on mother and household characteristics. Similarly, in the public health literature, birth weight is used to predict future human capital outcomes. Birth weight is used to explain adult health or school performance, but health early in life is not accounted for. Here, I create a link between children's height, children's health at birth and mother's health during pregnancy. Children's health is measured as being small at birth or not. Children who were smaller than the average at birth, are also shorter for their age. Mother's health is measured as being anemic or not, a chronic disease starting early in life in developing countries. These women are iron-deficient, which affects the development of the child in utero, resulting in children shorter for their age.

In a series of robustness checks, I find that cohorts born closer to peaks in violence are more affected by the insurgency. Furthermore, gender difference are small, but when present, show a preference towards boys. Parents invest into boys because these make better labor in rural areas of Kashmir. I also change my measurements of violence from a binary variable to continuous measurements. These measurements show smaller and less significant effects of the insurgency on HAZ scores of children.

Overall, mother's height and the exposure to violence in utero and early in life explain most of the variation in HAZ scores of children. Furthermore, the experience of armed conflict renders the positive effect of health service utilization before and during pregnancy insignificant. Finally, children already shorter for their age are more likely to be sick throughout their life in developing, as well as developed countries. Here, these children are more likely to have diarrhea in the two weeks prior to the survey interview.

A Other health outcomes

I test, if children (age 0 to 36 months) are more likely to have a cough in the two weeks prior to the survey or if they are anemic in general. A cough can be caused by living conditions, for example the type of cooking fuel used, and if the house has a chimney (or windows) or not. Proper ventilation is one of the concerns in developing countries, where cooking fuel is usually wood or kerosene (Rinne et Al 2007, Duflo et Al 2008). These create harmful fumes in indoor cooking. I control for these living conditions in a reduced form health production function. I use "Pucca"-housing as a control variable. Puccas are higher quality houses. Furthermore, I include controls for "Bacillus Calmette-Gurin" (BCG) and diphtheria, pertussis and tetanus (DPT) vaccinations of the child. Pertussis is also know as whooping cough (WHO 2012). Anemia is based on hemoglobin tests which measure the iron-content in the blood of a child or a mother. Anemia can affect productivity later in life, because it affects the concentration of children or adults (WHO 2012), and can induce higher energy requirements by the metabolism. Here, I use controls for receiving iron-supplements during pregnancy and if the mother is anemic or not.

Table 12 and 13 summarize my results. I use similar treatment and control groups as before. I can only test cough incidences for the NFHS-3, because I cannot control for the same living conditions in earlier survey rounds. Anemia was only tested in the NFHS-2 and 3.

The impact of the insurgency on anemia of children is mixed (table 12). Children in the Srinagar district (NFHS-2) are more likely to have anemia. For the NHFS-3, I find that anemia levels are less in more conflict-affected regions of Kashmir, with only being significant for rural Kashmir. Prenatal care, as well antenatal care reduce anemia for the NFHS-2 round, but have small positive impacts for the NFHS-3 round. Iron supplements are not significant in most specifications.

In table 13, I present results for having a cough or not prior to the survey. Children in Kashmir are more likely to be sick compared to children in Jammu, especially in urban areas of Kashmir. Given that housing is better in urban areas, the insurgency reduces children's health. Although not significant, living in a Pucca or using natural gas for cooking reduces coughs. Having received a DPT vaccination reduces coughs significantly, as expected.

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C Figures

Figure 1: Jammu and Kashmir district map

The districts most affected by violence are: Srinagar (40%), Baramula (17%), Kupwara (11%), Anantnag (10%), Pulwama (7%) and Badgam (3%). The ranking is based on own calculations in using the event data set I created. For the period 1990 to 2011 I have 1368 different events in total. 662 occurred in the period 1990 to 1996 only.

