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# Predictors of child's health in war conditions: the Lebanese experience

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# مُنبِئات عن صحة الطفل في ظروف الحرب: التجربة اللبنانية

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## Abstract

**Objectives:** Children living under war conditions are affected directly and indirectly. This study investigates the physical and mental health of children in Lebanon in relation to war events and mediating factors. At the time of the initial data collection, little was known of the parental and environmental factors affecting child mental and physical well-being during war. In light of current research, a secondary analysis was conducted to further examine the influences on the health of children in war environments. **Method:** The secondary analysis was conducted on data from a stratified random sample of 2752 households in Beirut during the civil war (1975-1990). Based on reports from mothers, their health, child's health (ages 3-12) and stressors faced by the family were assessed. **Results:** High percentage of children experienced physical, psychological and interpersonal problems. Multiple regression analysis showed that parental and environmental factors predicted health of the child during war. **Conclusion:** In accordance with current research, life events, mother's mental health and family resources were strong predictors of child's mental health. Psychosocial preventive interventions focusing on family resources and the mental health of mothers and children are paramount to help safeguard the well-being of the children in times of war.

**Key words:** Child's health; war; maternal health; social support; psychosocial resources

**Declaration of interest:** None

## Introduction

Modern day conflicts cause civilian casualties; with children being the most vulnerable, physically and psychologically.[1] Children are especially at risk during conflict; they suffer from fatal injuries, loss of limbs due to explosive remnants of war, hunger and disease, becoming targets of armed groups, and exploited as combatants[1].

War impacts children's cognitive, emotional and social development placing them at risk for mental health problems and impaired cognitive functioning[3, 4]. Children and their parents are exposed to war directly through experiencing or witnessing traumatic events (i.e. serious injury, permanent disability, destruction of one's home, death of a family member, indiscriminate violent acts) [5,6,7]. Exposure to traumatic war events extend beyond the violence to the depletion or loss of material and social resources creating daily hassles (i.e. shortages in water, food, electricity, fuel) that can heavily burden the family unit and social support[8,9]. Studies have shown that the effects of war trauma on children can be mediated by strong social support[10] and the family's ability to function and cope with the stressors of war[11, 12, 13].

It is well known that children in conditions of war are resilient[14,15]. Emotional, behavioral or physical responses towards the stressors of war vary from child to child[16, 2]. Some children may develop posttraumatic stress disorder (PTSD)[6,17,18,19], withdraw from interpersonal contact, become aggressive or regressive[20], have nightmares, separation anxiety, eating disturbances, learning difficulties, problems with concentration[20,21] and somatic symptoms [22].

Children are especially vulnerable to the maternal family's response to the direct and indirect stressors of war[5,23,24] which can predict children's well-being in these times[11,25,26,27]. Protection of child health in times of war and fostering resilience play a key role in preventing psychopathology[28]. Therefore it is crucial to understand the factors influencing children's health during wartime in order to provide appropriate interventions for both the child and mother[3]. In light of current literature and the continued need to understand the impact of war on the well-being of children, this study examines the impact of war exposure and non-war life events, the mother's health, and the family's resources on children's health during the 15-year Lebanese civil war (1975-1990). Recommendations for interventions during and after war are discussed.

### Background

Enduring war stressors (i.e. material and social resource loss) resulting from the conflict can increase the risk of poor psychological functioning[29, 30]. For example, during the Lebanese civil war, Farhood et al.[9] surveyed adult family members and found that the majority who reported daily hassles (i.e. electricity cuts (87%); water

shortages (75%), lack of food (55%) also reported poor mental health.

During the past 30 years, Lebanon has been subjected to devastating wars which have inflicted many atrocities on its population[31]. Several research studies have been conducted to explore the effects of war on children from different perspectives[3,4,7,32,33,34]. At the time of the initial data collection used for the current study analysis, a 15-year long civil war inflicted violence and stressors on the Lebanese population[9]. During which time, little was known of the parental and environmental predictors of child mental and physical well-being. The following literature review brings together recent findings shedding light on the topic several decades later.

