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## Gender, depression and physical impairment: an epidemiologic perspective from Aleppo, Syria

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### Abstract

**Objective**—Examine the association of physical impairment with gender, depression, and socio-demographics in the community in Aleppo, Syria.

**Method**—We conducted a cross-sectional, population-based study in Aleppo on adults aged 18–65 ( $N = 2,038$ ). We used a computerized interviewer-administered structured questionnaire. Physical impairment was measured via an adapted 12-item World Health Organization, Health State Description Individual Questionnaire which includes both physical and emotional items. We used physical impairment items score to classify individuals into low, middle, and high physical impairment category. Self-report of physician-diagnosed depression and chronic diseases active in the past year and their current treatment status were obtained.

**Results**—Sample mean age (SD) was 35.3 (12.1) years, 55% were female, and 4.5% had depression. Female gender, low socioeconomic status (SES), and depression were associated with high physical impairment. Women had more impairment (OR = 3.35, 95% CI: 2.15–5.21) with little change after controlling for depression and chronic diseases, but significantly decreased after controlling for socio-demographics (OR = 1.51, 95% CI: 0.84–2.73). The association with low (vs. high) SES was prominent (OR = 2.48, 95% CI: 1.32–4.67) after controlling for all variables. Depression's association (OR = 4.85, 95% CI: 1.93–12.15) lost significance after controlling for chronic diseases (OR = 2.81, 95% CI: 0.96–8.25), but further adjustment for socio-demographics had little effect.

**Conclusion**—Women and individuals of low SES appear more vulnerable to physical impairment in the community in Aleppo. Depression's association with physical impairment may be mediated through co-existing chronic diseases. Public health planning regarding physical impairment in Syria should encompass these as putative risk factors.

## Keywords

Physical impairment; Gender; Depression; Epidemiologic studies; Syria

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## Introduction

Physical impairment is a very important element associated with depression. Indeed, in a World Health Organization study on Global Burden of Disease (GBD), depression was the fourth leading cause of GBD accounting for 4.4% of total disability-adjusted life-years (DALY) in the year 2000. In the Mediterranean region it rated fifth, just below heart disease, accounting for 3.5% of DALY [29]. There are several methods of assessing physical impairment. For example, the DALY measures premature death and years of healthy life lost in states of less than full health, broadly termed disability [16]. Other methods assess functional impairment via rating scales or by calculating lost productivity such as days absent from work [23]. The functional impairment includes both physical and psychological aspects. Indeed, as physical symptoms in depression are considered a public health concern [21], the functional impairment associated with depression does include physical impairment [5,30]. Further, depression has been shown to predate the onset of physical impairment [17]. Study of the association between physical impairment and depression should occur in the context of chronic diseases for several reasons. First, the co-morbidity of depression and chronic disease is common [20,26], a finding we replicated in an epidemiologic sample in Aleppo, Syria [12]. There is also evidence to suggest that such co-morbidity increases disability and cost [3,7,25]. Finally, depression may indirectly exacerbate physical impairment through poor adherence to treatment of co-existing chronic diseases [6] and treatment of depression is shown to improve it [24]. Demographic and socio-cultural factors are relevant to the development of physical impairment. For example, women appear to be more prone to physical impairment associated with depression [33] and Ballantyne proposed gender mediates the effect of adverse socioeconomic factors on health leading to compromised health in women [2]. Physical impairment associated with depression is reported across different cultures [18]. In the Arab world stigma relating to mental illness is prominent, therefore research on depression, especially from an epidemiologic perspective is very limited and the examination of depression in relation to chronic physical conditions is even more lacking. We found one cross-national study on the topic in the Arab World which included Lebanon, an Arab country neighboring Syria [22]. These researchers reported a modest synergistic effect of co-morbid mental disorder with a physical disorder on severe disability. In this report, we aimed to examine the association between depression and physical impairment utilizing an epidemiologic sample from Aleppo, Syria. We focused on the role of gender in light of gender disparities in the Arab world and above mentioned evidence of women's vulnerability to physical impairment. We should note that given our cross-sectional design such an association does not imply causality. To the best of our knowledge this is the first such report from Syria.