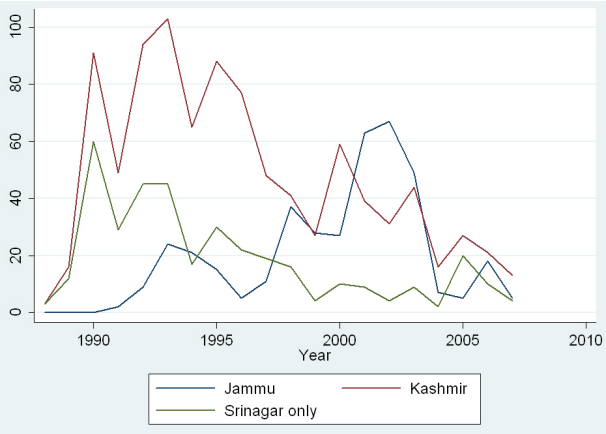


Figure 2: Number of victims for J&K - 1988 to 2007 - own calculations

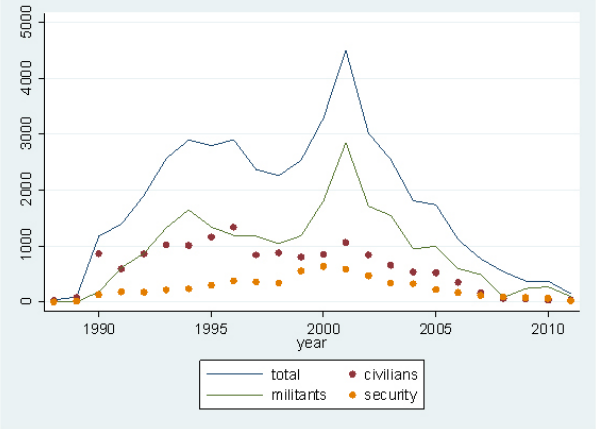


Figure 3: Number of victims for J&K - 1988 to 2011 - Source of raw data: SATP (2012)

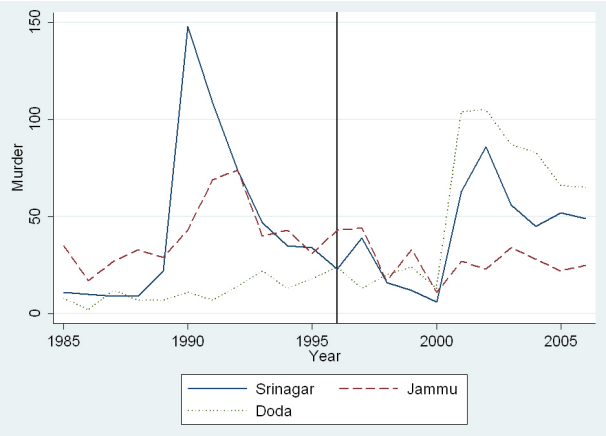


Figure 4: Number of murder victims for Srinagar, Jammu and Doda district 1990 to 2006 - Source of raw data: INSCR (2012)

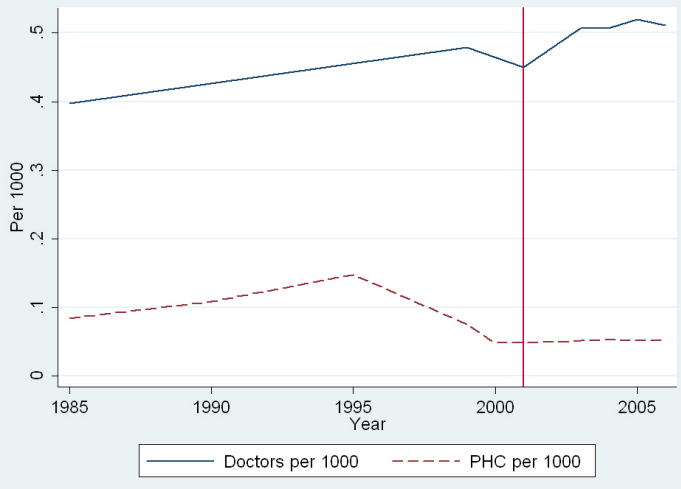
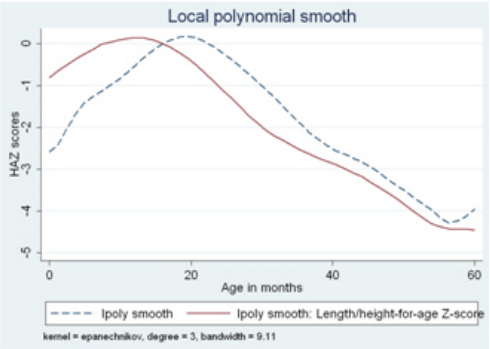
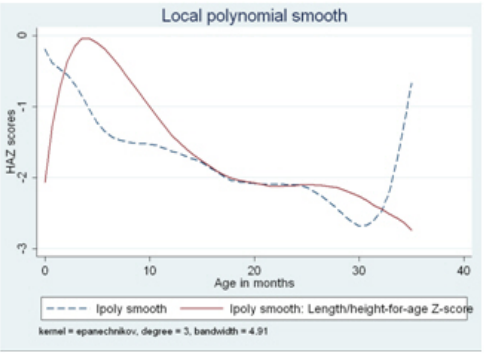