*War events and health*

In a study conducted in spring of 1985, Chimienti, Nasr and Khalifeh[20] examined the responses of the mothers of 1039 Lebanese children (ages 3-9) to assess the effects of war exposure on the emotional and social behavior. The authors found that children experiencing death of a family member, destruction of home or witnessing death were more likely to exhibit nervous, regressive, aggressive and depressive behavior than children who did not. Additionally, in a study performed on a selected sample of 2220 children 3-16 years of age living in Greater Beirut, Macksoud[33] found that 95% of the children were exposed to at least one traumatic war event, 82% were exposed to shelling, 63% exposed to combat, 60% were forced to change residence, and 53% had their home bombarded. Macksoud and Aber[7] found that the number of war traumas experienced by children during the Lebanese civil war was positively associated with PTSD symptoms with displacement and separation from parents increasing depressive symptoms.

Children who experience war-related traumatic events may develop psychological symptoms such as aggressive behavior, emotional numbness, anxiety, and a sense of helplessness[18,35,36]. Additionally children may also experience generalized fear, sleep disturbances, night terrors, nightmares, separation anxiety to caregivers, regressive symptoms such as bed-wetting and loss of acquired speech. They may also exhibit somatic symptoms such as stomach aches and headaches as well as safety concerns, preoccupation with danger, changes in behavior, mood, and personality[7], loss of interest in activities, inability to concentrate, and lowering of school performance[5,37]. Some children may also experience chronic symptoms placing them at risk for psychopathology such as PTSD[18, 19].

War exposure also affects cognitive functioning in children placing the child at risk for both short- and long-term consequences to cognitive development. As a result of war exposure, traumatized Bosnian children, aged 5-6 years, showed lower cognitive performance than children not exposed to violence[38]. In another study on Palestinian children traumatized by war events, Qouta et al.[39] found that war trauma (i.e. loss, injury, and destruction to home) was highly associated with cognitive deficiency with regards to attention and concentration. Additionally, Punamäki et al.[11] found that cognitive impairment predicted symptoms of PTSD and depression in adolescents.

*Maternal health*

Several studies have investigated the link between maternal health and the well-being of the child in war conditions. Children whose mother had poor psychological functioning were more vulnerable for developing psychological disorders during armed conflict[26,32] especially in younger age groups[4] and females[25]. Thabet et al.[4] found that exposure to war trauma and parent's emotional response to their trauma experience were significantly associated with PTSD and anxiety symptoms in children. Additionally, the mother's parenting style and ability to cope during the conflict predicted child's health[5].

*Family resources*

Family resources have been used as predictors of child health. Family resources (i.e. material and social) were significantly associated with psychological health, physical health, and interpersonal relationships[9,40]. Concurrently, Farhood[13] looked at the Lebanese family and found that the greater the family resources, the healthier the family, the better the coping. The author Barath[41] looked at the health and psychosocial status of Albanian children exposed to ethnic conflict in Kosovo and found that poverty, lack of family resources and poor social support were major stressors and predictors of poor health. It is empirically supported that the most predictive factor of mental health outcomes during war is enduring social and material resource loss[8,42,43] which places strain on both the family unit and community directly affecting adaptation, limiting resiliency, and greatly impacting psychological health[5,12,25,44].

Examining predictors of children's health during war continues to be a relevant research topic even decades following a war that devastated many lives and communities. Such assessments allow for a better understanding of the emotional and psychological toll the war environment has on child well-being and aids in

intervention planning.[3,45,47] The scope of this analyses seeks to investigate the predictors of children's health in Lebanon during the war period of 1975-1990, and the role of mediating and moderating factors on health outcomes. Particular attention is made to mother's health and family resources as potential predictors of children's health and well-being during wartime.

## Theoretical Framework

Figure 1 (below) presents the theoretical framework for the current analyses based on four main concepts: health of the child, stress factors generated from war and non-war life events, family resources and mother's health.