## Methods

### Participants/sampling

We used the Aleppo Household Survey (AHS) conducted in 2004 by our Syrian Center for Tobacco Studies (SCTS). The AHS is a population-based health survey of households in Aleppo, Syria (population 2,500,000). We used a two-stage, stratified, cluster sampling with target population divided into two strata formal and informal zones. These are haphazard residential areas where poor and working-class families have settle in clusters at the periphery of Aleppo. Settlers have typically built houses and shops without formal approval from the municipal authorities. These peri-urban residential areas have rapidly outgrown Aleppo's

projected plans for expansion, which placed a strain on existing municipal resources and caused difficulties in keeping pace with building basic infrastructure or providing essential services. Further details are described elsewhere [9]. The target population was adults 18–65 years of age. Details of methodology, sampling, and survey development are discussed elsewhere [15]. Response rate was 86%, achieving a sample size of 2,038 (921 male, 1,117 female).

## Procedures

We used an interviewer-administered survey. Six 2-person teams of surveyors equipped with notebook computers recorded questionnaire responses via a custom data entry program (Delphi programming language and SQL server DBMS). All interviewers successfully completed a week long training course on the survey manual and software. Additionally, each day a member of the administrative team accompanied one team to assure the quality of data collection. Data were reviewed daily using a setting of validation rules, including checks for missing responses, out of range values, date and time inconsistencies, logical inconsistencies between certain items, and consistency of obtained data across interviewer teams. All study participants underwent a thorough structured interview. The questionnaire included sections on demographics, social, health-related issues (depression, chronic diseases, smoking), and physical impairment. The protocol and informed consent were approved by the Institutional Review Boards at the University of Memphis, Tennessee and the SCTS. All participants provided informed consent.

## Variable measures

Dependent variables included physical impairment and receiving medical treatment for chronic physical disease:

### Physical impairment

This was measured via an interviewer-administered scale we adapted from the World Health Survey's Individual Questionnaire, Health State Descriptions section [32]. The 12-item scale assesses past year physical and emotional impairments (Table 1). Items are scored as follows: none = 0, mild = 1, moderate = 2, severe = 3. Given the focus of our study, our goal was to extract a physical impairment component of the scale and minimize the emotional dimension of impairment. Items which do not represent physical impairment (e.g. feeling blue and depressed, difficulties with concentrating and remembering, problems with sleeping) were excluded. Additionally, we performed exploratory factor analysis on the full 12-item scale. The criterion chosen to determine that an extracted factor accounted for a reasonably large proportion of the total variance was based on an eigenvalue greater than 1. A principal components analysis extraction procedure and equamax method rotation procedure was performed. This revealed two components I and II with eigenvalues of 3.9 and 1.2. Equamax rotation resulted in two factors, factor I represented physical impairment and factor II emotional one. The physical factor six items were: difficulties with mobility, pains and aches, suffering from back pain, difficulties with self care, difficulties with vision, and problems of teeth or gum. The item "feeling tired and exhausted" had comparable loading on the physical and emotional factors and was thus excluded. Items and the findings of principle component analysis are detailed in Table 1. The physical impairment items score range is 0–18 which we stratified into three tertiles, the lower tertile with a score of 0–3 as low; 4–7 as middle; and 8–18 as high.

**Independent variables included**—*Demographic factors*: age and gender. Ethnicity (Arab vs. non-Arab) is considered more of a national than a racial/ethnic difference, and was thus included under social factors.

*Social factors:* included marital status, ethnicity, religion, level of education, work status, and income. Work status, number of people working for money within household, income, education level, item ownership, and household density (number of individuals living in the household divided by the number of rooms) were included in socio-economic status (SES). Each of these variables was given a score of 0 (low), 1 (medium), or 2 (high) and then a mean score was calculated. Details of how SES is calculated are described elsewhere [8]. Higher scores indicate better SES. In order to differentiate between meaningful gradients in SES in a population, the score was stratified into three tertiles to construct low, middle, and high SES categories. We should note that SES refers to the individual rather than the household.

*Health factors:* we obtained information on depression and chronic diseases. Depression was deemed present if, based on interview questionnaire; the subject reported that a physician diagnosed him/her with depression in the past and endorsed having suffered from depression in the past year. Depression severity was not rated. We also asked subjects if they had any of the following chronic diseases ever diagnosed by a physician: heart disease, stroke, diabetes, chronic respiratory diseases (asthma, chronic bronchitis, and chronic obstructive pulmonary disease), rheumatism, peptic ulcer disease, kidney disease, and liver disease. Henceforth, all references to depression and chronic diseases indicate their presence in the past year. Additionally, we obtained information as to whether subjects were receiving active medical treatment for each of their reported chronic diseases. We used this measure as an outcome to assess whether depression is associated with a decreased likelihood of receiving treatment for co-existing physical diseases.

