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# Violence in Israel's Palestinian society: a cross-sectional study

Ahmad S Muhammad, Mohammad Khatib

## Abstract

**Background** Violence is a pattern of hostility expressed in attempts to dominate through physical, verbal, or emotional aggression by the strong partner in a relationship. Data show a definite increase in the prevalence of violence in Israel's Palestinian society. The aim of this study was to examine the prevalence of violence and its correlates and the coping patterns by mainstream members of Palestinian citizens in Israel.

**Methods** The study included a sample of Arab localities in Israel. Targeted, structured, face-to-face questionnaires were completed by a team of trained interviewers at the home of participants. Eligible households consisted of a husband, wife, and an additional single member of the family (aged 18–40 years) living with the family.

**Findings** We surveyed 1775 households in 55 different Arab localities in Israel. 165 (9%) households reported that one of their members or all the family had been exposed to violence. 864 (49%) households reported witnessing violence, the most common cases involving persecution (769 [43%] cases by an unknown person, 204 [12%] cases by a known person, and 183 [10%] cases by a policeman or a soldier) and hitting (1202 [68%] cases by an unknown person, 653 [37%] cases by a known person, and 197 [11%] cases by a policeman or a soldier). 786 (44%) households did not report the event or complain to anyone. 1074 (61%) men and 676 (38%) women aged 18–44 years were witnesses to cases of violence in their surroundings. The main reported causes of violence were unemployment, frustration, and stress resulting from low standards of living in general, the feeling of oppression and discrimination by the Israeli establishment, and a feeling of lack of identification with the state. Most cases of persecution occurred in the neighbourhood, whereas most cases of physical violence occurred outside the neighbourhood but in the same locality.

**Interpretation** Violence in the Palestinian society in Israel is a complex and widespread phenomenon. Joint efforts of the state, policy makers, professionals, and different organisations are needed to reduce its prevalence. These findings could be used as a basis for planning a general programme to reduce violence in Palestinian society.

**Funding** None.

## Contributors

ASM did the study design, data management, data analysis, data interpretation, and the writing and revising of the Abstract. MK did the study design, data analysis, data interpretation, and the writing and revising of the Abstract. Both authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

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# Antenatal factors associated with low birthweight in the Gaza Strip: a matched case-control study

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## Abstract

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**Background** Antenatal care is an effective means of reducing risk for the mothers and fetuses during pregnancy. It is intended to prevent obstetric complications by improving the quality of antenatal care, hygiene, and knowledge about signs and symptoms of common medical problems during pregnancy. Low birthweight (<2.5 kg at birth) is an important factor affecting neonatal mortality and a predictor of health of the newborn child. The aim of this study was to assess the association between antenatal care provision and birthweight.

**Methods** This case-control study was done in two main hospitals with obstetric services in the Gaza Strip. Women were eligible if they had lived in the Gaza Strip for at least 1 year before delivery, delivered a live singleton infant, and were admitted for labour at the Al-Tahrier Hospital between May and June, 2007, or at the Al-Shifa Medical Centre between July and August, 2007. Women were assigned as cases and controls in a 1:1 ratio; cases were women who delivered live singleton infants with a weight of less than 2.5 kg. Matched controls were mothers who delivered single live infants weighing 2.5 kg or more during the first 24 h after their respective cases were identified. We estimated univariately unadjusted matched odds ratios (mOR) and 95% CIs with conditional logistic regression. Multivariate analysis of the data was completed in two integrated steps. Model 1 included the antenatal predictors that resulted after the stepwise backward selection for variables, with univariate p value less than 0.20, as recommended by Hosmer and Lemeshow. Model 2 included the significant antenatal variables of model 1 and other principal confounding factors, namely parents' education, occupation, residency, income, and maternal body-mass index. Maternal antenatal care was assessed (1) objectively, from conditions recorded in the mothers' hospital file (anaemia and pregnancy-induced hypertension) and (2) subjectively, by asking mothers about the number of antenatal visits, perception of the quality of given care, consanguinity, and symptoms of vaginal bleeding and periodontal disease.

**Findings** 446 women were enrolled in this study. The results of multivariate analysis show that six prenatal factors were associated with an increased likelihood of low birthweight after adjustment for principal confounding variables, namely lower perception of the quality of given antenatal care (mOR 4.30, 95% CI 1.49–12.4), consanguinity (first-cousin marriage; 2.34, 1.25–4.41), medical complaints of anaemia (4.16, 2.12–8.13), pregnancy-induced hypertension (3.29, 1.23–8.75), maternal reporting of vaginal bleeding (5.18, 1.57–17.0), and periodontal diseases (3.69, 1.48–9.19).

**Interpretation** The findings suggest that several maternal antenatal factors are associated with low birthweight in the Gaza Strip. Such associations might have implications for clinical antenatal work, especially since the identified exposures mostly are modifiable. Emphasis should be given to educational health strategies combined with governmental actions in monitoring, controlling, and improving the quality of antenatal care provision at different health-care sectors in the Gaza Strip.

**Funding** None.

**Declaration of interests**

I declare no competing interests.

# Knowledge, attitude, and practice among farmworkers applying pesticides in cultivated area of the Jericho district: a cross-sectional study

Amira Shaheen, Yehia Abed

## Abstract

**Background** The excessive use of pesticides has chronic and acute toxic effects on human health. The aim of this study was to assess knowledge, attitudes, practices, and toxicity symptoms in farmworkers applying pesticides in a cultivated area of the Jericho district.

**Methods** In this cross-sectional study, we collected data through face-to-face interviews with farmworkers who applied pesticides in a cultivated area of the Jericho district.  $\chi^2$  and t tests were used to identify and assess associations, which were considered significant when p values were less than 0.05. Ethical approval was obtained from the Al-Quds University ethics board.

**Findings** 220 farmworkers participated in the interviews. Knowledge of pesticides was relatively high, except for knowledge of biological control (26%) and other agricultural ways for pest control (12%). A substantial proportion of farmers reported that they knew of the importance of wearing a wide-brimmed hat (91%) and an oral–nasal mask (95%), yet many did not use these forms of protection ( $p=0.007$  for use of a wide-brimmed hat;  $p=0.049$  for use of the oral–nasal mask). The most common toxicity symptoms associated with use of pesticides were a burning sensation in eyes and face (75%), headache (62%), cold, breathlessness, or chest pain (51%), and itching skin irritation and dizziness (46%).

**Interpretation** Most of the symptoms reported during interviews could be related to the use of organophosphorus pesticides. Training programmes for farmers are needed to explain safety aspects and optimal use of pesticides via integrated best management. Further studies are needed to assess the biological effects of pesticides on farmworkers. Farmworkers with acute symptoms should be followed-up to avoid the development of chronic symptoms.

**Funding** None.

### Contributors

AS and YA developed the study design. AS collected and analysed the data. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# Reducing dietary salt consumption in the occupied Palestinian territory: a cross-sectional survey

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## Abstract

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**Background** The increasing prevalence of non-communicable diseases in the occupied Palestinian territory accounts for a large part of general mortality. WHO recommends a 30% reduction in mean population intake of salt or sodium as a cost-effective option to decrease the burden of cardiovascular disease. Results of surveys show that salt consumption is 7 g per day in Palestine, almost 50% higher than the recommended daily amount per person. Bread is consumed in large amounts and is an important contributor to salt intake. The aim of this study was to assess the content of salt in the bread sold in the West Bank with the aim of setting a reliable salt reduction target.

**Methods** In this cross-sectional study, ad-hoc trained inspectors from the ministry of health visited 135 bakeries in all West Bank's Governorates in August, 2015. Data were collected through a structured questionnaire administered to bakers with questions about the amount of salt added to flour during the preparation of 281 bread products. The sample size was calculated for a level of accuracy of 7%. Data were analysed using SPSS 17.0.

**Findings** The average amount of salt added to flour during bread preparation was 1.33 g per 100 g of flour (SD 0.62; range 0.00–4.00), corresponding to 1.11 g salt per 100 g bread.

**Interpretation** Salt content in bread sold in the West Bank was highly variable. The salt reduction target for 2016 was set by the Palestine Standard Institute at 1.3 g of salt per 100 gram of flour, with a gradual reduction of 0.1 g of salt per year in the next 3 years to adjust consumers' palates to less salty products. The compliance to the regulation is monitored by the ministry of health and the Palestine food producers association assures full support. According to the available literature, the occupied Palestinian territory is the first Arab country to establish a mandatory programme for salt reduction in foods.

## Funding

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## Contributors

AR contributed to data interpretation and policy use. AAR contributed to study design, data management, and analysis. EM contributed to data interpretation and the writing of the Abstract. LR contributed to data interpretation. NS contributed to the revision of the Abstract. MB contributed input for data analysis. VR contributed to the revision of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

# Maternal weight gain during pregnancy and outcomes for the newborn child and mother in Tulkarem and in camps: a retrospective cohort study

Baraa Qarmach, Belal Abu Samha, Mulhem Sukhun, Souad Belkebir

## Abstract

**Background** Excessive gestational weight gain appears to be a risk factor for low and high birthweight, preterm delivery, gestational diabetes, pre-eclampsia, caesarean section, and post-partum haemorrhage). The objective of this study was to determine the association between gestational weight gain and pregnancy outcomes.

**Methods** This retrospective cohort study was done at a primary health-care centre supported by the Palestinian Ministry of Health in Tulkarem (one of the main cities in northern occupied Palestinian territory) and in two United Nations Relief and Works Agency (UNRWA) primary health-care centres (in the Tulkarem and Nourshams Camps) in 2016. Patient files of women who had given birth were reviewed, and sociodemographic data, medical history, body-mass index (BMI), and gestational weight gain were recorded. We used SPSS version 20 for statistical analysis. Significance was set at a p value of less than 0.05. This study was approved by the Institutional Review Board committee at An-Najah National University, and permission was obtained from the Ministry of Health and the UNRWA.

**Findings** 771 patient files were reviewed (326 from Tulkarem City, 274 from Tulkarem Camp, and 171 from Nourshams Camp). The mean age of mothers at first visit was 26.5 years (SD 5.81), and 328 (43%) women had attended tertiary education. 341 (44%) women had a normal BMI at first visit, 254 (33%) women were overweight, and 147 (19%) women were obese. 283 (37%) women gained weight within recommended levels, and 213 (28%) women gained more than the recommended weight. 210 (27%) women had a caesarean section. The incidences of preterm delivery, gestational diabetes, pre-eclampsia, and post-partum haemorrhage were 9%, 6%, 2%, and 10%, respectively. 405 (53%) newborn babies were boys and 366 (48%) were girls, with an overall mean birthweight of 3313 g (SD 511.83). 37 (5%) neonates had low birthweight, and 60 (8%) neonates had high birthweight. Bivariate analysis showed a significant association between gestational weight gain and BMI at first visit, high birthweight, and post-partum haemorrhage ( $p < 0.001$ ). Multivariate logistic regression showed that women who gained weight above recommendations had a higher risk of giving birth to a baby with high birthweight (odds ratio 3.4, 95% CI 1.65–7.00), whereas women who gained less than recommended had a lower risk of developing post-partum haemorrhage (odds ratio 0.44, 95% CI 0.199–0.996).

**Interpretation** Gaining more than the recommended weight during pregnancy is consistently associated with negative maternal and infant outcomes. These effects could be avoided if improved individualised care were systematically implemented in both ministry of health and UNRWA clinics to support women preconceptionally, prenatally, and post partum.