Figure 5: Doctors and Primary Health Centers per 1000 - Source of raw data: Government of Jammu and Kashmir - Development Report (2011)

NHS-1: Urban Jammu (dashed line) vs. Rural Jammu (solid line)



NHS-2: Kashmir (dashed line) vs. Jammu (solid line)



NHS-3: Kashmir (dashed line) vs. Jammu (solid line)

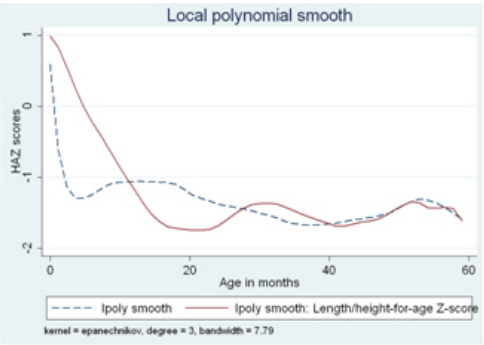


Figure 6: Local HAZ polynomials - own calculations

D Tables

Year	Jammu region	District average	Jammu district	Kashmir region	District average	Srinagar district
1988	0	0	0	3	0.5	**3**
1989	0	0	0	16	2.66	**12**
1990	0	0	0	91	15.16	**60**
1991	2	0.3	**1**	49	8.16	**29**
1992	9	1.5	3	94	15.66	**45**
1993	24	4	5	103	17.16	**45**
1994	21	3.5	0	65	10.8	17
1995	15	2.5	8	88	14.66	30
1996	5	0.83	0	77	12.83	22
1997	11	1.83	0	48	8	19
1998	37	6.16	1	41	6.83	16
1999	28	4.66	0	27	4.5	4
2000	27	4.5	0	59	9.83	10
2001	63	10.5	3	39	6.5	9
2002	67	11.16	16	31	5.16	4
2003	49	8.16	2	44	7.33	9
2004	7	1.16	4	16	2.66	2
2005	5	0.83	0	27	4.5	20
2006	18	3	0	21	3.5	10
2007	5	0.83	0	13	2.16	4
2008	4	0.66	2	8	1.33	0
2009	2	0.33	0	3	0.5	1
2010	0	0	0	6	1	3

Table 1: Number of insurgency related incidences - 1988 to 2010 - own calculations

Bold numbers indicate that absolute number of incidents is close or more than 50% of all incidents in this particular year. **Note** that I am using this event-data set in conjunction with findings in the literature. The reason is that it is not possible to collect all insurgency related events without access to local archives. Especially the amount of incidences in the Jammu district underestimates the effect of the insurgency. Given the amount of riots, murder rates and looting early in the 90's in the Jammu district (INSCR 2012), it is surprising that not more insurgency related incidences are reported. One reason could be that only incidences in Kashmir made it into the literature, because the Azaadi movement is mainly a Kashmiri one. Nonetheless, Jammu city is the winter capital of the state including many government agencies which can be targets for militants.

