

# Cardiovascular Health in Urban, Rural, and Refugee Camp Communities

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## Background & Methods

### Introduction

Considerable evidence indicates that populations with optimal cardiovascular health (CVH) risk factors and health behaviors experience low rates of cardiovascular (CVD) events.

This suggests the need for population-wide approaches to avoid risk factors and unhealthy behaviors. Such approaches are essential to reach the World Health Organization's (WHO) goals of a 25% relative reduction in risk of premature mortality from CVD and other chronic diseases by 2025.

### Objectives

We use data from the Prospective Urban Rural Epidemiology (PURE) study to describe CVH in the West Bank of the occupied Palestinian territory (oPt).

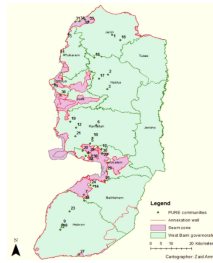
### Methods

#### Sample Selection

Baseline data were collected in 2012-2013 from 1,553 participants residing in 39 communities located in the West Bank.

The West Bank was stratified by region, into North, Center and South. A random sample of urban, rural, and refugee camp communities was selected from each region.

Rural communities were oversampled to include areas referred to as seam zone communities. These are Palestinian communities located between the separation wall erected by Israel and the Green Line.



#### Data collection

Data on sociodemographic characteristics and health behaviors, including smoking, physical activity and diet were collected using standardized forms. Blood pressure and anthropometric measures, including height and weight were collected by trained nurses using standardized equipment.

Fasting blood samples were separated within two hours of collection and stored in the laboratory at -20C at each study site. Blood sugar, total cholesterol (TC), triglycerides (TG), and high density lipoprotein cholesterol (HDL-C) were analyzed at UNRWA labs using standardized methods. Low density lipoprotein cholesterol (LDL-C) was calculated using the Friedewald equation (LDL-C = TC - (HDL-C + TG/5)).

### Participant characteristics

#### Characteristics of study participants, n=1,553

% Females	51%
Mean age, years (SD)	49 (9.9)
Education, % (n)	
None or primary	29% (454)
Secondary	56% (455)
Trade school or more	15% (229)
Community type, % (n)	
Urban	39% (611)
Refugee camp	19% (290)
Rural	42% (652)

## Results

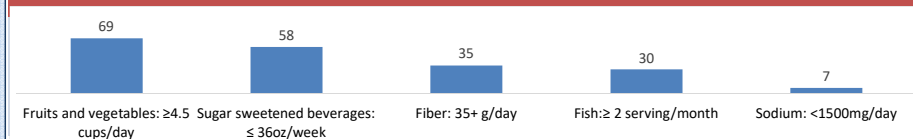
### Description of Individual CVH Scores

#### Estimates (%) and definitions of poor, intermediate, and ideal cardiovascular health (n=1,553)

	Poor	Intermediate	Ideal
<b>CVH behaviors</b>			
<b>Smoking:</b>			
Definitions	Current	Former ≤ 12 months	Never or quit >12 months
Prevalence, n(%)	465 (30%)	40 (3%)	1,046 (67%);
<b>Body mass Index:</b>			
Definitions	≥30 kg/m <sup>2</sup>	25-29.9 kg/m <sup>2</sup>	< 25 kg/m <sup>2</sup>
Prevalence, n(%)	669 (46%)	486 (34%)	289 (20%)
<b>Physical activity:</b>			
Definitions	MET score < 600	MET score 600-3000	MET score ≥3000
Prevalence n(%)	310 (21%)	438 (29%)	742 (50%)
<b>Healthy diet score:</b>			
Definitions	0-1 components	2-3 components	4-5 components
Prevalence, n(%)	518 (34%)	914 (60%)	103 (7%)
<b>CVH factors</b>			
<b>Total cholesterol:</b>			
Definitions	≥240 mg/dL	200-239 mg/dL or treated	<200 mg/dL
Prevalence, n(%)	41 (3%)	195 (14%);	1,150 (83%)
<b>Blood pressure:</b>			
Definitions	SBP ≥140 or DBP ≥90 mm Hg	SBP 120-139 or DBP 80-89 mm Hg or treated	SBP <120 or DBP <80 mm Hg
Prevalence, n(%)	229 (16%)	751 (52%);	459 (32%)
<b>Fasting plasma glucose:</b>			
Definitions	≥ 126 mg/dL	100-125 mg/dL or treated	<100 mg/dL
Prevalence, n(%)	256 (19%)	372 (27%)	756 (55%)