**Funding** None.

## Contributors

BQ and BAS did the study design, data collection, analysis, the reporting of results, and the statistical analysis. MS participated in study design and data interpretation. SB participated in study design, data interpretation, and the writing of the Abstract with input from BQ and BA. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

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# The effect of exposure to war-traumatic events, stressful life events, and other variables on mental health of Palestinian children and adolescents in the 2012 Gaza War

Basel El-khodary, Muthanna Samara

## Abstract

**Background** The aim of this study was to investigate the effect of exposure to war-traumatic events on mental health in children and adolescents in the presence of other stressors such as stressful life events, exposure to traumatic events (not related to war trauma; eg, being in a car accident or having a serious illness), and poverty.

**Methods** Participants were chosen from the Gaza Strip using a stratified random sampling method. The data were collected in October, 2013, 1 year after the Gaza War on Nov 14–26, 2012. War-traumatic events were measured using the War-Traumatic Events Checklist (W-TECh), which includes three categories: personal trauma; witnessing trauma to others; and seeing demolition of property. Stressful life events were measured using the Stressful Life Events Scale. Exposure to traumatic events (not related to war-trauma) was measured using the University of California at Los Angeles post-traumatic stress disorder (PTSD) reaction index for the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV (child version). PTSD was measured using the PTSD Symptoms Scale. Finally, depression was measured using the Child Depression Inventory.

**Findings** The sample consisted of 1029 students aged 11–17 years. 496 (48%) participants were boys, and 533 (52%) participants were girls. 909 (88%) students had experienced personal trauma, 861 (84%) had witnessed trauma to others, and 908 (88%) had seen demolition of property during the war. Boys reported more exposure to personal trauma, witnessing trauma to others, seeing demolition of property, and overall traumatic events compared to girls. Girls reported more exposure to stressful life events, exposure to trauma (not related to war-trauma), PTSD, and depression. 549 (54%) students had a diagnosis of PTSD diagnosis. We found a positive correlation between the age and exposure to war-traumatic events and stressful life events and between family size and exposure to war-traumatic events and PTSD. By contrast, we found a negative correlation between family income and stressful life events, exposure to traumatic events not related to war trauma, PTSD, and depression. Finally, exposure to war-traumatic events, experience of stressful life events, and exposure to traumatic events not related to war-trauma were positively correlated with PTSD and depression.

**Interpretation** Socioeconomic status such as big family size and low family income increased the severity of effects of stressful life events, exposure to war-traumatic events, and exposure to traumatic events not related to war-trauma. Consequently, the possibility of PTSD and depression was high. The findings also show that stressful life events, exposure to war-trauma, and exposure to traumatic events not related to war-trauma could be considered as risk factors for PTSD and depression.

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### Contributors

Both authors conceived the study and its design, coordinated the study, and drafted the Abstract. Both authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# Metabolic syndrome in overweight and obese young Palestinian students at An-Najah National University: a cross-sectional study

Basma R Damiri, Amir Agbar, Saja Al-Khdour, Yousef Arafat

## Abstract

**Background** Metabolic syndrome is one of the main reasons for elevated mortality worldwide. The aim of this study was to characterise and establish sex-adjusted prevalence of metabolic syndrome in young Palestinian adults.

**Methods** This cross-sectional study was done at An-Najah National University in 2014 using International Diabetes Federation (IDF) and modified National Cholesterol Education Program-Third Adult Treatment Panel (NCEP) definitions. Approval was obtained from the Institutional Review Board, and written informed consent was obtained from all participants.

**Findings** Of 850 students (352 men, 498 women) aged 18–24 years, 178 (21%) were overweight, and 45 (5%) were obese. 154 students were enrolled in this study (89 [58%] men, 65 [42%] women). 114 [74%] participants were overweight, and 40 [26%] participants were obese. Metabolic syndrome was more prevalent when the IDF definition was used (44 [29%] participants) than when the modified NCEP definition was used (37 [24%] participants;  $p < 0.001$ ), with no differences between men and women ( $p > 0.05$ ). Metabolic syndrome was more prevalent in participants with obesity than in students with overweight according to the IDF definition (16 [40%] vs 29 [25%]) and the modified NCEP definition (14 [35%] vs 23 [20%]). The prevalence of individual metabolic syndrome components was: 111 (72%) for central obesity (48 [43%] men, 63 [57%] women) according to the IDF definition, and 66 (43%) participants (18 [27%] men, 48 [73%] women) according to the modified NCEP definition; 46 [30%] for increased blood pressure (33 [72%] men, 13 [28%] women); 28 [18%] for high triglycerides (24 [86%] men, four [14%] women); 115 [75%] for low HDL-cholesterol (72 [63%] men, 43 [37%] women); and 37 (24%) for impaired fasting glucose (22 [59%] men, 15 [41%] women). Low HDL-cholesterol, central obesity, and raised blood pressure were the leading three common metabolic abnormalities in participants.

**Interpretation** Irrespective of the definition used, metabolic syndrome is highly prevalent in Palestinian young adults. With the increase of obesity, the clustering of metabolic syndrome components was remarkably increased. More attention should therefore be given to the adult population at risk to reduce adulthood obesity and subsequent cardiovascular disease.

**Funding** None.

## Contributors

BRD contributed to the research idea, study design, data analysis, data interpretation, tables, figures, the writing and revision of the Abstract, data collection, data management. AA, SA-K, and YA contributed to study design, data collection, data analysis, data interpretation, tables, figures, and input for data analysis. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

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# Barriers to treatment of mental health problems for Palestinian people in refugee camps in Jordan: a cross-sectional study

Callum McKell, Ahmed Hankir

## Abstract

**Background** About 2·1 million Palestinians live in Jordan, and 370 000 Palestinians live in Jordanian refugee camps. Conflict in their country of origin, poverty, unemployment, and squalid camp conditions are some of the environmental factors that render Palestine refugees susceptible to mental health problems. The aim of this study was to identify the barriers that contribute to the treatment gap in mental health-care services for Palestinian refugees in the Baqa'a refugee camp north of Amman, Jordan.

**Methods** In this cross-sectional study, qualitative, semi-structured interviews of health-care professionals working at health centres for Palestine refugees in Jordan were done by a British researcher in the English language in the presence of an interpreter. All interviews were recorded, transcribed, and thematically analysed. Ethical approval was granted by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) and the University of Leeds. Written consent was obtained from all participants.

**Findings** 16 health-care professionals were interviewed during a 3 week period in May, 2015. 14 participants were based in health-care centres at the Baqa'a refugee camp, and two participants were based at the Field Office of the UNRWA in Amman, Jordan. All (100%) participants reported that underfunding was the most common barrier to accessing treatment. Other major barriers were sex (reported by 15 [94%] participants), stigma and religion (12 [75%]), and culture (ten [63%]).

**Interpretation** We suggest the following policy recommendations to overcome the barriers to accessing and using mental health-care services in Palestinian refugee camps in Jordan: (1) allocation of more resources for the provision of mental health-care services; (2) establishing a health and social care model that adopts a holistic approach to treating mental health problems in Palestinian refugees, incorporating a framework that facilitates enhanced communication and cooperation between faith leaders and health-care providers; and (3) launching anti-stigma campaigns that are culturally and religiously sensitive and specific.

**Funding** None.

### Contributors

CM was lead investigator of the study, obtained ethical approval, designed the study, collected and analysed data, and wrote the Abstract. AH contributed to the review of the literature sections and revised the Abstract. Both authors have seen and approved the final version of the Abstract for publication.

### Declarations of interests

We declare no competing interests.

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# Age of despair or age of hope? Elderly Palestinian women's perspectives on health in midlife

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## Abstract

**Background** Few studies exist of women's experiences and understanding of health in the transition from reproductive to post-reproductive age. Available data is from high-income settings, and most studies tend to focus on women of reproductive age. Little is known about women's perspectives in the Palestinian context. The aim of this study was to add to our understanding of Palestinian women's midlife experiences, looking beyond reproduction and childbearing, and how elderly Palestinian women understand, explain, and manage their midlife health.

**Methods** We recruited women aged 40–55 years for an in-depth interview using a life-history approach. To maximise heterogeneity, we included women living in the north, south, and central West Bank and women living in rural, urban, and camp settings with diverse economic and social conditions (education, employment, marital status). We analysed women's verbatim narratives to identify key themes and subthemes. Ethical approval was obtained from Birzeit University and the London School of Economics.

**Findings** 35 women were interviewed between Feb 1 and Aug 31, 2015. Many women articulated a positive view about ageing and midlife as a natural process. Perspectives were often linked with their own mothers' experiences, which was the main source of knowledge about menopause. Women reported a combination of indigenous and biomedical knowledge and practice, often beginning with popularised medical practices and herbal remedies. Although most women recognised faith and tawakul (reliance on God) as ways of coping with ill health, they also emphasised the need for physical activity and nutritious baladi (locally grown, native, organic, chemical-free) food, often romanticised as part of a generational past. Good health was conceptualised as a combination of physical well being, indicated by effortless movement, and a relaxed psychological state of mind (raha nafsiyeh, hadat al-bal). In times of hardship, health issues were often connected to life events. Having children appeared to provide a protective effect for women in coping with health issues. Local idioms of health (hamm [worry, disquiet, upset, uneasy, grief, anxiety, sorrow, affliction], za'aal [a combination of feelings, including anger, distress, frustration, grief, incapacitation, worry, and sorrow], nakad [distemper, bitterness, disturbing, troubling, and somber], and istislam [resignation, giving in]) characterised women's descriptions of ill health. Exposure to political violence, living in fear, and economic hardship were widely understood as affecting mental and physical health. Discourses surrounding women's experience of this transition included age of despair, age of hope, and age of power. Some women referred to this period as literally the cessation of menstruation (the menstrual cycle as having split from her) or that ageing has entered (el-kabar 'abar). Although these words are value-laden, not all women feel as the words indicate. Age of despair was often ridiculed but still used by women for ease of reference.

**Interpretation** Despite wide variation in circumstances (place of residence, marital, and socioeconomic status), women's narratives are underpinned by consistent perspectives as to what good health entails. Our analyses reveal the pluralistic approaches that elderly Palestinian women take towards health and the need to better understand women's health after their reproductive years.

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### Contributors

DH did the fieldwork and data collection. DH and EC wrote the Abstract with input from all authors. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

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# Palestinian women's oral health status, knowledge, practices, and access to dental care during pregnancy: a cross-sectional study

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## Abstract

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**Background** No data exist about the oral health status, beliefs, and practices of women living in the occupied Palestinian territory generally and in pregnant women in particular. The aim of this study was to investigate pregnant women's oral health status, beliefs, and practices and the barriers to access to dental care.

**Methods** Pregnant women visiting prenatal programmes at Ministry of Health centres in Jerusalem governorates were screened using the Decayed, Missed and Filled Teeth (DMFT) index to quantify their dental caries experience. A structured interview was also done to assess oral health beliefs and practices, demographic characteristics, and mothers' stress level and social support. Ethical approval was obtained from Al-Quds University Ethics Committee.

**Findings** 119 pregnant women agreed to participate in this study. 103 (87%) women were housewives with mean age 26 years (SD 5). 30 (25%) women had a household monthly income less than US\$380, and 54 (45%) women did not finish their high school education. The sample had a mean DMFT index score of 14 (SD 5). 42 (35%) women had not visited a dentist in the past 3 years, and 61 (51%) women were advised by family and friends not to visit the dentist while pregnant. 96 (81%) women had no dental insurance, and 33 (28%) women considered cost to be a barrier to accessing dental care. 42 (35%) women brushed their teeth sometimes, and 106 (89%) women never flossed their teeth. 29 (24%) women perceived their oral health to be poor, and 65 (55%) women believed that a woman can lose a tooth just because she is pregnant. 60 (50%) women did not know the connection between poor oral health and adverse birth outcomes, and 25 (21%) women believed that cavities in baby teeth do not matter.