	NFHS-1 (0 to 59 months)		**NFSH-2** (0 to 36 months)		**NFSH-3** (0 to 59 months)	
	urban (n=233)	rural (n=463)	urban (n=213)	rural (n=749)	urban (n=277)	rural (n=949)
Children's characteristics						
HAZ	-1.536	-1.418	-1.338	-1.707	-1.144	-1.362
Age in months	25.89	26.03	18.42	16.72	30.18	29.56
Boys	57.94%	53.35%	54.01%	55.18%	52.71%	52.37%
Small at birth	25.00%	23.54%	28.27%	31.11%	25.36%	33.05%
Iron Supplement	91.85%	78.62%	83.05%	69.36%	79.17%	64.63%
Vitamin A	34.36%	21.74%	41.21%	25.27%	n.a.	n.a.
Complications at birth	32.19%	22.89%	34.21%	16.55%	31.05%	9.17%
Antenatal Checkup	98.28%	86.18%	97.05%	81.88%	94.44%	82.67%
Tetanus Vaccination	98.28%	85.10%	94.49%	86.11%	95.33%	84.10%
Diarrhea last two weeks	23.38%	19.35%	31.51%	32.62%	4.55%	11.50%
Mother's characteristics						
Age in years	25.48	23.76	26.95	26.84	28.98	27.81
Years of Schooling	8.59	3.77	6.22	2.56	7.41	3.39
Hindu	85.41%	76.24%	30.80%	40.41%	40.79%	29.08%
Muslim	4.29%	15.33%	58.23%	58.88%	54.15%	70.81%
Height (cm)	n.a.	n.a.	153.20	153.59	153.72	154.35
Children ever born	2.33	3.09	2.52	3.13	2.44	3.08
Household's characteristics						
Owns Land	18.45%	74.24%	2.53%	18.00%	30.69%	77.24%
Owns Livestock	18.45%	78.14%	n.a.	n.a.	24.19%	77.03%
Scheduled Tribe	0	1.74%	19.41	30.87%	21.30%	38.25%

Table 2: Descriptive Statistics based on NHS-1, 2 and 3 for all Jammu and Kashmir

Note that for NFHS-1 years of schooling, I assumed missing values to be zero. Give that the sample barely includes any members of a scheduled tribe, years of schooling likely overstates the true years of schooling.

NFSH-1	Jammu district	Rest	Difference	Jammu urban	urban rest	Difference			
HAZ (age<12)	-.3841	-.907	.5228	-1.118	-1.975	.8561			
HAZ (age<24)	-.1467	-.6781	.5314	-.5603	-1.237	.6767			
HAZ (age<36)	-.52975	-.9762	.4464	-.5945	-1.3678	.7733*			
HAZ (age>36,<59)	-3.3931	-3.0636		-2.948	-3.3263				
Difference	2.8634***	2.0873***		2.3539***	1.9584***				
NFHS-2	Rural Kashmir	Rural Jammu	Difference	Srinagar	other Kashmir districts	Difference			
HAZ (age<12)	-1.281	-.5932	-.6878***	-.965	-2.573	1.608***			
HAZ (age<24)	-1.665	-1.207	-.4578**	-1.098	-2.573	1.474***			
HAZ (age<36)	-1.840	-1.582	-.2575*	-1.162	-2.613	1.450***			
HAZ (age<12)	-1.281	-.5932		-.965	-2.614				
HAZ (age>12,<36)	-2.209	-2.149		-1.247	-2.843				
Difference	.928***	1.556***		.282	.228				
NFHS-3	Jammu	Kashmir	Diff.	Jammu Rural	Kashmir Rural	Diff.	Jammu Urban	Kashmir Urban	Diff.
HAZ (age<36)	-1.113	-1.242	-.1284	-1.127	-1.226	-.098	-1.058	-1.290	-.232
HAZ (age<24)	-.945	-1.096	-.1508	-.9238	-1.051	-.128	-1.043	-1.212	-.168
HAZ (age<12)	-.1938	-.9044	-.7106**	-.177	-.774	-.596	-.282	-1.2447	-.962
HAZ (age>48)	-1.443	-1.421	.0227	-1.492	-1.664	-.172	-1.234	-.626	.607
HAZ (age<36)	-1.113	-1.242		-1.127	-1.226		-1.058	-1.290	
HAZ (age>36)	-1.532	-1.521	-.0101	-1.598	-1.680	.081	-1.269	-.877	-.392
Difference	.420***	.299*		.471***	.453**		.211	-.413	

