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## **Housing environment and women's health in a Palestinian refugee camp**

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### **Abstract**

This study was carried out during January and February 2002 in Al- Ein Refugee Camp in Nablus city in Palestine. Interviews were held with 150 women of different age groups and different marital status. The results show a positive relationship between women's physical and mental health and housing conditions. There is a statistically significant relationship between the family size represented by the number of children in the household, the number of children that sleep in one room, and the number of children that sleep in one bed, the house size, and number of rooms and women's feeling of privacy (mental health and well-being). Most of the houses in the camp are unhealthy and overcrowded. The family income is very low and there is a general poor health status of women in the camp. Most of the women do not know the conditions of a healthy house. The study shows the importance of housing reforms on the health of the family in general and women's health in particular, mainly in refugee camps.

**Keywords:** *Housing environment, women's health, refugee camps, Palestine*

### **Introduction**

Palestinian refugees are persons whose normal place of living was Palestine, between June 1946 and May 1948, who lost both their homes and means for livelihood as a result of the Arab–Israeli conflict. The number of Palestinian refugees grew from 914,000 in 1950 up to 3.8 million in 2001 and there is a continuous rise due to the natural population growth (United Nations Relief and Working Agency (UNRWA) 2003a).

One third of registered Palestinian refugees live in 59 camps in Jordan, Syria, Lebanon, West Bank, and Gaza (UNRWA 2003a). The distribution of those refugees is shown in Table I, and the figures are as of 30 June 2002 (UNRWA 2003b).

Nowadays, Palestinian refugee camps are a model of poor environmental conditions and lack of green and planted areas or open spaces, with overcrowding (Zeidan 1999; Farah 2000). For example, Al-Khatib et al. (2003) found that the room density rates in al-Ama'ri refugee camp in the West Bank of Palestine were 68.1% with a high density (3–5 persons per room) and 12.8% overcrowded (more than 5 persons per room) respectively.

Table I. Palestinian refugee camps profile.

Field of operation	Official camps	Registered refugees	Registered refugees in camps
Jordan	10	1,679,623	293,215
Lebanon	12	387,043	217,211
Syria	10	401,185	115,863
West Bank	19	626,532	168,507
Gaza	8	878,977	468,071

### *Al-Ein refugee camp (place of study)*

Al-Ein refugee camp is located close to Nablus city in the north of the West Bank of Palestine and dates back to 1950. The camp is a home to families, most of which are from villages or cities whose normal place of living was Palestine, between June 1946 and May 1948 like Jaffa, Al Abasieh, Safad, and Yzour. About 65% of the population of the camp is under 20 years of age. The camp is extremely cramped and overcrowded. According to UNRWA, during funerals the deceased are usually passed through windows from one shelter to another in order to reach the camp's main street.

There are two schools in the camp, one for boys and one for girls, covering the primary and preparatory levels. Neither school is heated in the winter and there are no libraries. There is one private daycare center in the camp, but there is no playground or playing space for the children. Most of the basic services in the camp are under the responsibility of UNRWA, but many of these services are lacking. There is an UNRWA health center, a dental clinic and an X-ray lab. There is also a health clinic that belongs to the Palestinian military services but it is in poor conditions.

The director of Al-Ein refugee camp reported that when Al-Ein refugee camp was established in the year 1950, there were no health facilities. By 1957, there was a large tank of water that was considered as a source of water for the whole camp, with a shared toilet for both men and women, which was stressful and hazardous. By 1962, the camp had been provided with electricity by the municipality of Nablus. By 1965, the sewage network was established in the camp. The sewage network is available but needs to be upgraded.

Nowadays, only the main road is paved. There are three community organizations in the camp: a women's activity center, a camp service committee, and a social center for youth (UNRWA 2003a). There are no longer any single story shelters in the camp; with 60% of the buildings being three stories high, 30% two stories, and 10% four stories. The individual share of this area is 7.8 square meters (Marshy 1999).

### *Housing and health*

Housing is defined as a house, shelter or dwelling. A household is one or more families or individuals 'who make common provision for food or other essentials of living' (Clauson-Kaas 1996).

Poor housing structure lessens natural lighting in rooms, preventing exposure to sunrays that provide the necessary ultraviolet rays for the body to utilize vitamin D (Filfil 2000). Inadequate heating insulation and ventilation encourage mold and other microorganisms to grow. Many molds are allergenic and provide a food supply for house mites, which are also potential allergens.