**Interpretation** Women in this study had a high prevalence of dental caries and reported substantial barriers to obtaining dental care. Findings from this study suggest the need for preventive and educational interventions to be incorporated in prenatal health-care programmes to improve maternal and child oral health in Palestine.

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### Declaration of interests

I declare no competing interests.

# Poverty, food insecurity, and health of Palestinian refugees in Lebanon and recently displaced from Syria to Lebanon: findings from the 2015 socioeconomic household survey

Hala Ghattas, Jad Chaaban, Nisreen Salti, Alexandra Irani, Tala Ismail, Lara Batlouni

## Abstract

**Background** The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) provides health, education, and housing services to Palestinian refugees in Lebanon (PRL), and food assistance and welfare support to the most vulnerable refugees. Palestinian refugees recently displaced from Syria (PRS) to Lebanon have placed additional pressures on health and education services, and employment rights of Palestinians remain limited. The objective of this study was to provide an updated profile of the socioeconomic and health status of PRL and PRS after their influx into Lebanon.

**Methods** This nationally representative, multistage, cluster randomised survey of PRL and PRS households was done in April, 2015. Modules on socioeconomic, demographic, health, and food security variables were included. The poverty lines were US\$6·84 per person per day for PRL households and \$2·47 per person per day for PRS households. Food insecurity was assessed using the Arab Family Food Security Scale. Health conditions were reported for all household members by a household proxy. We used STATA version 13.0 to construct multivariate models to investigate independent predictors of poverty, food insecurity, and chronic disease. The study was approved by the Institutional Review Board of the American University of Beirut.

**Findings** 2974 (88%) of the 3382 eligible PRL and 1050 (89%) of 1171 eligible PRS households gave informed consent and completed the questionnaire. 65% of PRL and 89% of PRS lived under the poverty line, whereas 3% of PRL and 9% of PRS were extremely poor. 62% of PRL and 95% of PRS were food insecure. Household size, unemployment, and low educational attainment of the head of household were associated with both poverty and food insecurity in PRL and PRS households. The prevalence of chronic illness was high in PRL and PRS households, with chronic disease in PRL households reported for 40% of people aged 19–59 years and for 88% of elderly adults (aged >60 years), and chronic disease in PRS households reported for 41% of people aged 19–59 years and for 86% of elderly adults. Chronic illness was independently associated with education and employment, household size, food insecurity, and area of residence.

**Interpretation** Palestinian refugees in Lebanon and those recently displaced from Syria to Lebanon are susceptible to poverty, food insecurity, and chronic illnesses, which vary with similar sociodemographic markers (mainly employment and education). Advocacy is needed to increase employment rights and ensure continued access to education and health services for Palestinians living in Lebanon, particularly with pressures on services resulting from the Syrian crisis.

**Funding** UNWRA.

### Contributors

JC, NS, and HG designed the study. AI and TI collected and analysed the data. HG and AI wrote the Abstract. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

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# Pain and loss of income after traumatic limb loss in Palestinian war casualties: a retrospective, cross-sectional study

Hanne Heszelein-Lossius, Yahya Al-Borno, Yasmeen Keita, and Nashwa Skaik, Hazim Shawwa, Mads Gilbert

## Abstract

**Background** During four separate Israeli military attacks on the Gaza Strip (in 2006, 2009, 2012, and 2014), about 4000 Palestinians were killed and more than 17 000 Palestinians were injured (412 killed and 1264 injured in 2006; 1383 killed and more than 5300 injured in 2009; 130 killed and 1399 injured in 2012; and 2251 killed and 11 231 injured in 2014). An unknown number of people had traumatic amputation of one or more extremities. In addition to loss of body parts, loss of work and income further complicated patients' lives after trauma. In 2015, we reported preliminary data on the somatic consequences, showing that eight of ten amputees had unilateral or bilateral lower limb amputations, most often because of attacks by drone-carried weapons. A third of cases had amputations during ceasefire periods. A high number of debilitating extremity injuries were in the young civilian population, where needs of rehabilitation were difficult to meet because of limited local resources during the long-lasting siege of the Gaza Strip. Here we report long-term functional and psychosocial consequences of traumatic amputations in Gaza War casualties.

**Methods** This cross-sectional study was done at The Artificial Limb and Polio Center, a local rehabilitation centre in Gaza City. We studied Palestinians living in the Gaza Strip who had sustained traumatic amputations during Israeli military attacks between 2006 and 2014. We explored the amputees' self-assessed health, socioeconomic status, anatomical location and level of amputation, comorbidity, and date and mechanism of injury. We used two validated and self-administered screening questionnaires (36-Item Short Form Survey and General Health Questionnaire 12 [GHQ12]) combined with a detailed clinical examination of each amputee. We used standardised records and questionnaires in Arabic. Data were analysed with SPSS. The study was approved by the Palestinian Ministry of Health in the Gaza Strip, Al-Shifa Hospital's board, and the director of the Artificial Limb and Polio Center in the Gaza Strip. All participants included in the study completed a written consent form.

**Findings** We included 165 Palestinians in this study. Pain was reported by more patients who were unable to continue work because of the traumatic amputation than by patients who were unemployed for other reasons, even when adjusting for time passed since amputation ( $p=0.039$ ). We found a correlation between reported pain and poverty (income <800 shekels per month;  $\chi^2=0.034$ ) but no correlation between GHQ12 scores indicating psychological distress and the extent of the initial trauma. Use of prosthetics decreased GHQ12 scores, suggesting a lower level of psychological distress in users of artificial limbs.

**Interpretation** Self-reported pain after loss of one or more limbs correlated with deteriorated occupational and financial life situation after the amputation. Use of prosthesis seemed to ease the psychological distress. Poverty and unemployment caused by amputations and disability might be a more important trauma than the physical amputation itself.

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### Contributors

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# Risk factors for paediatric cancer in the Gaza Strip: a case-control study

Heiam A Elnuweiry, Yehia Abed

## Abstract

**Background** Cancer is a serious health problem and the third leading cause of death in the occupied Palestinian territory, both in adults and children. For most children younger than 18 years who have cancer, there is no obvious cause. The aim of this study was to identify the main risk factors for paediatric cancer in the Gaza Strip.

**Methods** This case-control study was done in five Gaza Strip governorates. We enrolled children diagnosed with paediatric cancer and receiving treatment at oncology departments at Ranteesy Specialised Paediatric Hospital, Al Shifa Hospital, and at the European Gaza Hospital in 2012 and 2013. Controls were children who visited primary health-care centres and matched for locality, age, and sex. We used face-to-face questionnaires to interview the children's parents and  $\chi^2$  tests for analyses.

**Findings** 292 children were enrolled in this study. 146 children had been diagnosed with paediatric cancer (70 [48%] children had a solid tumour, 50 [35%] had haematological cancer, and 25 [17%] had a lymphoma tumour). 146 children were enrolled as controls. The main risk factors associated cancer were exposure to ultrasound during gestational period ( $p < 0.0001$ ) and family cancer history ( $p = 0.001$ ). For environmental factors, we found associations of paediatric cancer with family history of smoking ( $p = 0.016$ ), exposure in pregnancy to passive smoking ( $p = 0.018$ ), and white phosphorus ( $p < 0.0001$ ). Agriculture pesticides and herbicides were not associated with paediatric cancer. Furthermore, the parents' educational level and occupation and the mother's exposure to x-rays were not associated with paediatric cancer.

**Interpretation** The study presents data on several potentially avoidable environmental risk factors for paediatric cancer in the Gaza Strip.

**Funding** None.

### Contributors

Both authors contributed equally to the study design and statistical analysis. HE prepared the Abstract and YA participated in corrections. Both authors have seen and approved the final version of the Abstract for publication.

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# Attack on a hospital in the Gaza Strip: a descriptive study

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## Abstract

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**Background** Article 8(2) of the Rome Statute describes “war crimes” as grave breaches of the Geneva Conventions. Article 18 of the Fourth Geneva Convention provides protection for civilian hospitals and staff. On July 21–22, 2014, Al Aqsa hospital, a 190-bed government hospital in the Gaza Strip, was hit by several Israeli military strikes while fully operational, with hundreds of refuge-seeking civilians in its buildings and grounds. The attacks killed three people, injured 70 people (including 11 medical staff), and destroyed or damaged buildings, equipment, and ambulances. The aim of this study was to investigate the response to the attack in persons who were at or near the hospital during the attacks .

**Methods** For this descriptive survey, we used convenience sampling of persons at or near the hospital during the attacks. 26 of the 29 people who were approached on Sept 1–2, 2014, consented to interview. 13 participants were hospital staff, two were patients, three were relatives of patients, five were refuge-seekers, one was a relative of a refuge-seeker, and two were hospital neighbours. Written consent was obtained from all participants, and reasons for refusal were recorded.

**Findings** All refusals cited fear of Israeli reprisals. All participants reported no resistance presence or activity in or near the hospital before or during the attacks. Ten (38%) participants were injured, including seven staff members, two relatives visiting patients, and one patient. 21 (81%) participants believed the attacks were deliberately directed at the hospital. 12 (92%) of the 13 staff members reported high levels of concern about the future safety of hospital staff. 20 (77%) participants reported no longer feeling safe anywhere. Eight (31%) participants commented that the attacks showed that neither the international community nor international humanitarian law protect Palestinian hospitals and medical workers.

**Interpretation** The absence of resistance activity indicates that the attacks on Al Aqsa hospital were not justified by military necessity and were thus in breach of the Geneva Conventions, constituting war crimes. Residual fear and loss of faith in international instruments can only be addressed by holding Israel accountable. This will have important implications for both the credibility of international law and the safety of civilians, medical staff, and facilities in future conflicts, everywhere.

**Funding** None.

### Contributors

JW-P contributed to the study design, data collection, data interpretation, and the writing and revision of the Abstract. YAR contributed to study design, data collection, data interpretation, and the revision of the Abstract. ISK contributed to the study design, data interpretation, and the revision of the Abstract. MAS contributed to the study design, data collection, and the revision of the Abstract. ASA and MMAH contributed to the data collection and the revision of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

# Cefazolin alone versus cefazolin, gentamicin, and metronidazole for prophylaxis in women undergoing caesarean section: a randomised controlled trial

Khaled Abu El Aish, Haly Zourob, Walid Madi, Saleh El Hams

## Abstract

**Background** Prophylactic antibiotic regimens for women undergoing caesarean section are useful for prevention of maternal morbidity, and antibiotic misuse can give rise to antimicrobial resistance. The aim of this study was to compare a single preoperative dose of cefazolin with the current standard practice of cefazolin, gentamicin, and metronidazole three times daily after the caesarean section until patient discharge.

**Methods** In this randomised, unmasked, parallel-group controlled trial, we enrolled women (aged 18–45 years) who were undergoing a caesarean section at the Al-Helal Al-Emirati Hospital in Rafah, Gaza Strip, occupied Palestinian territory. Using manual-blocks formation based on the rolling of a die, recruited women were randomly assigned to either 1000 mg intravenous cefazolin 30–60 min before the caesarean section (cefazolin group) or 1000 mg cefazolin, 80 mg gentamicin, and 500 mg metronidazole three times daily after the caesarean section until hospital discharge (triple antibiotic group). Outcome measures included readmission to the hospital because of wound infection, registered post-caesarean complications, duration of the caesarean section procedure, and length of hospital stay. Data were analysed with SPSS. Groups were compared using student's *t* test or  $\chi^2$  test. The study was approved by the Ministry of Health of the Gaza Strip and done in accordance with the Declaration of Helsinki. Women provided verbal informed consent before participation in the trial and before undergoing the caesarean section.