Table 3: HAZ mean values - for NFHS-1, NFHS-2, and NFHS-3

Difference significant at 1% ***, 5% **, 10% *,

Treatment group Control Group	Jammu district rest of Jammu	cohort model	rural Jammu district rest of Jammu	cohort model
War	-1.032**	-1.440**	-.528**	-1.342**
	(.317)	(.591)	(.140)	(.632)
Age child	-.212***	-.243**	-.254**	-.194***
	(.043)	(.052)	(.065)	(.074)
Male	-.240	.002	-.264	-.000
	(.144)	(.273)	(.211)	(.292)
Age mother	.097***	.131**	.085*	.065
	(.013)	(.055)	(.033)	(.061)
Education	.015	.032	.021	.038
	(.021)	(.037)	(.026)	(.035)
Muslim	.384*	.556	.263	-.734
	(.168)	(.583)	(.233)	(1.019)
Abortion ever	.055	.183	-.126	.349
	(.151)	(.387)	(.405)	(.441)
Number of Children born	-.374	-.781	-.540	-1.443**
	(.457)	(.806)	(.540)	(.702)
Scheduled tribe	-.328	-.334	-.578	.724
	(.367)	(.836)	(.432)	(1.219)
Birth order	1.045	1.630	1.617	3.579**
	(1.135)	(1.589)	(1.519)	(1.435)
Small at Birth	-.807***	-.138	-.697	-.103
	(.172)	(.342)	(.356)	(.304)
Complications at Birth	.221	.483	.154	-.141
	(.315)	(.365)	(.364)	(.308)
Antenatal Care	1.292	.259	1.070	.503
	(.807)	(1.672)	(.800)	(1.059)
Tetanus vaccination	-.933	.544	-.767	-.207
	(.967)	(1.589)	(.944)	(1.087)
Home delivery	.086	.418	.215	.144
	(.073)	(.356)	(.174)	(.321)
R^2	0.61	0.80	0.63	0.76
N	337	159	225	159
Time trend	yes	yes	yes	yes
Birth F.E.	yes	yes	yes	yes
City F.E.	yes	yes	no	no
District F.E.	yes	no	yes	yes
State F.E.	yes	yes	yes	yes
HH controls	yes	yes	yes	yes

Table 4: DID regressions based on NFHS-1 children 0 to 36 months

. Household controls include owning a TV (for urban areas) and owning land and livestock (for rural areas).
Significant at 1% ***, 5% **, 10% *, clustered standard errors in brackets

Treatment group Control group	Rural Kashmir rural Jammu	Urban Kashmir urban Jammu	other urban districts all urban districts
War	-.391	-2.553***	-1.523***
	(.678)	(.371)	(.334)
Age child	-.300	-.166	-.150
	(.241)	(.153)	(.167)
Male	-.047	-.136	-.216
	(.142)	(.216)	(.206)
Age mother	.006	-.012	-.009
	(.012)	(.034)	(.029)
Education	.068	.055*	.067*
	(.022)	(.028)	(.033)
Height mother	.038	.088**	.089**
	(.010)	(.028)	(.029)
Anemia mother	.151	-.756**	-.877***
	(.257)	(.225)	(.231)
Muslim	.434	1.784***	1.743**
	(.496)	(.466)	(.563)
Abortion ever	.248*	-.143	-.199
	(.133)	(.295)	(.313)
Number of children	.020	-.041	.087
born	(.212)	(.489)	(.661)
Wanted child	.091	.163	.167
	(.181)	(.287)	(.317)
Birth order	-.021	.021	-.093
	(.175)	(.420)	(.566)
Small at birth	-.082	-.488*	-.410*
	(.139)	(.234)	(.182)
Tetanus vaccination	.203	-.087	-.070
	(.237)	(.300)	(.327)
Prenatal Care	.215	-.560	-.309
	(.244)	(.476)	(.581)
Doctor assistance	-.519*	-.366	-.445
at birth	(.277)	(.756)	(.787)
Antenatal Care	.052	-.097*	-.097*
	(.031)	(.043)	(.043)
Home delivery	-.087	-.495	-.404
	(.129)	(.658)	(.726)
Currently	-.367	-.823**	-.721**
Breastfeeding	(.269)	(.305)	(.284)
R^2	0.22	0.42	0.44
N	646	178	178
Time trend	yes	yes	yes
Birth F.E.	yes	yes	yes
City F.E.	no	yes	yes
District F.E.	yes	yes	yes
State F.E.	yes	yes	yes
HH controls:	yes	yes	yes

Table 5: DID regressions based on NFHS-2 children 0 to 36 months

Significant at 1% ***, 5% **, 10% *, clustered standard errors in brackets. Household controls include owning a TV, refridgerator and land. Furthermore, if a household belongs to a scheduled class or not and the altitude the household lives.