It is better to select a site that is sheltered from the winter winds, has good exposure to the sun, has natural cooling in the summer and a healthy vegetation. The building site should be dry, provided with piped water, a septic tank or sewer for safe waste water disposal and it needs to have a source of electricity. Also, the site should be far from outdoor pollution sources such as industrial pollution (Dodson 1999). There are many factors that link the housing conditions to health. Some of these factors are direct such as the site of residential area, building materials, natural lighting and ventilation, dampness, crowding and availability and access to water and sanitation. Indirect factors include proximity to health care, access to education, transportation and place of employment, and the tenure. These relationships have been confirmed by many researchers such as (Khader 1996; [Mara & Alabaster 1995](#); [Bierman-Lytle 1995](#); Platt 1989; [Wilkinson 1999](#)).

Common sources of indoor air pollution include tobacco smoke, biological organisms, building materials and furnishings, cleaning agents and pesticides, in addition to airborne lead and mercury vapors. Indoors, the chief source of lead is paint. All these may cause serious health risks, mainly for the respiratory system. (American Lung Association (ALA) 1994).

Prevailing discussions on women's health have considered mostly reproductive health. At a health policy level, especially in developing countries, women's primary significance is considered as child-bearer and child carer (Lewis & Kieffer 1998). Women's health involves women's total well-being, a condition of life not only determined by women's reproductive function, but also by the effect of work load, nutrition, stress, war and migration (Giacaman & Johnson 2002).

Within their life spaces (homes) women seek food, fuel, water, and shelter. Women are the primary users and managers of the biophysical environment ([Dankelman & Davidson 1989](#)). The role of women in the house as household provisioners and health managers also exposes them to particular health risks (Abaleron 1995; [Gove & Hughes 1983](#)).

Palestinian refugee women lost the productive role they once had in their village community working with their fathers, brothers and husbands in the fields. In the refugee camps their role is confined within the boundaries of their shelter, which affects their position and influence in society. Women and children suffer mostly from the lack of infrastructure and services such as sanitation; refuse disposal, water supply, roads and paths and electricity supply. The lack of communal spaces for social activities affect women for particular reasons (Budeiri 1996).

That is, women are more likely to remain within the confines of the home and camp for cultural and economic reasons, which are both reinforced by the effects of overcrowding. Women have greater responsibilities at home from running an overburdened household and limited economic opportunities. In the Gaza Strip, 19% of the 139,910 refugee households are headed by a woman (Budeiri 1996). Overcrowding makes it more difficult for women to manage the home and carry out their multiple roles and responsibilities. It is more difficult for them to keep the home clean. Overcrowding in the home also jeopardizes women's privacy (Filfil 2000; Heiberg & Ovansen 1993; [Munro & Madigan 1993](#)).

The aim of this research was to investigate women's perception of the effect of housing environment on their health and well-being in Al-Ein refugee camp, in addition to studying the relationship between housing and women's physical health, mental health and well-being.

## **Methods**

The population of this study included all households in Al-Ein refugee camp. A cross-sectional survey using a preset questionnaire (semi-structured interviews) was conducted: a sample of 150 households were systematically selected, and a woman was chosen to be the

interviewee in each selected household. Out of the responding 150 women, 103 were married and 47 were single.

According to the Palestinian Central Bureau of Statistics (PCBS) 1999, the total population of Al-Ein refugee camp in 2002 was 4557 persons.

The study was carried out during the months of January and February 2002 through field visits to the selected households. The interviews lasted from 60–70 minutes. Women in the interview were free to express their own thoughts, perceptions, and ideas. A woman's perception of health is a reflection of her age and marital status. Therefore, three types of women were identified: young unmarried women, married women of childbearing age and older married and unmarried women.

The questionnaire contained questions including information about the family, social and economic profile, housing and living conditions, the health profile, information relevant to women's health and well-being, and the woman's perception of her own health. All women were asked about the definition of health, and the effects of housing environment on health. Many of the questions were left open ended in order to allow for maximal utilization of the data obtained during the period of analysis. Special questions were designed for married women and others for unmarried women.

Data obtained was coded and entered into the computer utilizing SPSS (Statistical Package for Social Sciences) software. The data was analyzed and cross-tabulated. The main tests used in the statistical analysis of the data were Chi-square tests.