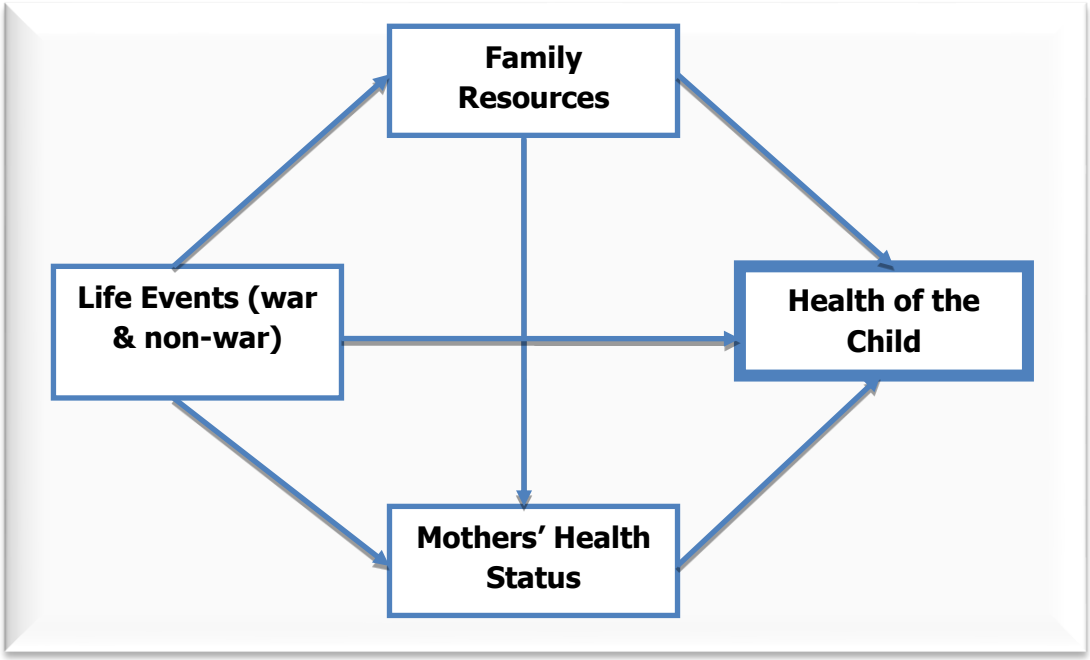
Health of the child, the major concept of interest and the outcome variable in this study, is defined as the child's physical and mental health. Physical health reflects somatization symptoms in response to stress. Common psychosomatic complaints are presented in Table 1. Mental health includes both psychological symptoms (Table 2) and problems in interpersonal relations (Table 3).

Another predictor of child health is maternal health, divided into physical health as reflected by somatic complaints, and mental health including both psychological and depressive symptoms together with interpersonal and marital relations (Table 4).

Stress is the major explanatory variable assessed by the severity and impact of stressful events faced by the child's family. This includes the normative life events and those associated with the war (Table 5).

In relating the explanatory variables to the major concept of the study, the child's health, it is important to consider the potential mediating factors, one of which is family resources. Other factors include the mother's education, age, socioeconomic status, and social support available to the family as reported by the mother.

Figure 1: Theoretical Framework




Stressful life events are predicted to negatively impact child health directly as well as indirectly through their influence on the mother's health and the family's resources. These factors are also interrelated, whereby family resources affect the mother's health status.

In this model, age appears as a control variable as child's health and development are reported to vary with age.

## Methodology

*Sample*

A population and health survey of the city of Beirut was undertaken by the Population Laboratory of the Faculty of Health Sciences, AUB[46]. Data was collected on a stratified random sample of 2752 households based on reports by mothers and carried out by trained university students. Families were interviewed at home and asked about their physical and mental health in relation to war and non-war events. The current study uses secondary data analysis from the 1984 health survey. All children aged between 3 and 12 years in the 540 families were

considered and this amounted to 478 children (male n=253; female n=225).

**Measurements of concepts**

Measures of health outcomes were derived from scales that had been used for the Lebanese population and based on the DSM-IIIR criteria. These scales were further subjected to content validation[9]. The measures refer to:

**A. Child's health:**

1. Physical health was represented by 12 common somatic complaints such as hyperactivity, common cold, and tonsillitis (Table 1).
2. Psychological health was represented by nine complaints reflecting common psychological problems of children older than 3 years of age such as sleeping with parents, nervousness, and temper/tantrum (Table 2).
3. Interpersonal relations were assessed using seven common behavioral problems such as aggressiveness, shyness and crying (Table 3).

A symptom was reported by the mother if its onset had fallen within the six months prior to the interview. The mother was asked to rate the severity of each symptom or problem on a 4-point scale [0 for not occurring, 1 for mild, 2 for moderate and 3 for severe]. Summary scores were obtained for each measure of child's health by summing up the severity scales across the items making up the measure.