Treatment group Control group	Kashmir Jammu	cohort model	Urban Kashmir urban Jammu
War	-.251	-.622	-1.590**
	(.286)	(.450)	(.738)
War*Hindu	-.478*		-.239
	(.261)		(.647)
Age child	-.214**	-.409***	-.285
	(.102)	(.156)	(.286)
Male	.056	.293	-.030
	(.174)	(.202)	(.265)
Age mother	.005	.033	-.020
	(.021)	(.023)	(.045)
Education	.019	.018	-.046
	(.022)	(.026)	(.038)
Height mother	.066***	.057***	.059**
	(.015)	(.020)	(.028)
Anemia mother	-.321	-.520*	.077
	(.205)	(.286)	(.389)
Abortion ever	.032	.144	.314
	(.215)	(.268)	(.426)
Number of children	-.015	-.104	-.061
born	(.085)	(.088)	(.177)
Wanted child	.035	-.047	-.357
	(.221)	(.222)	(.420)
Small at birth	-.404**	-.169	-.972***
	(.184)	(.231)	(.272)
Tetanus vaccination	-.387	-.097	
	(.372)	(.538)	
Prenatal Care	.053	-.169	.906
	(.280)	(.584)	(.556)
Doctor assistance	-.243	.322	-.298
at birth	(.398)	(.729)	(.596)
Antenatal Care	.095	-.037	-.858
	(.419)	(.744)	(.946)
Home delivery	-.029	.538	-.730
	(.424)	(.729)	(.610)
Currently	-.026	-.541**	-.210
Breastfeeding	(.205)	(.228)	(.324)
R^2	0.22	0.18	0.63
N	475	345	102
Time trend	yes	yes	yes
Birth F.E.	yes	yes	yes
City F.E.	yes	yes	yes
District F.E.	no	no	no
State F.E.	yes	yes	yes
HH controls	yes	yes	yes

Table 6: DID regressions based on NFHS-3 children 0 to 36 months

. Significant at 1% ***, 5% **, 10% *, robust standard errors in brackets. Household controls include owning a tv, refridgerator, owning land and belonging to a scheduled cast. As well as altitude a household lives in. I dropped tetanus vaccination from my last model (column 4) because of multicollinearity. I do not present a cohort model for urban areas because the sample size reduces drastically to have meaningful results.

	NFHS-1		**NFHS-2**			**NFHS-3**	
	Jammu	Jammu rural	Kashmir urban	Kashmir rural	Other	J&K	J&K urban
Years>3							
War	-1.562*	-.791	-3.919***	-.218	-.268**	-.366	-1.897*
	(.650)	(.194)	(.729)	(.660)	(.081)	(.306)	(.982)
R^2	0.69	0.71	0.46	0.21	0.26	0.19	0.52
N	229	163	134	580	387	471	101
Years>5							
War	1.248	-1.758	-1.431	-.246	-.269**	-.254	-1.866
	(.945)	(.313)	(.777)	(.665)	(.081)	(.333)	(1.215)
R^2	0.75	0.80	0.53	0.22	0.25	0.19	0.53
N	129	93	115	479	353	415	93

Table 7: Migration - Years living at current residence - NFHS-1, 2 and 3

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors, as well clustered standard errors if districts are used. Models with high levels of multicollinearity, because of a too small sample size, are not reported here.

	NFHS-1		**NFHS-2**			**NFHS-3**
	Jammu	Jammu rural	Kashmir urban	Kashmir rural	others districts	Kashmir
36 to 59 months						
War	1.077	.233	n.a.	n.a.	n.a.	.405
	(.760)	(.454)				(.413)
R^2	0.71	0.76				0.27
N	128	76				198
24 to 35 months						
War	-4.376*	-4.167***	-3.436***	-.958	-.754**	.309
	(1.918)	(.711)	(.239)	(.872)	(.204)	(.630)
R^2	0.76	0.80	0.59	0.29	0.46	0.24
N	99	62	65	201	124	138
12 to 23 months						
War	-.728	-1.097	2.683**	.610	.021	-.503
	(.395)	(.962)	(.845)	(.948)	(.215)	(.409)
R^2	0.73	0.80	0.75	0.23	0.42	0.30
N	123	87	59	199	128	207
<12 months						
War	.729	1.714	n.a.	-1.074	-.569**	-.746
	(1.442)	(0.78)		(.984)	(.180)	(.548)
R^2	0.66	0.78		0.23	0.32	0.28
N	115	147		246	157	172

Table 8: Exposure to violence by birth cohorts - NFHS-1, 2 and 3

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors, as well clustered standard errors if districts are used. Models with high levels of multicollinearity, because of a too small sample size, are not reported here.