Some additional qualitative data was obtained through interviewing key persons related to refugee camps.

## **Results**

### *The family social and economic profile*

Family size ranged from 2–37 members with an average of 8.06 members. The results show that 28.7% of the families had nine or more members, 14.7% had eight members, 20% seven members, 13.3% six members and 23.3% of the families had five members or less. The average number of males and females in the family was equal with four of each.

The age distribution of the mother, father, eldest son and eldest daughter are shown in Table II.

Regarding the job of the father, the results show that 22% are employees, 18.7% are workers, 2.7% are drivers, 36% don't work, and about 20.7% work in other different fields of work. Most of the women interviewed (90.7%) are housekeepers and 8.7% are employees. The economic status of most families is low with 28% having no source of income. Table III demonstrates the level of family monthly income in New Israeli Shekels (NIS) (1 NIS equals 0.23 \$US).

### *Housing conditions*

The residential units in Al-Ein camp are generally small, with 40% of the interviewed families having three rooms or less.

Concerning ventilation of the houses in the camp, it was found that 48% of the houses had only one window, 50% had two windows, and 2% of the houses had no windows at all and were poorly ventilated.

The houses are built mostly of concrete and bricks; most of them are the property of UNRWA. All houses have indoor toilets and health facilities connected to the water network

Table II. Age distribution of the mother, father, eldest son and eldest daughter.

Age in years	Mother		Father		Age in years	Eldest son		Eldest daughter	
	Valid %	Cumulative %	Valid %	Cumulative %		Valid %	Cumulative %	Valid %	Cumulative %
19–25	11.5	11.5	1.5	1.5	1–10	25.9	25.9	25.7	25.7
26–35	21.6	33.1	20.0	21.5	11–20	38.5	64.4	43.6	69.3
36–45	29.1	62.2	32.6	54.1	21–30	25.2	89.6	15.0	84.3
46–60	27.7	89.9	30.3	84.4	31–40	9.7	99.3	12.8	97.1
61–80	10.1	100.0	14.1	98.5	41–45	0.7	100.0	2.2	99.3
> 80	0.0	100.0	1.5	100.0	> 45	0.0	100.0	0.7	100.0

Table III. Level of family monthly income.

Income (NIS)	Frequency	Valid %
0–500	62	42.9
501–1000	30	31.5
1001–2000	36	36.7
2001–3500	18	12.5
Total	145	100.0

and electricity. Regarding the roof material, 43.3% were made of concrete, and 56.7% of reinforced concrete. The roofs made of concrete were mainly found in very old houses. In 5.3% of the houses there was water leakage from the roofs and the walls.

All of the homes in the survey were connected to the sewage system and no cesspool was recorded in this study. The available sewage system needs upgrading. Flooding of wastewater in the streets and contamination of drinking water from sewage is common. Many cases of diarrhoea were recorded in the camp health center. Regarding safety measures inside the house, 72% of women reported having no safety for their children.

#### *Measurement of overcrowding*

The houses in El-Ain camp are generally crowded. This is due to the large family size and limited area of houses and shortage of land. Table IV shows the different house area in the sample.

The average in-house living area per person in Al-Ein refugee camp was 10.38 m<sup>2</sup>, and the average number of persons per room in the sample was 2.68 m<sup>2</sup>.

Regarding human crowdedness worldwide, the accepted standards for human crowdedness rates consider one person/room as low density, 3–5 persons/room as high density and 5+ persons /room as overcrowded (Lowry 1991; Al-Khatib 2003). Out of the households surveyed, 70.7% had three or more children/room as shown in Table V. The average number of children per bedroom was found to be 3.56.

On the other hand, it was found that 27.4% of the families had two children sleeping in one bed, and 10.7% had three or more children sleeping in one bed. In addition, only 33.3% of women considered their houses as unhealthy ( $\chi^2 = 16.667$  and  $p = 0.000$ ).

#### *Women in Al-Ein refugee camp*

*Age profile, marital status and education.* Twenty percent of the women interviewed were younger than 19 years, 27.3% were between 20–29 years old, 18% were between 30–39 years old, and 34.7% were 40 years or older. Most of the women were married (57.3%), 29.3% were single, 10.7% were widows, and 2.7% were divorced.