**Findings** Between Jan 1, 2013, and July 31, 2013, we screened 329 women and enrolled 313 (mean age 31.2 years [SD 6.5]). We excluded 26 women because of previous infections ( $n=12$ ), history of drug allergy ( $n=5$ ), and missing data ( $n=9$ ). 158 women were assigned to the cefazolin group, and 155 women assigned to the triple antibiotic group. Four women were readmitted to the hospital because of wound infections (three [2%] women from the cefazolin group, one [1%] from the triple antibiotic group;  $p=0.375$ ). Mean duration of the caesarean section procedure was 35.86 min (SD 7.77) in the cefazolin group and 36.70 min (7.40) in the triple antibiotic group ( $p=0.511$ ). Mean length of hospital stay after the caesarean section was 39.62 h (SD 11.19) in the cefazolin group and 40.48 h (13.07) in the triple antibiotic group ( $p=0.672$ ). No cases of endometritis, urinary tract infections, or febrile morbidities were reported.

**Interpretation** Pre-caesarean, single-dose cefazolin was as effective as the combination of cefazolin, gentamicin, and metronidazole in preventing post-caesarean infections. We therefore recommend that cefazolin is used pre-operatively to prevent post-caesarean infection.

**Funding** None.

### Contributors

KAEA contributed to the conceptualisation of the study, study design, data collection, statistical analysis, input for data analysis, data management, and the writing and revision of the Abstract. HZ contributed to the study procedure, study design, and the revision of the Abstract. WM contributed to the study procedure. SEH contributed to the study procedure and data collection. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

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# The quality of medical and public health research from Palestinian institutions: a survey-based study

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## Abstract

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**Background** There has been an increase in the quantity of health research from the occupied Palestinian territory in the past decade but no assessment of the quality. The aim of this study was to assess the quality of reports of Palestinian health research and factors associated with it.

**Methods** We searched MEDLINE and Scopus for reports of original research relevant to human health or health care authored by researchers affiliated with Palestinian institutions and published between Jan 1, 2000, and Aug 30, 2015. We used international guidelines to assess report quality, classifying as adequate those with at least 50% of items completely addressed.

**Findings** Of 2383 reports identified, 497 met our inclusion criteria. 264 (55%) reports were published after 2010, 354 (71%) first authors were affiliated with Palestinian institutions, and 261 (53%) reports had co-authors from outside the occupied Palestinian territory. 342 (69%) reports were inadequately reported, and none of the studies had adequately reported all items. Of 439 observational studies, 11 (3%) reports provided adequate descriptions of eligibility criteria and selection procedures, 35 (8%) reported efforts to address potential sources of bias, 50 (11%) reported the basis for the study sample size, and funding sources were mentioned in 74 (17%) reports. Improved reporting quality was associated with international affiliation of the first author (prevalence ratio 1·6, 95% CI 1·2–2·1), international collaboration (2·9, 1·7–5·0), international funding (1·9, 1·5–2·5), publication after 2005 (3·9, 1·8–8·5), and an four or more co-authors (1·5, 1·1–2·1).

**Interpretation** Although the quality of reports of Palestinian research has improved in recent years, it remains well below an acceptable standard. International reporting guidelines should be used to guide research design and improve the quality of reports of research.

**Funding** None.

## Contributors

LA, KE, NA-R, EB, and IC conceived and designed the study. LA searched the literature from electronic databases. LA and MO participated in data screening, extraction, and quality assessment with guidance from NA-R and IC. LA analysed the data and wrote the first draft of the Abstract. All authors provided critical comments and contributed to the interpretation of analysed results. All authors have read and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

# Pharmacists' knowledge, attitudes, and practices towards herbal remedies in the West Bank: a cross-sectional study

Maher Khmour, Manar Kurdi, Hussein Hallak, Mohammad Dweib, Qusai Al-Shahed

## Abstract

**Background** The consumption of complementary and herbal products is increasing in many parts of the world. The purpose of this study was to investigate the knowledge and attitudes among pharmacists in West Bank towards the use of herbal products.

**Methods** This cross-sectional study was done in the four largest cities in occupied Palestinian territory (Ramallah, Hebron, Bethlehem, and Nablus) between Dec 10, 2014, and March 30, 2015. Pharmacists from all specialties (community pharmacists, hospital pharmacists, and medical representatives) were invited to complete a questionnaire after giving informed consent. The responses to the questionnaire were reviewed by four research experts for face validity and piloted with 12 pharmacists to test for clarity. The questionnaire had two sections. The first section requested details of the participant's demographic information (eg, age, sex), whereas the second section included open-ended questions about the participant's behaviours towards and knowledge about use of herbal remedies.

**Findings** 350 pharmacists completed the questionnaire. The mean age of pharmacists was 32.9 years (SD 6.5). 238 (68%) pharmacists worked in community pharmacies, and their experience in practice ranged from 1–26 years. Only 133 (38%) pharmacists believed that herbal products are very effective, and 171 (49%) pharmacists believed that herbal remedies are very safe. Product packaging and product representatives were the sources of information most consulted by the pharmacists (154 [44%] for product packaging vs 89 [25%] for product representatives). General health tonic preparations were the most widely dispensed drugs, followed by cough preparations (19%). 227 (65%) pharmacists believed that herbal remedies were effective, but 175 (50%) pharmacists reported concern about their safety. The knowledge about indications for herbal medicines was good, but the pharmacists' awareness of interactions and adverse effects was inadequate. 308 (88%) pharmacists believed that regulation of herbal products should be increased, whereas 262 (75%) pharmacists believed that available information about herbal products is inadequate.

**Interpretation** Many pharmacists in West Bank believed that herbal remedies were an effective alternative therapeutic option. Continued education of herbal medicine for practicing pharmacists should be encouraged to enable pharmacists to provide competent, effective, and holistic patient care.

**Funding** None.

## Contributors

MK and HH jointly conceived, designed, and coordinated the study. MK and HH critically revised the Abstract for important intellectual content. MK, MD, and QA-S contributed to data acquisition and analyses and critically revised the Abstract for important intellectual content. All authors have read and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

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# Determinants of and changes in catastrophic health expenditure in the occupied Palestinian territory: an analysis of ten rounds of the Palestinian Households Expenditure and Consumptions Survey (1996–2011)

Majdi Ashour

## Abstract

**Background** Catastrophic health expenditure (CHE) is measured to assess the financial protection from the risk of health-related conditions, which is considered a principle performance goal of any health system. The incidence and intensity of CHE in the occupied Palestinian territory between 1998 and 2007 was assessed in previous research; however, no research has assessed the occurrence of CHE in different population groups in the occupied Palestinian territory. The objective of this study was to examine the changes in the occurrence of CHE in different groups of Palestinians from 1996 to 2011, which was a period of increasing political turmoil, transformation of the national health system, and economic hardship faced by the population.

**Methods** The repeated cross-sectional series of the Palestinian Expenditure and Consumption Survey was conducted by the Palestinian Central Bureau of Statistics ten times between 1996 and 2011. Each survey asks detailed questions about a household's expenditure, including spending on health, using a diary approach. CHE was measured using a threshold of spending of 10% or more of the household's resources on health care. Total household expenditure was used as a proxy of a household's resources. The occurrence of CHE was traced from 1996 to 2011 and compared across different expenditure quantiles, dwellers of urban areas, rural areas, or refugee camps, and the characteristics of head of households within the West Bank and the Gaza Strip were compared.

**Findings** CHE in the occupied Palestinian territory increased from 7·3% of households in 1996 to 8·2% of households in 2011. This increase was observed in the West Bank and Gaza Strip. However, the occurrence of CHE in the Gaza Strip was consistently and significantly lower than in the West Bank. CHE was consistently higher in the worse-off expenditure quantiles in the occupied Palestinian territory and in the West Bank compared with affluent households. The change in the occurrence of CHE in different expenditure quantiles in the Gaza Strip was statistically insignificant from 1997 to 2004. From 2005 onward, the economically vulnerable groups of the households have become less exposed to CHE than affluent households. The occurrence of CHE in households in rural areas of the West Bank was consistently higher than elsewhere. Households in the West Bank with illiterate heads of family were consistently more exposed to CHE than other households, whereas the opposite was observed in the Gaza Strip.

**Interpretation** The findings should be interpreted within the context of the unique Palestinian situation. For example, the overburdened rural populations in the West Bank could have greater difficulty in accessing health services. The lower occurrence of CHE in the Gaza Strip and the trend towards reducing inequalities between the more vulnerable households, especially in a period of socioeconomic adversity, points to an emerging paradox of resilience in the Gaza Strip, which should be investigated carefully from the perspectives of both the health system and social lives.

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# The effect of continuity of care on antibiotics prescription for Palestinian refugees in UNRWA health centres: a cross-sectional study

Manon Pigeolet, Majed Hababeh, Ali Khader, Akihiro Seita, Samuel Coenen

## Abstract

**Background** Antimicrobial resistance is a growing public health threat worldwide, with over-prescription of antibiotics for upper respiratory tract infections (URTI) in children being very common although at least half of URITs have a viral aetiology. A Family Health Team (FHT) model was gradually implemented at United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) health centres to provide continuity of care and patient-centred care. These types of care are associated with lower antibiotic prescription rates for URTI in several European countries, but their effect in a refugee setting is unknown. The aim of this study was to assess the differences in medical officers' knowledge and beliefs about antibiotics and to investigate the association between sociobehavioural factors and high antibiotic prescription for URTI in children in FHT and non-FHT health centres.

**Methods** This cross-sectional study included medical officers working at UNRWA health centres in Jordan, Gaza Strip, West Bank, and Lebanon in 2014. We used a self-administered, standardised multiple-choice questionnaire that covered demographics, beliefs, knowledge, and antibiotic use and included five case-vignettes on URTI in children. Case-vignette 1 described a child aged 9 months that was previously healthy but presented with fever of 38.5°C and rhinorrhoea. The child had been pulling at his right ear since the beginning of the day; the tympanic membrane was slightly pink, retracted, and had decreased mobility; and no air-fluid level was seen. A self-reported antibiotic prescription rate of more than 25% for URTI was considered high prescription. This cut-off was chosen to match an internal UNRWA target to not prescribe antibiotics for more than 25% of URTI cases and on the basis that more than 50% of URTI cases are viral and do not need an antibiotic treatment. We did  $\chi^2$  tests to compare knowledge and beliefs about antibiotics, and we did multiple logistic regression to analyse the association between sociobehavioural factors and high antibiotic prescription in FHT and non-FHT health centres. Ethical approval was not considered necessary since questionnaires were obtained anonymously. Verbal consent was obtained from participants.

**Findings** 362 medical officers were asked to complete the questionnaire, and 335 (93%) medical officers completed the questionnaire (227 officers in the FHT group, 108 in the non-FHT-group). Medical officers in the two groups had similar demographics, including their self-reported prescription rate. Antimicrobial resistance was described as a problem in the community by more participants in the FHT group than in the non-FHT group ( $p=0.048$ ), and the correct answer to case-vignette 1 was given more often in the FHT group than in the non-FHT group ( $p=0.001$ ). No demographic determinant was associated with high prescription. In the non-FHT group, high antibiotic prescription was associated with previous clinical experience (odds ratio 0.14, 95% CI 0.03–0.74) and the educational level of patients' parents (11.6, 2.33–58.10). In the FHT group, high antibiotic prescription was associated with wanting to be on the safe side (2.49, 1.07–5.79).