	NFHS-1		NFHS-2			NFHS-3	
	Jammu	Jammu rural	Kashmir urban	Kashmir rural	Other	J&K	J&K urban
Boys							
War	-2.130***	-.539	-1.023	.174	-.213	.056	.412
	(.295)	(.313)	(.885)	(1.197)	(.230)	(.291)	(.959)
R^2	0.69	0.77	0.51	0.22	0.32	0.30	0.62
N	182	117	96	351	214	397	95
Girls							
War	.227	.150	-1.051	-1.356*	-.273	-.603*	-1.714
	(.861)	(.498)	(.937)	(.630)	(.192)	(.330)	(1.059)
R^2	0.61	0.64	0.59	0.31	0.34	0.24	0.66
N	155	108	82	295	195	318	65

Table 9: Gender difference in height scores - NFHS-1, 2 and 3

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors, as well clustered standard errors if districts are used. Models with high levels of multicollinearity, because of a too small sample size, are not reported here.

	NFHS-1		NFHS-2			NFHS-3	
	Jammu	Jammu rural	J&K	J&K urban	J&K rural	J&K	J&K urban
Killed	-.284*	-.119	.032	-.010	.041	-.004	-.042
	(.127)	(.207)	(.030)	(.022)	(.041)	(.009)	(.018)
R^2	0.61	0.64	0.23	0.42	0.22	0.20	0.45
N	337	225	824	178	646	715	160
Murder	.016	.011	.004	-.002	.006	.006	-.016
	(.010)	(.015)	(.003)	(.006)	(.004)	(.013)	(.031)
R^2	0.61	0.64	0.23	0.42	0.23	0.20	0.43
N	337	225	824	178	646	715	160

Table 10: Different measurements of violence - NFHS-1, 2 and 3

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors, as well clustered standard errors if districts are used. Models with high levels of multicollinearity, because of a too small sample size are, not reported here.

	NFHS-1	NFHS-2		NFHS-3
Treatment group	Jammu district	urban Kashmir	rural Kashmir	all Kashmir
Control group	other districts	urban Jammu	rural Jammu	all Jammu
War	.449***	-.029	.556**	.083
	(.146)	(.178)	(.193)	(.057)
Age child	.006	-.085	-.053	-.080***
	(.011)	(.048)	(.049)	(.019)
Male	-.012	.034	.016	-.004
	(.062)	(.066)	(.048)	(.030)
Age mother	-.026*	-.019	-.006	-.005
	(.010)	(.012)	(.006)	(.004)
Education	.010*	.010	.000	.007*
	(.004)	(.008)	(.003)	(.004)
Muslim	.055	-.196*	-.297***	-.040
	(.138)	(.082)	(.050)	(.046)
Currently	-.006	.185**	.092	-.023
Breastfeeding	(.004)	(.065)	(.056)	(.040)
No toilet in house	.179	.026	-.056	.052
	(.004)	(.131)	(.059)	(.047)
Birth order	-.053	.045	.003	.004
	(.137)	(.030)	(.017)	(.013)
Small at birth	.191**	-.061	-.001	.040
	(.048)	(.071)	(.045)	(.036)
Water pipe	n.a.	.154	-.026	-.041
		(.225)	(.043)	(.040)
Owns Refrigerator	n.a.	-.076	.140**	.039
		(.116)	(.048)	(.051)
Gave plain water	n.a.	.440***	.016	.013
		(.075)	(.096)	(.051)
Gave Fresh Milk	n.a.	.011	.080	-.009
		(.095)	(.044)	(.035)
Gave Fruits	n.a.	.100*	-.061	.007
		(.040)	(.047)	(.039)
R^2	0.31	0.22	0.09	0.10
N	154	165	589	510
Time trend	yes	yes	yes	yes
Birth F.E.	yes	yes	yes	yes
City F.E.	yes	yes	yes	yes
District F.E.	yes	yes	yes	no
State F.E.	yes	yes	yes	yes
HH controls	yes	yes	yes	yes

Table 11: Other dimensions of health - Diarrhea in the last two weeks

Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors. Models with high levels of multicollinearity, because of a too small sample size, are not reported here. Household controls include owning land and livestock, owning a TV, and belonging to a schedule tribe.