The level of education of women in Al -Ein camp is very low. In this sample, 14.7% were illiterate, 48% had an elementary education, 16.7% had preparatory education, 10% secondary education (Tawjihi), and only 10.7% had post-secondary education. One hundred and seven out of 150 women were married. Most of them were married at an early age between 16–18 years old, 62% of them were first wives, while 5.3% were second wives. Multiple marriage is a feature present in Palestinian society, about 3% of men are married to two wives. One hundred and thirty-six (90.7%) of the married women in the camp were housekeepers. Only a few had the opportunity to go out to work.

Table IV. Range values, frequencies, and percentages of the area of houses.

House area (m <sup>2</sup> )	Frequency	Valid %
5–30	12	8.2
31–60	45	30.8
61–90	39	26.7
91–120	29	19.9
121–150	8	5.5
> 150	13	8.9
Total	146	100.0

Table V. Children room density rates in Al-Ein refugee camp.

Room density	Frequency	Valid %
Low density	44	31.7
High density	84	60.4
Overcrowded	11	7.9
Total	139	100.0

*Health profile and reproductive health of married women.* The fertility rate in general is high, with no adequate family planning, short spacing between births, and there is no regular use of family planning methods by the women. The most commonly used family planning method is the coil. There is a noticeable degree of abortion in the camp with 57.9% reporting experience of abortion, 36.2% suffering from pregnancy complications, and anemia diseases, and 39.2% of women reported not receiving any ante-natal care. It was found that 87.4% of married women suffer from physical illness. The relationship between the major health problems of married women and their opinion about whether their housing conditions were healthy or unhealthy are summarized in Table VI.

*Women's perception of the effect of housing conditions and crowding on their health.* Most interviewed women (96.7%) agreed that there is a great effect of housing conditions on health and well-being. About 50 women (33.3%), could see that the old building with cracked walls and roofs was an unhealthy house, and this affected their health indirectly, as they suffered from fear of collapse of their old house, which caused stress, anxiety and loss of sleep (mental problems).

Most women agreed that humidity and bad ventilation have bad effects on health. One hundred and fifteen (76.7%) related humidity and bad ventilation to diseases such as respiratory asthma, easier spread of communicable diseases, arthritis and joint pain, and 97.3% mentioned that there is a direct affect of humidity on health.

Nearly all women (97.3%) thought that crowding increases the spread of disease. Lack of clean air results in the spread of respiratory illness. In addition, 18.7% thought that crowding also caused lack of privacy, which leads to stress and increases the rate of home accidents.

## Discussion

The bad economic situation in Al-Ein refugee camp has directly affected the women's health, since their poverty has led to poor housing conditions, shortage of health care services, and living with the extended family.

Table VI. Major health problems of married women versus housing conditions.

Illness	Housing conditions	
	Healthy	Unhealthy
Back and neck	11	19
Chronic disease	26	41
Teeth problem	18	30
No illness	7	13
Total and percentage	62 (37.6)	103 (62.4)

( $\chi^2 = 17.816$ ,  $p = 00.000$ ).

The family size reflects a high fertility rate, which increases the difficulties of handling the daily chores of women and results in overcrowding. It was found that there is a negative statistically significant relationship between the married women's feeling of privacy in their house and the number of rooms in the house ( $\chi^2 = 17.144$ ,  $p = 0.031$ ), the total number of family members ( $\chi^2 = 32.467$ ,  $p = 0.037$ ), and the number of children that sleep in one room ( $\chi^2 = 23.674$ ,  $p = 0.010$ ). Most of the married women interviewed reported suffering from lack of privacy in their house, especially when 35.6% of their eldest sons and 30.7% of their eldest daughters are above 20 years old. The limited space in their houses occurs because 40% of the houses have an area of 60 m<sup>2</sup> or less, and this an uncommon situation in the Occupied Palestinian Territory, where most of the houses have an area of at least 100 m<sup>2</sup>. Thus, overcrowding in married women's houses results in a lack of private space and the inability to make decisions about their own lives. These stressful conditions may lead to problematic husband – wife relationships, stress, anger and frustration, and many other difficulties in their daily lives.