### Statistical analysis

Descriptive statistics were calculated for the overall study population. Scale data were expressed as mean  $\pm$  standard deviation; while categorical data were expressed as percent and number of cases for each level. We used logistic regression modeling to assess the relationship between physical impairment and depression with a focus on the role of gender. To account for the complex survey design, sampling weights was calculated as combination of strata weight (formal/informal zone); cluster weight (neighborhood) and household members weight (number of adults age 18 and over living at the household) [28]. Applying sampling weight overcomes the underestimate and/or overestimate of the standard error caused by the complex design [11]. Because the sample had a different age-gender structure from the Syrian population, post-stratification technique was used with Syrian population 2004 as the reference [11]. Variances of parameter estimates are computed according to the Taylor linearization method. A series of four multinomial logistic regression models were constructed to assess correlates of physical impairment, with low impairment (score 0–3) being the reference category. Initially (model 1) we entered age and gender. In model 2, we added depression. In model 3, we adjusted for the same variables as in model 2 plus chronic diseases and daily cigarette smoking. We adjusted for daily smoking since it may be associated with depression [19] as well as physical impairment. In model 4, we adjusted for variables in model 3 plus the following socio-demographic factors: residence, education, occupation, socio-economic status, marital status, religion, and ethnicity. We included ethnicity here since Arab/Non-Arab distinction is considered more of a social/national identity than a genetically dissimilar racial group. We did not include presence of liver disease in the models as including it caused a quasi-complete separation in the data. In that instance the odds ratio estimation becomes infinite and the likelihood equation does not have a finite solution. These models allowed us to examine whether the association of impairment with gender (model 1) relates to depression (model 2), co-existing chronic diseases (model 3) or socio-demographic factors (model 4). In Table 4 A and B we report the results of these models in terms of odds ratio (OR) and 95% confidence interval (CI). To assess the relationship between depression and treatment of co-existing chronic diseases, we initially conducted a simple chi square test. Subsequently, we conducted

a set of three logistic regression models with receiving treatment for any disease as the outcome and depression as the independent variable. Analyses was performed on individuals who have any of the chronic diseases described above ( $N = 950$ ). Model 1 was unadjusted; models 2 adjusted for chronic diseases and model 3 adjusted for chronic diseases plus socio-demographic factors. Analyses were performed using SPSS version 15.

## Results

Sample characteristics are shown in Table 2. We note 39% of women versus 53% of men have above sixth grade education. Also, 82% of women versus 7% of men were unemployed. Since these two factors are included in the socio-economic status (SES) score, 55% of women versus 20% of men were of low SES. Overall, 4.5% of participants had depression, with higher rates in women than men (6.1 and 2.6%, respectively,  $p < 0.001$ ).

In Table 3 we present sample physical impairment in chronic diseases and depression, both as mean score and category (low, middle, and high impairment). We note that mean impairment score in depression is elevated and comparable to heart disease, diabetes and rheumatism. Also, 89% of patients with depression belong to either middle or high impairment groups, which is similar to diabetes (89%), heart disease (90%) and rheumatism (88%).

In Table 4A and B we present four regression models for middle and high physical impairment, respectively. The most prominent finding was the association of gender and SES with physical impairment. Female gender was associated with significantly more physical impairment in the first three models, but the association was lost after controlling for socio-demographic factors. Low SES was the only socio-demographic factor significantly associated with both middle (OR = 1.76) and high (OR = 2.48) physical impairment. Depression was also associated with physical impairment, but lost significance after controlling for chronic diseases. Univariate ANOVA modeling did not reveal depression by chronic disease or depression by gender interactions.

We then examined the association between receiving treatment for any co-existing chronic disease and past year depression. 65% of subjects with depression versus 48% of subjects without depression received such treatment ( $p = 0.004$ ). This pattern was true in females, where 69% of those with depression versus 49% without depression received such treatment ( $p = 0.003$ ). This was not the case in males, where 53% of those with depression versus 47% without depression received such treatment ( $p = 0.62$ ). This gender-specific association was confirmed in regression models after controlling for age, chronic diseases, and socio-demographic factors. Individuals with depression were more likely to receive treatment for any chronic disease (OR = 1.93, 95% CI: 1.10–3.41), and the association was present in women (OR = 3.11, 95% CI: 1.57–6.15), but not in men (OR = 0.69, 95% CI: 0.20–2.41). The association in women was not attenuated after controlling for chronic diseases and socio-demographic factors.