**B. Stress:**

The major explanatory concept was measured as follows:

1. War related event: assessed by asking about 17 war related events experienced by the children's family in the recent past. Events were divided into two groups: one group related to violent acts (seven events), another consisting of 10 events reflecting war related hassles of everyday life [9].
2. Non-war related events: assessed by asking about events of daily family life in the recent past including marriage, pregnancy, illness, death, and job change [9].

The occurrence and perceived impact of these events was reported by the mother. A summary score was obtained: 0=if the event never occurred or if it occurred with no impact; 1=if the impact was mild; 2=for medium impact; 3=for severe impact.

**C. Mother's health:**

1. Mother's physical health was represented by 14 somatic complaints such as headache, faintness, dizziness, muscle pain, nausea, vomiting, shortening of breath.
2. Mother's mental health was assessed by asking about 16 depressive symptoms such as poor appetite, weight loss, insomnia, inability to concentrate, feeling sad and lonely as well as seven psychological symptoms other than depression such as nervousness and forgetfulness, and interactional outcome represented by six problem areas in interpersonal relationships, and eight areas of concern in marital relations[9]. Each measure was given a summary score by adding up all the items comprising a measure.

**D. Family resources**

Farhood et al [9] used the definition of family resources in terms of social support, education and economic status.

1. Socio economic status (SES) was measured as the educational level of the head of the household. This variable was grouped into three categories: 1=low for not completed primary, 2=medium for primary to not having completed secondary, and 3=high for completed secondary and above. SES was analyzed because it is an ongoing measure of financial status which has shown to affect coping [9].
2. Educational level of the mother was grouped similarly to the head of household's educational level: 1=low for not completed primary, 2=medium for primary to not having completed secondary, and 3=high for completed secondary and above.
3. Age of the mother was grouped into four categories: 19 years of age or below, 20 to39 years' of age, 40 to 59 years, and 60 years and above.
4. Social support available to the family was measured in terms of utilization and satisfaction with available resources in dealing with five problems of various natures (i.e. personal, financial, health, security and social issues) (data not shown) [9].

**E. Age of child:**

Age was grouped into two categories: 3 to 5 years of age indicated preschool children, and 6 to 12 years indicate school age children.

**Table 1: Mean Percentage of children (3-12 years of age) reporting physical symptom by age and gender.**

| | Ages 3-5 years | | Ages 6-12 years | | Total | |
|---|---|---|---|---|---|---|
| **Physical Symptoms** | **Male N=70** | **Female N=52** | **Male N=183** | **Female N=173** | **Male N=253** | **Female N=225** |
| **Hyperactivity** | 49.5 | 25.0 | 45.4 | 34.7 | 44.7* | 32.4 |
| **Common Cold** | 47.1 | 17.3 | 33.9 | 29.5 | 37.5* | 26.7 |
| **Tonsillitis** | 20.0 | 25.0 | 24.6 | 20.2 | 23.3 | 21.3 |
| **Anorexia** | 24.3 | 25.0 | 12.0 | 20.2 | 15.4* | 21.3 |
| **Diarrhea** | 15.7 | 13.5 | 7.7 | 6.4 | 9.9* | 8.0* |
| **Weight Loss** | 12.9 | 3.8 | 8.7 | 8.1 | 9.9 | 7.1 |
| **Skin Allergy** | 10.0 | 1.9 | 4.4 | 4.6 | 5.9 | 4.0 |
| **Constipation** | 4.3 | 1.9 | 6.6 | 4.6 | 5.9 | 4.0 |
| **Vomiting** | 5.7 | 13.5 | 4.9 | 5.8 | 5.1 | 7.6 |
| **Obesity** | 2.9 | 7.7 | 4.9 | 5.2 | 4.3 | 5.8 |
| **Palpitation** | 2.9 | 0 | 2.7 | 2.3 | 2.8 | 1.8 |
| **Hand Tremors** | 2.9 | 0 | 1.6 | 2.3 | 2.0 | 1.8 |