**Interpretation** The FHT group had a better knowledge of antibiotics use and antimicrobial resistance as a community problem. The factors associated with high prescription differed between the FHT and non-FHT groups. Further research is needed to assess whether the working environment determines actual antibiotic prescribing in a refugee setting.

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### Contributors

MP developed and executed the study and analysed data with input from MH, AK, and SA. SC contributed to the statistical analysis and the writing of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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# Socioeconomic status and chronic disease in Palestinians living in and outside refugee camps in the West Bank and the Gaza Strip: an observational study

Marie Jonassen, Amira Shaheen, Mohammed Duraidi, Khaled Qalalwa, Bernard Jeune, Henrik Brønnum-Hansen

## Abstract

**Background** People living in the occupied Palestinian territory have high levels of poverty and unemployment and low educational level. The aim of this study was to investigate the association between socioeconomic status and self-reported chronic disease and to determine whether this association differed between Palestinians living in and outside refugee camps.

**Methods** The study was based on representative samples of Palestinians living in the occupied Palestinian territory (West Bank and Gaza Strip), aged 25 years and older, collected by the Palestinian Central Bureau of Statistics in 2006 and 2010. Educational level, wealth, and employment status were used as measures of socioeconomic status. Participants reporting a diagnosis and treatment for at least one chronic disease were categorised as having a chronic disease. We used logistic regression models to estimate the association between socioeconomic status and chronic disease and to compare the prevalence of chronic disease between Palestinians living in or outside refugee camps adjusted by socioeconomic status.

**Findings** The sample included 38 888 participants. Associations between all measures of socioeconomic status and chronic disease were highly significant. In 2010, the odds ratio (OR) of reported chronic disease in illiterate men and women were 1.37 (95% CI 1.21–1.56) and 1.45 (1.29–1.63), respectively, compared with men and women with elementary or preparatory educational levels. Compared with the richest quintile, the OR in the poorest quintile was 1.70 (1.47–1.96) for men and 1.80 (1.56–2.07) for women. Compared with employed people, the OR in unemployed people was 1.50 (1.31–1.71) for men and 1.12 (0.76–1.65) for women. Similar results were found for 2006. The prevalence of chronic disease was substantially higher in Palestinians living in refugee camps (29%) than in those living outside refugee camps (24%). The associations between socioeconomic status and chronic disease did not differ between people living in or outside refugee camps.

**Interpretation** We found highly significant associations between socioeconomic status and self-reported chronic disease. Although the prevalence of chronic disease was highest in Palestinians living in refugee camps, the pattern of association between socioeconomic status and chronic disease did not differ between Palestinians living in and outside refugee camps.

**Funding** None.

## Contributors

MJ, AS, HB-H, and BJ initiated the study and undertook the analysis. MD and KQ provided the data. All authors have contributed to the interpretation of the findings and to the writing of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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# Burden of chronic diseases in the Palestinian health-care sector using disability-adjusted life-years

Marwan Mosleh, Koustuv Dalal, Yousef Aljeesh

## Abstract

**Background** Chronic diseases are the greatest public health concern worldwide, contribute to a large burden of disease in the developed world, and are increasing rapidly in prevalence in developing countries. The aim of this study was to quantify the burden of reported chronic diseases in the occupied Palestinian territory.

**Methods** We used the global burden of disease (GBD) approach and its templates to quantify disability-adjusted life years (DALYs). To estimate years of life lost, we used mortality data from Ministry of Health materials, and we used local morbidity data from the Palestinian Central Bureau of Statistics (health survey 2010) to estimate years lived with disability. The study was approved by the Palestinian Health Research Council.

**Findings** In 2010, DALYs lost due to selected chronic diseases were estimated as 60 per 1000 DALYs in the West Bank and 57 per 1000 DALYs in Gaza Strip, with each DALY defined as 1 year of optimum healthy life lost. Ischaemic heart disease and hypertension contributed the highest proportion of DALYs in men and women in 2010, followed by lung cancer in men and breast cancer in women. Respiratory disease also contributed a high proportion of DALYs, with a small difference in rank between the Gaza Strip and West Bank. Cancer was ranked the third largest contributor and respiratory disease the fourth largest contributor to DALYs in the Gaza Strip, whereas respiratory disease was the third and cancer the fourth largest contributors to DALYs in the West Bank. We also found differences by sex and region. Heart disease and cancer continued to rank highly as causes of years of life lost in the West Bank and Gaza Strip for both sexes in 2010, indicating the major causes of chronic disease burden in the occupied Palestinian territory in 2010.

**Interpretation** The burden of chronic disease is increasing substantially in the occupied Palestinian territory, and interventions are needed to tackle these burdens. Further studies using recent data and increasing attention to chronic non-communicable diseases are needed in the occupied Palestinian territories.

**Funding** None.

### Contributors

MM, YA, and KD planned and designed the study, analysed the data, and wrote the Abstract. MM and YA collected data. YA and KD critically reviewed the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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# Genotoxicity of recycled electronic waste in Idhna, Hebron District, occupied Palestinian territory: a case-controlled study

Nadia Khlaif, Mazin B Qumsiyeh

## Abstract

**Background** Electronics waste is solid waste that accumulates because of the short lifespan of many types of electronic equipment. Most electronics waste ends up in landfills, whereas some is recycled. In the occupied Palestinian territory, the village of Idhna in the Hebron District is a large site for recycling electronics waste (much of this waste originates from Israel). The aim of this study was to evaluate the effects of electronics waste on human DNA damage and chromosome breaks.

**Methods** In this cross-sectional study, we recruited non-smoker individuals with direct exposure to electronics waste either because they were employed in the workshops or resident in Idhna. Control participants were selected to match the test sample in age and sex distribution, were recruited from Bethlehem and Al-Aizariya (Bethany). Blood samples in sodium heparin were evaluated for DNA damage using the COMET assay, whereas chromosome aberrations were tested by using conventional cytogenetic techniques.

**Findings** 46 participants were included in the test sample, and 16 participants were included in the control sample. Participants in the test sample had an average of 3.77 chromosomes with aberrations (SD 2.5), whereas participants in the control group had an average of 0.75 chromosomes with aberrations (SD 0.61). The frequency of chromatid and chromosome breaks, formation of rings, and total chromosome aberrations was statistically different between exposed and control samples, but no difference was observed between exposed and controls for the incidence of dicentric and tetraploidy. Results of the Comet assay showed a significant difference in DNA damage between exposed and control participants ( $p < 0.05$ ). No difference between the workers and the residents living in the area was noted ( $p < 0.05$ ).

**Interpretation** Exposure to recycled electronics waste in Idhna has potentially adverse health consequences. This is the second study of this kind in the occupied Palestinian territories. Hammad and Qumsiyeh (2013) have previously shown substantial genotoxic effects of Israeli industrial settlement discharge on human populations in Salfit (northern West Bank). Considering increased incidence of cancer and congenital birth defects in the southern part of the West Bank, these findings were important in promoting the case for mitigation measures, which are now under way.

**Funding** None.

### Contributors

NK did this work partly for a Master's thesis under the supervision of MBQ. Both authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# The importance of health for income inequality in the occupied Palestinian territory: a decomposition analysis and cross-sectional study

Mohammad Abu-Zaineh, Maame Esi Woode, Mârwan-al-Qays Bousmah

## Abstract

**Background** The contribution of income inequality to health inequality has been widely examined in developed countries. However, little evidence exists on the effect of health on income inequality in resource-constrained settings. Findings from previous studies have indicated several mechanisms through which health affects income inequality, with the labour market being an important channel. Given the different levels of development, there are reasons to believe that health might represent a greater constraint on earnings in low-income settings. The aim of this study was to examine the relation between income and health in the West Bank and Gaza Strip.

**Methods** Data were extracted from the 2004 Household Health Expenditure Survey, which covered 4014 households. We applied a Shapley value approach to assess the contribution of health to income inequality. The analysis involved estimating and decomposing the relative Gini index. The contribution of each variable to income inequality was then computed as the average marginal effect, holding all other covariates at the mean.

**Findings** Results indicated clear age-specific health-income gradients. This is particularly apparent in the working-age population. Results also indicated that chronically ill people live in households with low income. The regression analyses showed a negative effect of the proportion of adults in the household with chronic illness on income. The lack of education and employment appear to have the highest negative effect on income. The decomposition analyses revealed that ill health contributes to income inequality, whereas such an effect is reduced when we controlled for employment status.

**Interpretation** Our results suggested the presence of a ubiquitous relation between health and income. The contribution of health to income inequality depends on how it is distributed. Evidence supports a significant effect of ill health on income, which mainly operates through employment. Additionally, variation in exposure to health risks is a potentially important mechanism through which health might generate income inequality.

**Funding** None.

### Contributors

MA-Z contributed to the study design, data analysis, and the writing of the Abstract. MEW contributed with input for data analysis. MB contributed to data collection, data management, data interpretation, tables, and figures. All authors have seen and approved the final version of the Abstract for publication.

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We declare no competing interests.

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# The health status of the Palestinians living in Israel: a cross-sectional study

Mohammad Khatib, Ahmad Sheikh Muhammad

## Abstract

**Background** In mid-2014, 1 350 800 Palestinians were living in Israel (excluding residents of occupied East Jerusalem and the Golan Heights). Palestinians comprise 17% of the total population in Israel. The Palestinian community in Israel is very young, with 36% of Palestinians aged 14 years and younger, whereas in the Naqab, 49% of the Palestinian community is aged 14 years and younger. According to Ministry of Health reports, there is a gap between Arabs and Jews in most health indicators (life expectancy, infant mortality, chronic morbidity, and health behaviours). Most official surveys on the health of Palestinians living in Israel are based on small samples and do not consider specific characteristics of the Arab population (eg, composition, geographic distribution). The aim of this study was to obtain broader data on the health status of Palestinians in Israel as part of a socioeconomic survey.

**Methods** We surveyed Palestinian households in the north of Israel, the Haifa region, the Naqab, and central Israel. We used a structured questionnaire to gather data on demographic and socioeconomic status, housing conditions, standards of living, education, culture, health, and environment. Data were collected by trained interviewers in face-to-face interviews. Verbal and written informed consent was obtained from participants.

**Findings** Fieldwork was completed between March 1 and June 30, 2014. 97% of questionnaires were completed, providing data from 1698 Palestinian households (896 households from the north of Israel, 271 from the Haifa region, 293 from the Naqab, and 238 from central of Israel; 7115 participants in total). 15% of all study participants (14% of women and 15% of men) and 2% of participants aged 0–14 years reported chronic diseases. The highest prevalence of chronic diseases was found in mixed cities (22%) and in large communities with more than 15 000 residents (16%), whereas the prevalence of chronic diseases was lowest (4%) in villages that are not officially recognised by Israel. 6% of the participants had diabetes (5% of women and 6% of men). 9% of participants in general and 2% of participants aged 0–14 years had moderate or severe difficulties in their activities of daily living, and the prevalence of people with such difficulties increased with age, reaching 24% in participants aged 50–59 years and 51% in participants aged 60 years and older. 20% of the participants were smokers (4% of women and 36% of men), whereas 7% of participants aged 10 years and older were smokers. About 38% of participants exercised and played sports, and 16% took regular exercise. 42% of marriages were consanguineous, and this percentage increased to 70% of marriages in the Naqab.