## Discussion

In this first epidemiologic report of physical impairment in Syria, we found such impairment to be significantly associated female gender and low socio-economic status. The higher rate of physical impairment in women has been reported. In epidemiologic sample from the US, Wary and Blaum [33] found women's higher odds of difficulties with activities of daily living are "largely explained by social and health-related co-variables in middle aged and older adults". In our sample, the association did not decrease after controlling for depression, slightly decreased after controlling for chronic diseases, and significantly decreased after controlling for socio-demographic factors. Hence, the association in our sample is not explained by the higher rate of depression in women; chronic physical diseases may play a part in the association;

whereas socio-demographic factors, especially low SES, may explain this association. Ballantyne proposed that gender mediates the effect of adverse socio-economic factors on health leading to compromised health in women [2]. This maybe a very important factor here especially since gender disparities are prominent in the Arab world. Indeed, the Arab Human Development Report Series over the past few years highlight achieving equality for women as a core requirement in the development of the Arab world [27]. We commented earlier on the higher rates of low SES in women in our sample. In the sample as a whole, low SES was associated with increased physical impairment, a finding consistent with the literature from Western countries [13,14]. The impact of disparities endured by women and the adversities of low SES appears to be similar across different national and cultural backgrounds.

Depression was also associated with physical impairment. This finding is again consistent with studies in Western countries [5,10,30]. Our regression modeling revealed, after controlling for chronic diseases (model 3), this association decreased from OR = 4.85 to OR = 2.81 (becoming non-significant) in the high impairment group. This suggests the association may stem from co-existing chronic diseases. Further adjustment for socio-demographic factors (model 4) revealed no appreciable change, indicating the association of depression with physical impairment is more related to co-existing chronic diseases than socio-demographic factors. The significance of depression's association with impairment becomes evident due to its high rate (4.5%) in this community sample which we reported previously [12]. This finding is consistent with the WHO assessment of the high contribution of depression to disease burden in the world [29]. We should note that higher associations, hence the role of gender and socio-demographics is more evident in individuals with more severe impairment.

Studies have shown that depression is associated with poor adherence to medical treatment [6,31] leading to worse outcome. Therefore, the association between depression and physical impairment may be mediated through poor adherence. We examined this in our sample and found no evidence to support this occurrence. Rather, individuals with depression were twice as likely to be currently receiving treatment for a co-existing chronic disease. This is contrary to what has been reported. Several factors may explain our finding. Depression per our assessment denotes past year, and not necessarily active, depressive symptoms and the latter are more likely to impact adherence. Also, ascertainment bias may have occurred. It is possible that a common predisposing factor to both treatment of co-existing chronic diseases and diagnosis of depression is present in our sample. Stigma regarding mental illness is very prominent in Syria and leads to avoidance of assessment and subsequent diagnosis of depression. As a result, health aware individuals may be more likely to overcome such stigma and seek assessment and subsequently be diagnosed with depression. These same individuals would be more likely to seek treatment of chronic diseases. Thus, health awareness may be a common predisposing factor to both outcomes. This hypothesis is supported by proposed alternative models regarding the association between poor outcome and depression; where adherence to treatment is seen as preceding both, rather than mediating between, depression and outcome [31]. The gender-specificity of this association may derive from different health behavior patterns between women and men in Aleppo.

## Limitations

Several limitations in our study should be highlighted. We used self-report of physician diagnosed depression and chronic diseases. Given prominent stigma and poor resources related to diagnosis and treatment of mental illness in Syria our experience indicates that individuals with depression are more likely to receive diagnosis and treatment from primary care providers. We suspect milder cases are likely to be undiagnosed creating a bias toward more severe cases being identified. There is no data in Syria on the ability of primary care physicians to diagnose depression, but reasonable detection in primary care is reported elsewhere, especially of cases

that are of greater severity. In Italy, Balestrieri et al. [1] found primary care physicians' ability to detect depression to be "satisfactory" in moderate to severe cases and better than detecting milder cases. Brown and Schulberg [4] in a review article reported depression detection rates in primary care in USA to vary between one to two thirds of cases.