* P-value=0.05

**Table 2: Mean Percentage of children (3-12 years of age) reporting psychological symptoms by age and gender.**

| | Ages 3-5 years | | Ages 6-12 years | | Total | |
|---|---|---|---|---|---|---|
| **Psychological Symptoms** | **Male N=70** | **Female N=52** | **Male N=183** | **Female N=173** | **Male N=253** | **Female N=225** |
| **Sleeping with parents** | 45.7 | 46.2 | 26.2 | 24.3 | 31.6** | 29.3** |
| **Nervousness** | 30.0 | 23.1 | 31.7 | 27.7 | 31.2 | 26.7 |
| **Temper/Tantrum** | 28.6 | 19.2 | 19.7 | 13.3 | 22.1 | 14.7 |
| **Sleep talking/Screaming** | 10.0 | 7.7 | 12.0 | 9.8 | 11.5 | 9.3 |
| **Nail Biting** | 11.4 | 7.7 | 10.4 | 9.2 | 10.7 | 8.9 |
| **Enuresis** | 14.3 | 7.7 | 6.6 | 2.3 | 8.7* | 3.6 |
| **Difficulty going to sleep** | 7.1 | 3.8 | 5.5 | 8.1 | 5.9 | 7.1 |
| **Stuttering** | 4.3 | 3.8 | 5.5 | 0.6 | 5.1 | 1.3 |
| **Nightmares** | 7.1 | 5.8 | 3.8 | 4.0 | 4.7 | 4.4 |
| **Total** | 70 | 52 | 183 | 173 | 253 | 225 |

* P-value=0.05 ** P-value=0.01

## Data analysis

Data was analyzed using the SPSS program. Tabulations of the prevalence of physical and mental health symptoms were made by age and gender. Chi-square test was used to test for significance differences. Multiple regression analyses were also done between physical, psychological health and interpersonal relations and study variables (i.e. war related events, non-war related events, mother's health, family resources). Age and sex of the child was considered in the analysis.

## Results

*I. Health status of children*

Approximately 70% of children surveyed were reported to have complained of one or more somatic symptoms within the six months prior to the interview. Table 1 displays the percent distribution of children by psychosomatic symptoms, age group and gender. Hyperactivity was the most frequently reported physical symptom, followed by common cold, both being significantly higher among males. With respect to age differences, the results showed a significantly higher prevalence of common cold among the preschool age (3-5 years) only for males (47.1%), and anorexia in both males (24.3%) and females (25%), diarrhea for males (15.7%) and vomiting for females (13.5%).

As for psychological symptoms, wanting to sleep with parents, nervousness and temper/tantrums were the most prevalent reported symptoms for both males and females (Table 2). Most psychological symptoms showed higher levels among the age group 3-5 years than the 6-12 year age group, however, the difference was only significant for two symptoms: wanting to sleep with parents and enuresis. In general, males showed higher prevalence of reported psychological symptoms than females, but the difference was not statistically significant.

The percent distribution of children presenting with interpersonal problems is displayed in Table 3.

Aggressiveness was the most frequently reported problem for both males (35.6%) and females (29.3%), followed by shyness (20.2% for males and 16.4% for females) in both age groups.

Though boys exhibited more interpersonal problems than girls in general, the difference between them was not statistically significant. Additionally, there were no significant age differences on interpersonal problems for either males or females, or for the total sample.

*II. Maternal Health*

Mothers in this sample were predominantly young; more than two thirds were less than 40 years of age. As for their education, one third of mothers was illiterate or did not complete primary education. Another third had a moderate level of education (ranging from primary to not completed secondary), and the rest had an educational level of secondary or above. Additionally, 42.5% heads of households were of the middle socioeconomic status. Approximately one quarter was of low socioeconomic status and another quarter of high socioeconomic status.

Mother's reported below average scores on physical, psychological symptoms, and problems in marital relations. However, mothers reported a high score on interpersonal relations (data not shown).

*III. Stress*

Results show that children and their families were exposed to a number of war events and acts of violence with moderate to severe impact. Armed clashes in their neighborhoods and having to leave their homes were the most common acts of violence that families and children encountered. These events were perceived by the mother to have a severe impact. A very small proportion of these families experienced kidnapping and injury to family members, but those who did were severely impacted. As for the daily hassles arising from war related events, the majority of mothers reported high and severe impact. Moreover, there was a reduction in social networks, a dimension of the Lebanese war, was reported to be frequent and having severe impacts. Electricity cuts were reported by over 80% of the families along with water shortage by two thirds and 83% reported hardships due to change in economic status (data not shown).