	NFHS-2			NFHS-3	
Treatment group	urban Kashmir	rural Kashmir	Srinagar	all Kashmir	urban Kashmir
Control group	urban Jammu	rural Jammu	other districts	all Jammu	urban Jammu
War	.023	.202	.144***	-.060	-.062
	(.215)	(.164)	(.022)	(.039)	(.126)
Age child	-.020	-.073	-.068	.045***	.071
	(.067)	(.047)	(.051)	(.015)	(.049)
Male	-.078	.019	.028	-.005	-.004
	(.039)	(.049)	(.038)	(.024)	(.067)
Age mother	-.007	.008	.004	-.002	-.001
	(.010)	(.004)	(.007)	(.003)	(.009)
Education	.005	.004	-.004	-.009***	-.017**
	(.007)	(.005)	(.004)	(.003)	(.007)
Anemia Mother	.116	.094**	.079*	.031	.100
	(.126)	(.032)	(.032)	(.025)	(.064)
Muslim	.049	-.159**	n.a.	.022	.194
	(.077)	(.059)		(.031)	(.147)
Birth order	.056***	-.010	-.008	-.013	-.049
	(.013)	(.013)	(.013)	(.011)	(.042)
Small at birth	.023	.023	.024	.011	.106
	(.068)	(.025)	(.033)	(.026)	(.088)
Prenatal Care	-.138	-.007	-.161**	-.014	.014
	(.190)	(.059)	(.050)	(.039)	(.109)
Antenatal Care	-.016***	-.007	-.006	.089*	.274
	(.004)	(.008)	(.005)	(.046)	(.192)
Iron supplement	.097	.041	.136**	-.039	-.119
	(.099)	(.023)	(.049)	(.026)	(.091)
Currently	.134	.064	-.146	-.030	-.096
Breastfeeding	(.184)	(.064)	(.064)	(.028)	(.089)
R^2	0.25	0.10	0.11	0.60	0.59
N	180	646	411	520	114
Time trend	yes	yes	yes	yes	yes
Birth F.E.	yes	yes	yes	yes	yes
City F.E.	yes	yes	yes	yes	yes
District F.E.	yes	yes	yes	no	no
State F.E.	yes	yes	yes	yes	yes
HH controls	yes	yes	yes	yes	yes

Table 12: Other dimensions of health - Anemia Child

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors. Models with high levels of multicollinearity, because of a too small sample size, are not reported here. Household controls include owning land and livestock, owning a TV, and belonging to a schedule tribe.

	NFHS-3		
Treatment group	all Kashmir	urban Kashmir	rural Kashmir
Control group	all Jammu	urban Jammu	rural Jammu
War	.032	.247**	.006
	(.038)	(.098)	(.043)
Age child	-.044	-.146***	-.036**
	(.015)	(.044)	(.016)
Male	.013	-.011	.027
	(.025)	(.052)	(.029)
Age mother	.001	.006	.001
	(.003)	(.007)	(.003)
Education	.009***	.007	.007**
	(.003)	(.006)	(.003)
Muslim	.060*	-.293**	.072**
	(.034)	(.130)	(.036)
Birth order	.008	-.015	.011
	(.010)	(.023)	(.012)
Small at birth	.049*	.010	.060*
	(.028)	(.067)	(.032)
Currently	.039	.147***	.011
Breastfeeding	(.028)	(.055)	(.034)
Pucca	-.005	.136	-.032
	(.030)	(.088)	(.034)
Cooking Gas	-.011	.057	-.004
	(.036)	(.079)	(.042)
BCG received	.071	-.019	.069
	(.050)	(.130)	(.055)
DPT received	-.106*	-.055	-.108*
	(.053)	(.107)	(.060)
R^2	0.07	0.25	0.06
N	951	219	732
Time trend	yes	yes	yes
Birth F.E.	yes	yes	yes
City F.E.	yes	yes	yes
District F.E.	yes	yes	yes
State F.E.	yes	yes	yes
HH controls	yes	yes	yes

Table 13: Other dimensions of health - Cough in the last two weeks - NFHS-3 only

. Significant at 1% ***, 5% **, 10% *, all models include birth and state fixed effects and use robust standard errors. Models with high level of multicollinearity, because of a too small sample size, are not reported here. Household controls include owning land and livestock, owning a TV, and belonging to a schedule tribe.