**Interpretation** Compared with the Jewish population in Israel, Palestinians with Israeli citizenship have more chronic diseases and more unhealthy behaviours. These findings should be used to inform national health strategic planning and interventions to improve and promote the health status of the Palestinian population in Israel.

**Funding** None.

### Contributors

MK did the study design, data analysis, data interpretation, and the writing and revising of the Abstract. ASM did the study design, data management, data analysis, data interpretation, and the writing and revising of the Abstract. Both authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# Challenges and prospects in the public health research system in the occupied Palestinian territory: a qualitative study

Mohammed AlKhalidi, Yehia Abed, Abdulsalam Alkaiyat, Marcel Tanner

## Abstract

**Background** A public health research system is the bedrock of health systems to improve population health, system responsiveness, and equity. An international concern, referred to as the 10/90 gap, is that less than 10% of global funds are devoted to diseases or conditions that account for 90% of the global disease burden, particularly in developing countries. Palestinian health research is progressing, but it is not sufficiently investigated, with a remarkable knowledge gap on its conceptualisation, stewardship, stakeholders, and capacity and resources. The aim of this study was to understand the Palestinian public health research system by investigating challenges related to the system components that need to be strengthened.

**Methods** The study was done in the Gaza Strip and West Bank in the occupied Palestinian territory between January and July, 2016. We targeted relevant government institutions, academic schools, and large local and international health agencies. Data were collected through 52 in-depth interviews and six focus group discussions with policy makers, academics, and experts. Participants and institutions were selected purposively on the basis of stated criteria and peer review. Data were translated, transcribed, checked, and imported into MAXQDA 12 for thematic and content analysis. Approvals were obtained from The Research Commission of Swiss TPH, "Ethikkommission Nordwest- und Zentralschweiz" (EKNZ) in Switzerland, the Palestinian Ministry of Health, Helsinki Committee, and An-Najah National University in Palestine.

**Findings** The health research system is not well structured, whereas public health research is promising but probably without regulated national policies. Most experts emphasised that governance is not clearly framed in managing research functions, whereas public health research activities are most likely scattered and individually driven. There is a consensus that the concept of the health research system is misunderstood and that the system is underperforming because of various problems such as resource insufficiency. Research is also not fundamentally at the heart of the political agenda or itemised in central budgets. Besides workforce scarcity with poor incentives and infrastructure, priorities in public health research are inconsistent and efforts are uncoordinated with poor multidisciplinary research. Dissemination and application of the public health research agenda among stakeholders are lacking. The research culture seems to be insufficiently cultivated. The international support to the public health research system is inconspicuous although some initiatives have been successful. The overall environment in the occupied Palestinian territory formed one of obstacles of the public health research system. Precious opportunities are proposed to strengthen public health research system synergistically through best strategies.

**Interpretation** The occupied Palestinian territory is a fertile place for growth of public health research system activity. Development actions should therefore be taken to get the system materialised by reactivating a unified governance body that cooperatively manages the national policies, capacities, priorities, research utilisation, and application of the public health research system.

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### Contributors

MT, YA, AA, and MK contributed to the conception and methodological design. MK contributed to the collection, analysis of data, interpretation of results, and the drafting of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# Medical records of emergency caesarean sections in the Gaza Strip: a clinical audit

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## Abstract

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**Background** Delivery by caesarean section in developing countries have reduced compliance to the international standards of care in comparison with developed countries. The development of the quality in obstetric care is an urgent priority in the developing countries, and this will mandate regular clinical audits and revisiting of management strategies and techniques. The aim of this audit was to examine the management of patients undergoing delivery by emergency caesarean section, with particular focus on the outcome measure of time from decision to delivery, and to compare the results with internationally acceptable standards. The final aim is to develop a local written internal protocol.

**Methods** This descriptive retrospective clinical audit was based on available data from archived medical records for patients who delivered by emergency caesarean section between Sept 1 and Sept 30, 2015, at the Emirati Obstetric Hospital, the only nationally dedicated hospital in the Gaza Strip.

**Findings** We identified 20 patients who had emergency caesarean delivery, which was much fewer than expected. Items such as age, gestational age at time of delivery, type of anaesthesia, and perinatal outcome were recorded in all cases. However, other important information, such as the time from decision to delivery, was not recorded in any of the 20 medical records. It was therefore not possible to determine the decision-to-delivery time intervals for these emergency caesarean sections.

**Interpretation** This audit reveals the extreme weaknesses in the standard of medical record keeping at the Emirati Obstetric Hospital, probably as an expression of a culture of suboptimal medical record keeping in the Gaza Strip. For clinical audits to be meaningful, accurate and complete medical records are necessary to assess the standard of care delivered in a health-care centre.

**Funding** None.

### Contributors

MA contributed to study design, data analysis, data interpretation, and the writing of the Abstract. BB contributed to study design, data interpretation, and the revision of the abstract. OM contributed to data collection, data management, and input for data analysis. LA, MA, and SH contributed to data collection and data management. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

# Management of acute meningococcal septicaemia in Al-Nasser Paediatric Hospital: a retrospective cohort study

Nabil Al-Barqouni, Awni Al Shorafa, Belal Dabour, Sherin Abed, Loai Albarqouni

## Abstract

**Background** Acute meningococcal septicaemia is a fulminant disease, and mortality and long-term morbidity can be very high if not treated appropriately. We aimed to evaluate case fatality rate of all children admitted with acute meningococcal septicaemia.

**Methods** We did a retrospective cohort study of all paediatric cases of acute meningococcal septicaemia admitted to Al-Nasser Paediatric Hospital, the largest paediatric hospital in the Gaza Strip. Acute meningococcal septicaemia was diagnosed clinically and confirmed on the basis of results from skin smears and blood cultures, and meningitis was diagnosed clinically and confirmed by bacteriological examination of cerebrospinal fluid. Sociodemographic and clinical data and outcome information were obtained from hospital records. Outcome measures were predicted mortality using Paediatric Risk of Mortality score III (PRISM-III), actual mortality, and standardised mortality ratio (SMR).

**Findings** Between Jan 1, 2009, and Sept 31, 2015, 240 children were admitted with acute meningococcal septicaemia. 113 (47%) children were boys, and the average age was 3·15 years (SD 2·6). The number of admitted children with acute meningococcal septicaemia decreased from 47–59 cases per year in 2009–11, to 21–22 cases per year in 2012–15. Similarly, there were fewer deaths in 2012–15 (n=14) than in 2009–11 (n=35). The total mortality predicted by PRISM-III was 25·6%, whereas the actual overall mortality was 21% (standardised mortality ratio 0·814; n=49). 41 (82%) children died within 24 h of admission, 69 (29%) children received corticosteroid, 85 (35%) children received inotropic medications, and 46 (19%) children required mechanical ventilation for a median of 24 h (IQR 6–48). Acute meningococcal septicaemia was associated with meningitis in 75 (31%) children. The most common complications were multiorgan failure (22 [9%] children), skin necrosis or scarring (13 [5%]), convulsions or seizures (13 [5%]), and disseminated intravascular coagulopathy (ten [4%]). Mortality was independently associated with age (odds ratio per 1-year decreased age 1·06, 95% CI 1·03–1·10; p=0·0006), shock (3·83, 1·32–11·70; p=0·015), absence of meningitis on presentation (9·55, 3·25–28·07; p=0·0013), and mechanical ventilation (9·85; 4·31–22·54; p<0·0001).

**Interpretation** The mortality and morbidity associated with meningococemia are improving but remain high. Timely identification of acute meningococcal septicaemia in primary care as well as in emergency departments is crucial.

**Funding** None.

## Contributors

NA-B, SA, and LA conceived and designed the study. NA-B, AAS, and BD collected data. NA-B, SA, and LA interpreted the data. NA-B wrote the Abstract. All authors approved the final version of the Abstract for publication.

## Declaration of interests

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# The effect of a family health-team approach on the quality of health care for Palestinian infants in Jordan: a mixed methods study

Noortje Gerritsma, Maartje-Maria van den Berg, Ali Khader, Majed Hababeh, Loai Farajallah, Ishtaiwi Abu-Zayed, Mohammad Ashraf, Ghada Ballout, Akihiro Seita

## Abstract

**Background** The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) provides primary health care for Palestinian refugees in the Middle East. Recently, a family health-team approach was implemented to provide patient-centred instead of disease-centred care. Teams comprise at least one doctor, one nurse, and one clerk, and each team is appointed a certain number of families. The aim of this study was to assess the effect of this approach on the quality of infant care in Jordan.

**Methods** In this cross-sectional study, we compared care in an intervention health centre with care in a control centre. Data on the effectiveness of care of all infants aged 19–23 months were collected through medical record review between April and June, 2014. Effectiveness was assessed comparing immunisation, anaemia, and growth monitoring data. Patient-centeredness was assessed through semi-structured interviews with parents. Written consent was provided by all participants. Ethical approval was obtained from UNRWA's Ethics Office.

**Findings** The parents of 437 infants were included in the intervention group, and the parents of 552 infants were included in the control group. The odds for attending all growth monitoring visits were higher in the intervention group than in the control group (odds ratio [OR] 2·8, 95% CI 1·90–4·34). The odds for receiving iron to treat anaemia were also higher in the intervention group than in the control group (4·76, 1·28–17·7). We found no difference in anaemia screening rates (0·75, 0·40–1·40), attendance of follow-up visits for anaemia (0·7, 0·29–1·69), or vaccination rates (1·20, 0·68–2·11). Interviews (n=11) revealed waiting times at health centres to be perceived as barriers for parents when seeking care for their infants. Acceptability and continuity of care were not perceived as barriers.

**Interpretation** Whereas the family health-team approach has the potential to improve infant care in terms of growth monitoring and anaemia treatment, results might be attributable to other causes as data used in this study date back to when the approach had only been implemented for 3 months.

**Funding** Fondsendesk, VU University Amsterdam, the Netherlands, the Health Department, United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) Headquarters, Amman, Jordan.

## Contributors

NG contributed to the study design, data collection, data management, data analysis, data interpretation, tables, figures, and the writing of the Abstract. MMB, AK, MH contributed to input for study design, data analysis and interpretation, and the revision of the Abstract. LF and MA contributed to data collection. IAZ contributed support in data collection. GB contributed to data analysis and interpretation. AS contributed to the revision of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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# Lead in breastmilk samples from women living in the West Bank: a cross-sectional study

Ramzi Shawahna, Ahed Zyoud, Jamela Dwikat, Maram El-Helo, Bayan Yacoub, Hikmat Hilal

## Abstract

**Background** Breastmilk is the recommended form of enteral nutrition for all infants. Infants nourishing on breastmilk contaminated with lead are at high risk of exposure to this neurotoxic heavy metal. The aim of this study was to screen lead concentrations in samples of breastmilk obtained from women living in three main regions of the West Bank and to investigate the sociodemographic characteristics associated with high lead concentrations.

**Methods** In this cross-sectional study, breastmilk samples were collected from breastfeeding women living in Nablus, Ramallah, and Jerusalem. The participants' sociodemographic characteristics were recorded, and the lead concentration in breastmilk samples were quantified using a graphite furnace atomic absorption spectrophotometer. Ethical approval was obtained from the Institutional Review Board of An-Najah National University, and all participants provided written informed consent.