*IV. Family resources*

The results show that around 40% of heads of households are of middle socioeconomic status; 25% are of low socioeconomic status and 25% are of high socioeconomic status.

When asked about degree of satisfaction with social support, mothers reported a high level of satisfaction with social support, especially by members of high socioeconomic groups (data not shown).

*V. Determinants of child's health*

Multiple regression analyses were performed to determine and predict factors related to the child's health in its three indicators: physical, interpersonal and psychological. Table 4 displays multiple regression of physical and mental health of children. The independent variables entered into the regression equations were war related events, non-war related events, mother's health, and family resources. Age and gender of the child were also considered. The significant predictors of child's physical health included maternal depression, maternal physical symptoms and social support.

**Table 3: Percentage of children (3 -12 years of age) reporting interpersonal problems by age and gender.**

| | Ages 3 -5 years | | Ages 6 -12 years | | Total | |
|---|---|---|---|---|---|---|
| **Interpersonal Problems** | **Male N=70** | **Female N=52** | **Male N=183** | **Female N=173** | **Male N=253** | **Female N=225** |
| **Aggressiveness** | 38.6 | 21.2 | 34.4 | 31.8 | 35.6 | 29.3 |
| **Shyness** | 15.7 | 9.6 | 21.9 | 21.4 | 20.2 | 16.4 |
| **Crying** | 7.1 | 5.8 | 12.6 | 7.5 | 11.1 | 7.1 |
| **Sad most of the time** | 2.9 | 3.8 | 8.2 | 13.3 | 6.7 | 11.1 |
| **Impolite** | 10.0 | 1.9 | 7.1 | 4.0 | 7.9 | 3.6 |
| **Inability to socialize** | 5.7 | 3.8 | 6.0 | 5.2 | 5.9 | 4.9 |
| **Stealing** | 8.6 | 5.8 | 4.9 | 2.2 | 5.9 | 3.6 |
| **Total** | 70 | 52 | 183 | 173 | 253 | 225 |

* P-value=0.05

** P-value=0.01

**Table 4: Multiple regression analysis (regression coefficients and their S.E.) of physical, psychological health and interpersonal relations on study variable in relations to child health.**

| | | Interpersonal | Physical | Psychological |
|---|---|---|---|---|
| **War-related events** | Violent acts | 0.05** (0.017) | - | - |
| | Daily hassles | - | - | - |
| **Non-war-related events** | | - | - | - |
| **Mothers' Health** | | | | |
| **Depression** | | 0.070** (0.13) | 0.05** (0.01) | 0.35** (0.01) |
| **Psychological** | | - | - | 0.04** (0.02) |
| **Physical** | | 0.04** (0.017) | 0.04** (0.01) | - |
| **Interpersonal** | | - | - | - |
| **Marital** | | - | - | - |
| **Family Resources** | | | | |
| **Social support** | | - | 0.07* (0.03) | - |
| **Socio-economic status** | | - | - | - |
| **Education of mother** | | - | - | - |
| **Age of mother** | | - | - | - |
| **Child's variables** | | | | |
| **Age** | | - | -3.59** (0.13) | - |
| **Gender** | | - | - | - |
| **$R^2$** | | 0.166 | 0.188 | 0.088 |
| **F-value** | | 31.12** | 15.78** | 22.83** |

* P-value=0.05

** P-value=0.01

Violent acts representing one dimension of the war related events were positively related to the interpersonal problems of the child (r = 0.05). Daily hassles were not significantly associated with any of the child's health measures. Non-war related events had no effect on child's heath. In terms of the variables indicating maternal health, depression was significantly associated with a deterioration of the physical health (r = 0.05) psychological health (r = 0.35), and interpersonal relations (r = 0.07) of the child. Poor psychological health of the mother was found to be positively associated with the child's psychological health (r = 0.04). Poor physical health of the mother was significantly associated with poor physical (r = 0.04), and interpersonal relations (r = 0.04) of the child (table 5).