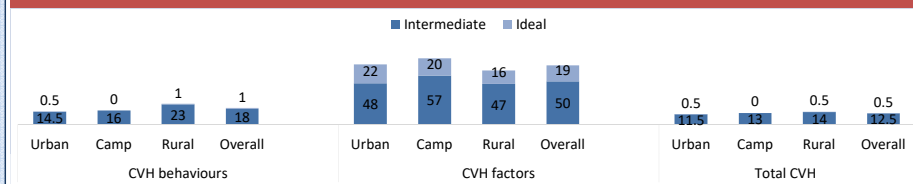
### Components of the healthy diet score

#### Participants who attained ideal individual components of the healthy diet Score, % (n=1,535)



### Composite CVH Scores by Type of Community

#### Intermediate or ideal CVH behaviors and CVH factors by type of community, % (n=1,287)



\*CVH behaviors score was poor if at least one behavior was poor (smoking, BMI, physical activity, and diet), intermediate if none were poor and at least one was intermediate, and ideal if the four behaviors were ideal.

\*CVH factors score was poor if at least one factor was poor (blood pressure, cholesterol, or blood glucose), intermediate if none were poor and at least one was intermediate, and ideal if the four factors were ideal.

\*Total CVH was poor if at least one of the seven metrics were poor (smoking, BMI, physical activity, diet, blood pressure, cholesterol, or blood glucose), intermediate if none were poor and at least one was intermediate, and ideal if all seven metrics were ideal.

#### Adjusted effects of community type on CVH behaviors and CVH factors (n=1,287)

Community	Intermediate or ideal CVH behaviors		Intermediate or ideal CVH factors	
	N	OR (95% CI)	N	OR (95% CI)
<b>Urban</b>	364	Reference	78	Reference
<b>Camp</b>	201	1.06 (0.70-1.60)	43	1.30 (0.91-1.87)
<b>Rural</b>	320	1.80 (1.30-2.48)	120	0.70 (0.53-0.93)

Odds ratios (ORs) represent ideal or intermediate cardiovascular health group (reference is poor cardiovascular health). Models are adjusted for education, sex, and age.

## Conclusions

### Discussion

Our analyses suggest that CVH in the Opt is intermediate among 13% of the participants and ideal among less than 1%.

Participants living in rural communities seem to exhibit healthier behaviors such as eating a healthier diet and are more physically active compared to urban communities. However, this is not reflected in health factors, where rural dwellers seem to have worse health factors, such as uncontrolled blood pressure.

One explanation, might be that although rural dwellers tend to participate in healthier behaviors, their access to healthcare facilities is limited and those with high blood pressure, blood glucose, or blood lipids, are not receiving appropriate healthcare to diagnose and control these risk factors.

When comparing refugee camps to urban communities, no differences were observed in terms of CVH behaviors. However, CVH factors appeared better in refugee camps. This could be explained by the availability of an UNRWA primary care clinic in each refugee camp to serve its residents.

### Recommendations

Overall CVH is low in the West Bank and population level interventions are required for any improvements and to prevent further increases in cardiovascular disease events and mortality.

Results suggest that interventions should be specific to the type of community. In urban and refugee camp communities, behavioral interventions, such as improving ones diet and quitting smoking are required. Rural areas need improved access to healthcare facilities and provision of higher quality of care when access is available.

It is important to continue to monitor these metrics using standardized definitions in order to assess the effectiveness of such interventions.

### Acknowledgments

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## References

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