**Findings** Breastmilk samples were obtained from 89 women. The median lead concentration was 4 µg/L (range 2–12 µg/L). The lead concentration was higher than WHO's safety limits for occupationally unexposed population in 17 (19%) samples. Lead concentrations were also significantly higher in samples obtained from women living in refugee camps and cities ( $p=0.003$ ) than in women living in villages, higher in women with low monthly household income than in women with high monthly household ( $p=0.020$ ), higher in women living in houses with peeling paint than in women living in houses with no peeling paint ( $p=0.026$ ), higher in women who worked in agriculture for more than 3 years than in women who worked in agriculture for less than 3 years or less ( $p=0.005$ ), and higher in women who frequently used eye kohl than in women who did not ( $p=0.004$ ). Multiple linear regression analysis showed that using eye kohl was a significant predictor ( $p=0.040$ ) of lead concentration in breastmilk above WHO's safety limits.

**Interpretation** In this study, about one-fifth of women had concentrations of lead in their breastmilk above the WHO's safety limits. Authorities need to implement measures to eliminate or reduce lead exposure, especially in refugee camps and cities. Eye kohl preparations marketed in the occupied Palestinian territory should be screened for lead content.

**Funding** None.

### Contributors

RS conceived the idea. JD, ME-H, and BY collected the samples and interviewed the women for their sociodemographic characteristics. AZ, HK, JD, ME-H, and BY analysed the lead concentration in breastmilk samples. RS did the statistical analysis and wrote the Abstract. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

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# Prevalence of visual disorders in urban Palestinian children: a cross-sectional study

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## Abstract

**Background** Vision screening programmes for preschool children (aged 3–5 years) have been implemented for early detection and intervention of blinding visual disorders. In the occupied Palestinian territory, scientific data on visual disorders among preschool children are lacking. The aim of this study was to determine the prevalence of visual disorders in Palestinian preschool children living in urban areas.

**Methods** In this cross-sectional study, preschools in Nablus city were selected using a cluster sampling randomised technique. All attending children aged 3–5 years were included in a vision screening after parental consent was obtained and a self-administered parental questionnaire was completed. The screening assessment included visual acuity, ocular alignment, depth perception, colour vision, non-cycloplegic retinoscopy, and ocular health. Children who failed the screening were referred for cycloplegic comprehensive eye examination. We used percentage and 95% CI to describe the prevalence, and the Pearson  $\chi^2$  test was applied to determine any associations. A  $p$  value less than 0.05 was considered significant. An Institutional Review Board's ethical approval was obtained.

**Findings** 764 children from eight preschools were included in the vision screening. 127 children failed the screening test and proceeded to the comprehensive eye examination referral. The most prevalent visual disorders were refractive error (176 [29%] children), amblyopia (15 [4%]), colour vision deficiency (seven [1%]), strabismus (seven [1%]), and ocular health abnormalities (four [1%]). We found no variation in the prevalence of refractive errors by age ( $p=0.35$ ) or sex ( $p=0.32$ ). The leading causes for amblyopia were anisometropia (seven [1%] children), significant refractive error (six [1%]), and strabismus (two [ $<1\%$ ]).

**Interpretation** Refractive error was the most prevalent visual disorder in Palestinian preschool children in Nablus. Both anisometropia and significant refractive errors were found to be the major causes of amblyopia. Although this study presented valuable information with respect to visual disorders among children at preschool age, the small sample size is a major limitation and the results cannot be extrapolated to the entire country.

**Funding** None.

## Contributors

LA contributed to study design, data interpretation, tables, figures, the writing of the Abstract, data collection, and data management. RS contributed to data analysis, data interpretation, tables, figures, the writing of the Abstract, data collection, data management. FE contributed to input for data analysis and the revision of the Abstract. YS contributed to data collection. YA contributed to study design, data collection, and data management. MS contributed to data collection. IB contributed to data collection and the revision of the Abstract. AA contributed to data analysis. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

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# The effect of fluids given to mothers antenatally on newborn children's weight loss: a prospective observational study

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## Abstract

**Background** Inadequacy of breastfeeding was considered the only factor leading to excessive weight loss, which might lead to unnecessary initiation of formula. However, other factors might contribute and should be considered. The aim of this study was to observe the effect of fluids given antenatally to mothers on the weight of their newborn children.

**Methods** This prospective observational study was done in the newborn nursery and labour room of the Al-Makassed Hospital. We included all women who had an uncomplicated pregnancy, were admitted between May 1 and Aug 31, 2015, and gave birth to a single healthy full-term baby weighing 2500–3999 g. We documented amount of intravenous fluids, weight of the newborn baby, and weight of diapers every 8 h until the mother and child were discharged from hospital. This study was approved by the ethical committee at Al-Makassed Hospital. Parental consent was taken verbally for participation.

**Findings** 375 pregnant women participated in this study, of whom 266 (71%) were multiparous and 247 (66%) had a normal spontaneous vaginal delivery. 255 (68%) mothers received intravenous fluids. The administration of intravenous fluids 24 h before delivery was associated with a statistically significant but not clinically significant increase in weight loss in the newborn child at 48 h compared with those who did not receive any fluids (190 g vs 156 g;  $p < 0.05$ ). Other predictors of weight loss were feeding and delivery method. The use of formula in addition to breastfeeding was associated with more weight loss compared with exclusively breastfed infants (215 g [6.5%] vs 168 g [5.2%];  $p = 0.03$ ). Both delivery by caesarean section and induced labour were associated with a marginally significant increase in weight loss ( $p < 0.05$ ) compared with spontaneous normal vaginal delivery.

**Interpretation** Weight loss in the newborn child is a multifactorial process. Intravenous fluid infused before delivery is a contributory factor. We recommend an intravenous fluid-restrictive policy to avoid false positive weight loss.

**Funding** None.

### Contributors

RR designed analysed data and wrote the Abstract. SA and HK contributed to the study design, data management, and the review of the Abstract. RS contributed to data analysis and interpretation. MZ and DI contributed to data collection and interpretation. All authors have seen and approved the final version of the Abstract for publication.

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# Quality of life in Palestinian patients with end-stage renal disease receiving treatment by haemodialysis: a cross-sectional study

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## Abstract

**Background** Haemodialysis is a life-saving but burdensome therapy for patients with end-stage renal disease, which can substantially impair health-related quality of life (HRQOL) and outcomes. The aim of this study was to determine the patterns of HRQOL and to identify the risk factors for reduced HRQOL in Palestinian patients receiving treatment by haemodialysis.

**Methods** This cross-sectional study was done between June 15, 2014, and Jan 15, 2015, using the EuroQOL-5 Dimensions instrument (EQ-5D-5L) for the assessment of HRQOL. We approached patients with end-stage renal disease undergoing haemodialysis at inpatient hospitals from ten different settings at a national level. The study protocol was approved by the Ethics Committee of An-Najah National University. Informed verbal consent was obtained from each participant before the start of the interview. Multiple linear regression was used to estimate which variables were significantly associated with reduced HRQOL.

**Findings** 267 (96%) of 277 eligible patients consented to participate. 139 (52%) participants were men, and the mean age was 53.3 years (SD 16.2). 177 (66%) patients had been treated by haemodialysis for less than 4 years. The reported HRQOL, as measured by mean EQ-5D-5L index value, was 0.37 (SD 0.44). We found a moderate positive correlation between the EuroQol-visual analogue scales and the EQ-5D-5L index value ( $r=0.44$ ;  $p<0.0001$ ). The results of a multiple linear regression showed a significant association between HRQOL and age ( $p=0.0011$ ), female sex ( $p=0.0167$ ), education level ( $p=0.0057$ ), number of chronic medications ( $p=0.0493$ ), and number of comorbid diseases ( $p=0.0001$ ).

**Interpretation** Our results provide insight into a number of associations between patient variables such as demographics, clinical factors, and their HRQOL. These findings should help raise health-care providers' awareness and improve the quality of life for patients receiving treatment by haemodialysis, especially those who have no formal education, are elderly, are female, are from refugee camps, or have multiple comorbid diseases or chronic medications.

**Funding** None.

## Contributors

SHZ led the study design, data collection, statistical analysis, and the interpretation of the data. WMS, SA, and RA were involved in study concept and design, and revised the study for important intellectual content. DND, DOM, RLK, MNS, NAA, and GHT contributed to the data collection, results tabulation, and statistical analysis. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

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# Non-communicable disease risk factors in Palestine refugees in Lebanon: a descriptive study

Saleh Fahd, ElZahraa Majed

## Abstract

**Background** Non-communicable diseases are more prevalent in refugees living in vulnerable circumstances. The aim of this study was to assess the prevalence of risk factors for hypertension and diabetes in Palestine refugees in Lebanon (PRL), including those fleeing the Syrian conflict (PRS). We hypothesised that risk factors for developing non-communicable diseases would be prevalent in these individuals.

**Methods** This descriptive study was done in eight health centres supported by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) in Lebanon from August 2014, to January, 2015. A random sample of PRL and PRS (aged 40 years and older) was selected from the patients attending these clinics. Direct measurements of height and weight were done to calculate body-mass index. A questionnaire was administered to enrolled participants to investigate smoking habits, personal history of cardiovascular diseases, and family history of diabetes, hypertension, or cardiovascular disease. Informed consent was obtained from all participants.

**Findings** 5025 PRL and 799 PRS were enrolled in this study. Among PRL, obesity affected 35% of women and 25% of men. Conversely, the prevalence of smoking was 58% in men and 42% in women. The prevalence of a family history of diabetes, hypertension, or cardiovascular disease was 62% overall, whereas 2% of the participants had a personal history of cardiovascular disease. Among PRS, the prevalence of obesity was 47% in women and 22% in men. In the PRS group, 67% of men and 34% of women were smokers. In the PRS group, 57% of the participants had a family history of diabetes, hypertension, or cardiovascular disease, whereas 4% of participants reported a personal history of cardiovascular disease.

**Interpretation** Risk factors for non-communicable diseases were widespread in both groups of Palestinian refugees aged 40 years or older. The prevalence of obesity and overweight was high in both groups, particularly in female PRS. Smoking habits were reported in both groups, mainly by men in the PRS group. More than two-thirds of the overall sample was affected by one or two risk factors. Despite the descriptive nature of this study, it provides information for policy makers to intervene in preventing and decreasing the prevalence of non-communicable diseases in refugee populations.

**Funding** None.

## Contributors

SF contributed to study design, data management and analysis, data interpretation, and the writing and revision of the Abstract. EM contributed to the tables, figures, input for data analysis, and the revision of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

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# Health-related quality of life in patients with breast cancer in Palestine: an assessment of a cross-sectional study using the EuroQoL-5 dimensions scale

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## Abstract

**Background** The negative effect of breast cancer on survivors highlights the importance of increased knowledge about patients' health-related quality of life (HRQOL). The aim of this study was to assess HRQOL in women with breast cancer and to examine the effect of patient characteristics on HRQOL.

**Methods** This cross-sectional study took place in four oncology centres in the West Bank, occupied Palestinian territory, during a 6 month period in 2014. We used a convenient sampling method to recruit participants and the EuroQoL-5 Dimension (EuroQoL EQ-5D) scale to assess their HRQOL. All analyses were done in SPSS version 16.0. The study was approved by the Institutional Review Board at An-Najah National University. Informed verbal consent was obtained from the participants before the start of the study.