**Table 5: Multiple regression analysis (regression coefficients and their S.E.) for depression, psychological symptoms, physical symptoms, and interpersonal relations for mothers.**

| | | Dependent Variables | | | | |
|---|---|---|---|---|---|---|
| | | **Depression** | **Psychological** | **Physical** | **Interpersonal** | **Marital** |
| **War-related events** | Violent acts | - | - | - | - | |
| | | (0.06)** | - | (0.05)** | (0.04)** | - |
| | Daily hassles | - | - | - | - | - |
| | | (0.06)** | (0.03)** | (0.05)** | (0.04)** | - |
| **Non-war-related** | | - | - | - | - | - |
| | | (0.07)** | (0.03)** | (0.05)** | (0.07)* | (0.05)** |
| **Social support** | | - | - | - | - | - |
| | | (0.13)** | (0.7)** | - | - | (0.12)** |
| **Socio-economic status** | | - | - | - | - | |
| | | (0.31)* | - | - | (0.33)** | (0.38)** |
| **Age of mother** | | - | 0.01* | - | 0.00* | - |
| **Education** | | - | - | - | - | - |
| | | - | - | - | - | (0.36)** |

* P-value=0.05

** P-value=0.01

In addition to the effects of stress and maternal health on the child's health, the family resources were also studied. Social support was the only significant mediating factor in relation to a child's physical health (r = 0.07). All other indicators of family resources were not significant.

## Discussion

A secondary analysis was conducted on a sample from an extensive health survey administered to households in Beirut during the civil war[46]. The current study aimed to assess health outcomes of children during wartime as impacted by mother's health and family resources. Factors of child's health were examined across three indicators: physical health, psychological health and interpersonal relations. In accordance with current research, family maternal health and social support moderated health outcomes in children during wartime [5, 18, 26, 47].

Current findings revealed that poor maternal psychological health was positively associated with poor child psychological health. Mothers' depression, specifically, was significantly associated with deterioration of children's physical and psychological health as well as interpersonal relations. The most reported psychological symptoms, irrespective of gender, included wanting to sleep with parents, nervousness and temper tantrums with higher scores observed in age groups 3-5 years. Exhibiting similar associated symptoms, following exposure to war events, a substantial proportion of Lebanese children suffered from anxiety, depression, and aggression[35].

Mother's mental health (i.e. depression) and physical health status was associated with child's health particularly in children 3-5 years. Similarly, Qouta et al.[25] found a strong association between mother's depression and child's psychological symptoms. With regards to reported physical health problems, there was a decrease with older age with the most common being colds which were predominantly in males. The most frequently reported psychological problem was hyperactivity and was significantly higher among males. Additionally, a higher prevalence of interpersonal problems in mothers was associated with shyness and aggression in their children. Qouta et al. [25] looked at child and mother mental health and found significant associations between symptoms of depression in mothers and their child's internalization of symptoms. Concurrently mother's hostile behavior predicted child's externalizing symptoms[25]. Perhaps the child's behavior was influenced by the mother's response to interpersonal problems.

A vast amount of research has shown that exposure to war-related violence affects child's psychological and physical health[5, 6, 46, 47]. In the present study, war-related acts of violence were associated with interpersonal problems in children, with strong associations across all three indicators for mothers. Additionally, daily hassles (i.e. electrical cuts, water shortages and financial hardships) and non-war related events were not associated with child health. However, mothers were impacted by these non-war related events across all indicators. Previous studies yielded similar findings suggesting that how mothers reacted to the daily war hassles influenced child's response[5, 7, 20].

War exposure that had the most severe impacts on the health of the entire family was armed clashes in the neighborhood and being forced from home due to a life threatening situation. Additionally, the current findings revealed that daily hassles associated with the war negatively impacted mother's health, but were not found to be a factor in child's health. Social support has shown to protect against the psychological effects of trauma[3,5,12,25] specifically in Lebanese populations[7,33,20,46,47]. In the current study, social support was considered a family resource. Although mothers and families experienced a decrease in social networks during the Lebanese civil war, social support and interpersonal relationships were perceived as stable in the current study especially amongst those with higher socioeconomic status (SES). With regards to child's health, social support was only a protective factor in relation to physical health.