Seventeen (36.1%) out of the 47 young unmarried women mentioned suffering certain health problems such as continuous headaches without evident reasons, and 46 (97.9%) complained of irregular periods. These health problems reflect the effect of a stressful life in their crowded homes. Young unmarried women think that they are severely deprived of privacy. Due to their youth, they need some kind of privacy to dress and to sleep as they wish. But this is impossible in a crowded house with many brothers and sisters all watching and commenting on their behavior. Nineteen girls out of 47 (40.4%) young unmarried women, reported not inviting their school colleagues to visit them in the home, because crowded noisy homes are not suitable to offer the privacy wished for when peers visited. This situation, described by a Palestinian social science expert, Mr Faisal Al-Zaanoun, may lead to frustration and the feeling of social deprivation, and the girl may feel that she is not equal to her colleagues at school, which may lead to mental disorders. Also, due to the very limited space in the house, the parents' problems and anger are always exposed in front of the children and other family members. These problems, which are mostly caused by the lack of privacy and freedom inside the crowded home, may have a bad effect on the young girls who will look with fear to marriage in the future. On the other hand, young girls may escape from all this into early marriage without being adequately prepared for the task of the housewife. This may again lead to further physical and mental problems. According to Al-Zaanoun, boys and girls in Palestinian society are taught to know their specific role in the family and in the community. The young unmarried women are prepared to obey orders and to do housework, while the boys are prepared for decision-making and giving orders. In addition, housework tasks in overcrowded houses may pose a greater risk of health problems such as home accidents.

From Table VI, it is clearly seen that there is a strong relationship between married women's health and the housing conditions: the healthier the house, the more diseases and health problems. Repetitive use of the upper extremities by the women during the hard housework in an overcrowded house results in neck problems. Neck pain may also be a symptom of underlying disease. Neck pain usually arises from common activities in women's daily lives such as: straining the neck/shoulder muscles while lifting weights or moving items around the house and lack of rest ([Arien et al. 2000](#)). Back pain is also common among women in the camp, which has many causes, including overuse, trauma, degeneration of vertebrae, infection, or tumor. The hard work of women in poor housing conditions with very few helping devices, many children, faulty habits in sitting, standing, walking or lifting are often the precursor to pain, and no time for rest and no exercise all lead to back pain (American College of Rheumatology (ACR) 2002). Stress exhaustion is also a grave danger to a woman's health. Medical research has identified a direct link between diseases and stress. Poor housing is a major cause of stress for women, in addition to hard work. Living in an overcrowded, old house with cracks and badly ventilated humid rooms, in addition to lack of privacy exerting great stress on the women, depresses their immune system which would normally protect them against diseases and cancers. Stress exhaustion is also a major factor in mental illness. There are many conditions likely to be caused by stress, such as psychological distress, heart disease, chronic fatigue, anxiety, in addition to high blood pressure which is a common disorder among women in Al-Ein refugee camp (American Institute of Stress (AIS) 2003).

### **Conclusions and recommendations**

This research was performed to study the relationship between women's health in Al-Ein refugee camp and their housing conditions. The place of study is characterized by poor and overcrowded housing. The families live in poor economic conditions. The average size of the family is 8.06 members. Most of the families are extended, which causes the life of the women to be more difficult.

Women in Al-Ein refugee camp have a low level of education mainly due to early marriage and childbirth that have harmful effects on the mother's and child's health. In addition, they suffer from various types of physical and mental violence. This study revealed the women's perception of the effect of housing on their health. There was broad agreement among the women that there is a negative relationship between housing conditions such as humidity and ventilation and health, that overcrowded housing increases the spread of diseases, and that very small houses make housework more difficult in managing space with time and household members.

The houses in the camp are crowded, poorly ventilated, are built mostly of concrete and bricks, and most of the houses are the property of the UNRWA. Crowding affects women's physical and mental health. Nearly 90% of the married women suffered from physical illness, and the results show a significant relationship between crowding and suffering from lack of privacy and frustration.

From the analysis of the study's results the following recommendations can be drawn:

- Control should be made on the quality of construction standards in the camp and enough site engineers for this process of control should be provided.
- More attention should be paid to safety inside the home, e.g., protected stairs, plentiful light sources, provision of storage spaces for dangerous materials, and playing areas for children to protect them from accidents.

- Improvement of the camp health center to provide better prenatal and postnatal care, and social work.
- Housing polices should take into consideration the women's needs in the design of the home, furniture and facilities.
- Increase of funds and support to deliver environmental health and health education for women in the camp, including proper information about the health hazards of cleaning products and heating systems.

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