**Findings** 244 women with breast cancer were interviewed. Their mean age was 52.7 years (SD 12.2), and the mean number of years of breast cancer was 3.38 years (SD 3.6). 136 (56%) women had stage 2 breast cancer, and 54 (22%) women had stage 3 breast cancer. 233 (96%) participants received chemotherapy, and 206 (84%) participants had surgery. The median EQ-5D index was 0.72 (IQR 0.51–0.84), and the median of EQ-visual analogue scale (EQ-VAS) was 70 (IQR 55–80). We found a positive correlation between the EQ-5D index and EQ-VAS scores ( $R=0.51$ ;  $p<0.001$ ). The highest EQ-5D index scores were found in elderly patients ( $p=0.006$ ), employed women ( $p=0.002$ ), women with high income ( $p=0.012$ ), women with higher education ( $p=0.001$ ), and women who exercised regularly ( $p=0.006$ ). Additionally, patients with advanced disease stage had the lowest median EQ-5D index ( $p=0.002$ ).

**Interpretation** Palestinian women who had survived breast cancer reported favourable overall HRQOL. Increased educational attainments, monthly income, and physical activity was associated with improved overall HRQOL. Thus, improved overall HRQOL should be considered a very important goal in treatment of breast cancer.

**Funding** None.

## Contributors

SWA-J had the idea for the study, led the study design, data analysis, and interpretation, and drafted the Abstract. RY, RS, HJ, WM, MD, and AB interviewed patients, participated in data interpretation, and contributed to the drafting of the Abstract. SHZ and WMS had the idea for the study, participated in the study design, and contributed important intellectual content during the revision of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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# Governance guidance for an eRegistry for maternal and child health: lessons from the occupied Palestinian territory

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## Abstract

**Background** The eRegistry for maternal and child health is an electronic registry system developed for the collection, analysis, retrieval, storage, and dissemination of information on health determinants and outcomes for women and children. The purpose of the eRegistry is to improve health-care provision and public health surveillance in the occupied Palestinian territory. Given the highly sensitive nature of reproductive health information, however, careful attention to ethical and legal considerations is essential. The aim of this study was to map the legal, regulatory, and ethical landscape using a situation analysis tool tailored for the Palestinian context and to identify gaps, opportunities, and actions necessary to ensure an ethical and lawful framework for an eRegistry.

**Methods** We used an exploratory situation analysis tool (SAT) to map the current legislative, regulatory, and governance environment in the occupied Palestinian territory. The primary objective was to assess, document, and analyse the legal and ethical landscape. Specific focal topics addressed by the SAT included identifying relevant legislation (eg, civil registration, data privacy, health registries, public health law), existing governance structures, accountability, and oversight bodies (ie, ethical review committees, data protection authorities), and data quality and security policies. The Palestinian National Institute of Public Health (PNIPH) completed the SAT and held workshops for relevant stakeholders, including staff from the ministry of health's legal affairs department, PNIPH staff, and other legal experts. No ethical approval was required because data were collected from public documents.

**Findings** The findings from the SAT reflect the current situation in the occupied Palestinian territory with respect to existing laws, accountability and oversight bodies, and data collection protocols and policies concerning data privacy and security. Existing Palestinian legislation relevant to health registries includes Article 4 of the General Statistics Law (2000), which honours data confidentiality and the privacy of individuals. The Penal Law number 16 of 1960 addresses the disclosure of confidential information, whereas Article 355 specifically states that disclosure of official confidential information to unauthorised persons is unlawful and could result in imprisonment. Furthermore, the Public Health Law (2004) addresses general maternal and child health issues in Articles 4 and 5. We investigated relevant oversight and accountability bodies (eg, ethical review board) that might be relevant to an electronic maternal and child health registry. Finally, in a review of existing data privacy protocols and policies, we noted that few formal protocols (ie, privacy manual) or policies regulate data collection and access practices.

**Interpretation** Specific areas within the legal and regulatory framework of the occupied Palestinian territory could be strengthened. The eRegistry Governance Guidance Toolkit, predicated on the SAT content, outlines responsible data stewardship practices and provides assistance in developing protocols and policies in lieu of specific laws by providing a framework to ensure the protection of women and children's privacy. Effective governance that protects women and children's privacy and confidentiality is essential for maintaining public trust and ensuring the long-term success of an eRegistry.

**Funding** European Research Council and the Norwegian Agency for Development Cooperation (Norad).

## Contributors

SM developed the SAT and contributed to analysis, writing, and revisions. In the occupied Palestinian territory, BG and RS orchestrated mapping and data collection and contributed to the analysis and writing. JK's legal expertise informed the overall design and data collection strategy. All authors contributed to the writing and editing of the final version of this Abstract. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

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# Institutionalising community health programmes into the Palestinian health-care system: a qualitative study

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## Abstract

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**Background** Community health is a field of public health and one of the important pillars of the health system that addresses health protection, promotion, and preservation. The occupied Palestinian territory is a fragile setting with an unstable health system that hardly functions. The aim of this study was to investigate the status of community health programmes and to generate useful suggestions for system strengthening.

**Methods** The study was done in the Gaza Strip in 2014, using a descriptive analytical and qualitative approach that involved a review of literature and reports and a structured, open-ended survey. The survey was developed by expert consultation and involved ten experts selected from five sectors (the ministry of health, academia, and private, local, and international non-governmental organisations). Data were analysed in Excel and with the coding and thematic analysis technique.

**Findings** Perceptions about the status of community health programmes were controversial, with some respondents describing them as fragmented and others stating that several community health programmes are functioning well. Two respondents believed that community health is still undeveloped. Participants who were fairly satisfied with community health programmes mainly worked at the ministry of health and the United Nations Relief and Works Agency, highlighting immunisation, family planning, screening, and awareness, but stating that the private sector is still inadequate. Three experts perceived the community health programmes as having an individual rather than community focus. Five experts said that some programmes are effective and efficient. Most participants agreed that community health programmes are confined to primary care and lack continuity with secondary care. Half of the experts said that the availability of community health programmes led to regulated protocols and policies that were not implemented, whereas the rest only existed in some programmes. The largest challenges in improving the performance of community health programmes are lack of coordination and standardisation, fragmented efforts, resource scarcity, weak training, lack of a unified community health strategy, poor planning, and needs that are irrelevant. Community health is undervalued, and public awareness and engagement is weak.

**Interpretation** Most community health programmes are not well embedded despite progress in some programmes. Community health needs to be institutionally cultivated. Community health programmes should be strengthened on the basis of clear national, integrated, and collective strategies that reflect community health priorities driven by political commitment and active community participation. A consolidated coordination network, allocated resources, and recruitment of community health professionals are needed alongside capacity building and education programmes.

**Funding** None.

### Contributors

Both authors contributed to the conceptualisation and methodological design. YA contributed to the collection, analysis of data, the interpretation of results, and the writing of the Abstract. Both authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

# Mental distress and job satisfaction in Palestinian nurses exposed to workplace aggression: a cross-sectional study

Yousef Jaradat, Morten Birkeland Nielsen, Petter Kristensen, Khaldoun Nijem, Espen Bjertness, Rita Bast-Pettersen

## Abstract

**Background** Nurses who are exposed to workplace aggression from patients, patient relatives, or colleagues are at risk for mental health disorders and job dissatisfaction. The aim of this study was to assess the prevalence of exposure to workplace aggression and the association between mental distress and job satisfaction in nurses working in the Hebron district of the occupied Palestinian territory.

**Methods** In this cross-sectional study, nurses were recruited to answer a questionnaire covering sociodemography and workplace aggression (WHO questionnaire), including exposure to physical and verbal aggression and bullying. We assessed mental distress with the General Health Questionnaire (GHQ-30) and job satisfaction with the Generic Job Satisfaction scale. Associations between workplace aggression and mental distress and satisfaction were estimated from  $\chi^2$  tests and linear regression analyses using Stata/IC10. The study was approved by the ministry of health. Written informed consent was provided by all participants.

**Findings** In 2012, we recruited 372 registered nurses from the Hebron governorate. 28 (8%) nurses were excluded, and the final sample (n=344) included 213 (62%) women and 131 (38%) men. The prevalence of aggression of any kind was 27%. 17 (5%) nurses had been exposed to physical aggression, 83 (24%) had been exposed to verbal aggression, and 25 (7%) had been exposed to bullying. Men reported a higher prevalence of bullying than women (12% of men vs 5% of women). The prevalence of exposure to physical aggression, verbal aggression, and bullying was highest in young nurses. After adjusting for covariates, nurses exposed to verbal aggression reported 2.9 units (95% CI 0.02 to 5.6;  $p=0.04$ ) more mental distress than non-exposed nurses. Bullying was associated with a 2.6 unit (95% CI -5.1 to -0.14) reduction in job satisfaction score.

**Interpretation** Nearly a third of nurses in this study reported exposure to some sort of aggression. Nurses exposed to verbal aggression reported more distress than nurses who had never been exposed to verbal aggression. Bullying was associated with reduced job satisfaction. Because the study had a cross-sectional design and both exposure and outcomes were measured using self-report, the results should be interpreted with caution.

**Funding** The Norwegian Programme for Development, Research and Education (NUFU pro x1 50/2002 and NUFUSM-2008/10232) and The National Norwegian State Education Loan Funds.

### Contributors

YJ, EP, PK, RB-P and MBN designed the study. YJ and KN participated in the data collection and monitoring. YJ, RB-P, and MBN prepared the datasets, wrote the first draft of the Abstract, and did the preliminary analysis. All authors participated in the conceptualisation and writing of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

### Declaration of interests

We declare no competing interests.

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# Excessive Facebook use and physical and mental health risks in the occupied Palestinian territory: a cross-sectional study

Zaher Nazzal, Hadi Rabee', Mohammad Ba'ara, Denis Berte

## Abstract

**Background** Social media has become popular and changed social interaction between people. The Middle East is an important and expanding market, particularly the occupied Palestinian territory, where restrictions related to cultural and geopolitical realities create an environment of isolation for young adults. Dependence on social media is suggested to diminish motivation to participate in naturally occurring activities and life interests, leading to physical and mental health risks. The aim of this study was to assess the potential association between excessive Facebook use and physical health complaints, unhealthy habits, and emotional discomfort in university students.

**Methods** In this cross-sectional study, we recruited students at the An-Najah National University of Palestine. We used a pretested, self-administered questionnaire to collect demographic data and information about Facebook use, unhealthy habits related to Facebook use, and physical health complaints. The Facebook Intensity Scale (FIS) and the Depression Anxiety Stress Scales (DASS21) were used as study instruments. The study was approved by the Institutional Review Board of An-Najah National University. Participation was voluntary, and written consent was obtained from each participant.

**Findings** The sample included 1003 students of both sexes and from a range of study areas. 938 participants returned valid questionnaires. 922 (98%) students had Facebook accounts, with 240 (26%) students spending more than 3 h per day on Facebook, and 258 (28%) students reporting having more than 300 Facebook friends. A positive relationship was found between time spent on social network sites, number of Facebook friends, and Facebook Intensity Scales scores and an increase in unhealthy habits including skipping meals, delaying urination, and late night and interrupted sleep. Negative health consequences related to excessive use included eye strain, reduction in energy levels, reduction in frequency and duration of exercise, and back and wrist pain. Excessive Facebook use and having a high number of Facebook friends were associated with emotional discomfort (depressive, anxiety, and stress symptoms).

**Interpretation** These findings present evidence that excessive social networking online is associated with unhealthy habits and negative health effects in Palestinian students. Excessive Facebook use might also lead to increased risk of mental health symptoms and interfere with actual developmental tasks. Public awareness and alternative opportunities for socialisation and recreation are needed to combat this high-risk health trend.

**Funding** None.

### Contributors

ZN, HR, and MB contributed to the conception and design of the study, the acquisition of data, the analysis and interpretation of the data, and the drafting of the Abstract. DB contributed to the conception and design of the study, data interpretation, and the writing of the Abstract. All authors have seen and approved the final version of the Abstract for publication.

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