On a community level, psychosocial preventive interventions are the most effective interventions in conflict prone areas[3,7]. Interventions emphasizing a psychosocial model would be effective in targeting the psychological impacts of enduring daily stressors and resource loss (i.e. social and financial) that result from war[48]. In terms of decreasing risk factors for child psychopathology in times of war, interventions should function on a community and individual level encouraging resilience and promoting parental coping mechanisms with an emphasis on ensuring and protecting healthy child development[6,49]. In a survey assessing special health and psychosocial needs of Albanian children in Kosovo shortly after the dramatic ethnic conflict in 1999, three major groups of stressors were identified as having an impact on child health and psychosocial well-being: lack of cultural and social security resources at home and in the community at large, poor physical and mental health conditions, and school-related stressors[41]. Along with meeting the basic material needs of a community during and after war,

ensuring sustainable mental health structures should be a key policy building initiative for long-term well-being of communities affected by conflict. Finally, in the absence of peace wars are inevitable. Therefore it is of great fundamental importance to secure the safety of children in war torn areas by implementing international initiatives that will aid in protecting them physically and psychologically during and after conflicts.

## Limitations and future research

There were several limitations to this study. For example, this study used data based on the mother's accounts of child behavior which may have resulted in a reporting bias. For instance, mothers who reported on the health of their child may have been reflecting on their own health status. To test this bias, mothers having more than one child were selected to see whether those with low profile on health would report a low profile on all of their children's health. In similar studies where researchers used the same informant to report on two constructs, a significant relationship between stressful events and child health were found[34]. However, when the children were asked to report, no significant relationship was found[50]. Alternative methods could include utilizing several family members as reporters or ask the children directly as previous studies have done. Additionally, this study did not seek clinical diagnosis. Yehuda et al.[51] reported that posttraumatic stress disorder in parents has been associated with anxiety symptoms in their children indicating a biological and a psychological component to the response to trauma[51]. Future research should compare the current findings with structured clinical interviews to assess correlates between maternal mental health and psychological disorders in their children.

## Conclusion

The current study presents physical, psychological and interpersonal problems experienced by children under war conditions. In accordance with the literature conducted; since this study took place in 1987, the most important predictors of child health during wartime were found to be maternal health and family social support. These findings may serve as a framework for helping clinicians identify the predictors of child health to facilitate treatment guidelines for managing these problems in children undergoing such traumas and further preventing its negative impact. Further research should be undertaken to develop, implement and test culturally-sensitive mental health interventions that target both mothers and children post-war and experience ongoing stressors from living in a conflict ridden area[3,52].

In addition to community based psychosocial and psycho-educational interventions, much attention should be given to encourage and support the cognitive-emotional healing process in young children who are affected by the atrocities of war. As a follow-up to the above assessment and findings, an intervention study is being planned in South Lebanon with an aim to promote psychosocial and mental health care through community based educational workshops in schools. The intervention will include teachers, parents, children and adolescents.

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## الملخص

**الأهداف:** عادة ما يتأثر الأطفال الذين يعيشون تحت وطأة الحروب بصورة مباشرة وغير مباشرة. تستعرض هذه الدراسة الصحة البدنية والنفسية للأطفال تحت تأثير الحروب والعوامل الوسيطة. لم تكن المعلومات عن تأثير الأسرة والعوامل البيئية على الصحة النفسية والجسدية للأطفال خلال الحروب كافية عند البدء بجمع البيانات للدراسة. وأجري تحليل ثانوي بناء على البحوث الحالية لتقصّي التأثيرات على صحة الأطفال في أثناء الحروب. **المنهج:** أجري التحليل ثانوي على بيانات من عينة عشوائية طبقية مؤلّفة من 2752 أسرة في بيروت في خلال الحرب الأهلية (1975-1990). وقدّرت الإجهادات التي واجهتها هذه الأسر استنادًا إلى تقارير من الأمهات عن صحّتهن وصحة أطفالهن (بين 3 و12 سنة). **النتائج:** أظهرت نتائج الدراسة أن نسبة عالية من الأطفال شهدت مشاكل جسدية ونفسية وفي علاقاتها مع الآخرين. وأظهر تحليل الانحدار المتعدد أن العوامل المرتبطة بالأهل والبيئة المحيطة تُنبئُ عن صحة الطفل خلال الحرب. **خلاصة:** تظهر الأبحاث الحالية أن حوادث الحياة وصحة الأم النفسية وموارد الاسرة هي منبئات قوية عن صحة الطفل النفسية. ولذلك، تكتسي التدخلات النفسية الاجتماعية الوقائية التي تركز على موارد الاسرة وصحة الأمهات والأطفال النفسية أهمية قصوى للحفاظ على رفاه الأطفال في الحروب .



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