We extracted items related to physical impairment from a WHO adapted scale that included items representing both physical impairment and emotional symptoms. In addition to face validity of the physical impairment items, principal component factor analysis with equamax rotation lends further support to their validity. Although pain is not a direct measure of physical impairment, it is associated with such impairment. Consistently positive correlation in our data between pain items and pure physical impairment items such as difficulty with mobility and difficulty with self care supported this association. Also, it may be argued that our low, middle, and high impairment groups do not coincide with corresponding severity levels from a clinical perspective. Analysis of physical impairment score showed similar findings regarding the association with depression and chronic diseases. Another issue is ascertainment bias since individuals who are more likely to seek treatment would also be more likely to get diagnosed with depression. However, even if this bias is present it should not affect the central finding in our study, which is the association of depression with physical impairment. Indeed, depressed women were more likely to seek treatment and had more physical impairment making our finding more compelling. Regarding treatment, we did not measure adherence to medications directly; rather we used a proxy measure of receiving any treatment for co-existing chronic diseases. This crude measure sets a lower threshold for adherence. We should be cautious about applying our result to actual adherence to medication. Although our findings may not generalize to other settings or Arab countries, our sample included adults from a wide range of socio-demographics in an urban setting with equal gender representation. Finally, we should underscore that our study depicts association, and not causality, of these factors with physical impairment.

## Conclusion

Women and individuals of a lower socio-economic status are more likely to suffer from physical impairment in the community in Aleppo. Depression is also associated with such impairment possibly mediated through co-existing chronic diseases. These findings are consistent with studies from other countries and cultures. Public health planning should encompass aforementioned vulnerability factors when addressing physical impairment in communities in Syria.

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**Table 1**

Factor analysis of the health state descriptions, individual questionnaire items

Items	Component	
	1	2
Past year difficulties with mobility	0.787	0.075
Past year pains and aches	0.678	0.282
Past year suffering from back pain	0.606	0.184
Past year difficulties with self care	0.570	0.043
Past year feeling tired and exhausted	0.495	0.415
Past year difficulties with vision	0.377	0.198
Past year problems of teeth or gum	0.344	0.129
Past year difficulties with concentrating and remembering	0.336	0.404
Past year problems with sleeping	0.256	0.566
Past year suffering from anxiety and stress	0.238	0.761
Past year feeling blue and depressed	0.169	0.754
Past year difficulties with personal relationship	0.029	0.740

**Table 2**Sample characteristics of study participants ( $N = 2,038$ )

	Men % (N)	Women % (N)	Total % (N)
<i>N</i>	921	1,117	2,038
Living in a formal residence	49.0 (451)	50.7 (566)	49.9 (1,017)
Ethnicity: Arab	79.3 (730)	80.3 (895)	79.9 (1,625)
Religion: Muslim	96.3 (884)	94.5 (1054)	95.3 (1,938)
Married	77.1 (710)	74.7 (834)	75.8 (1,544)
Education			
Years of education $\leq 6$	47.3 (436)	61.2 (684)	55.0 (1,120)
Years of education $> 6$	52.7 (485)	38.8 (433)	45.0 (918)
Employment			
Employed or student	92.7 (854)	18.2 (203)	51.9 (1,057)
Unemployed	7.3 (67)	81.8 (914)	48.1 (981)
Socio-economic status category			
Low: (0–3)	19.5 (180)	54.7 (611)	38.8 (791)
Middle: (4–5)	42.3 (390)	28.6 (320)	34.8 (710)
High: (6–12)	38.1 (351)	16.7 (186)	26.3 (537)
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD
Age	36.4 $\pm$ 12.2	34.3 $\pm$ 11.9	35.3 $\pm$ 12.1

*SD* standard deviation

**Table 3**  
Physical impairment score and category in individuals with depression and chronic diseases

	N	Impairment score (Mean ± SD)	Impairment category		
			Low % (N)	Middle	High
Depression	92	8.18 ± 4.01	10.9 (10)	37.0 (34)	52.2 (48)
Heart disease	96	8.92 ± 3.76	10.4 (10)	21.9 (21)	67.7 (65)
Hypertension	259	7.93 ± 3.86	13.9 (36)	32.4 (84)	53.7 (139)
Stroke	22	9.45 ± 4.15	4.5 (1)	27.3 (6)	68.2 (15)
Diabetes	89	8.56 ± 3.97	11.2 (10)	27.0 (24)	61.8 (55)
Rheumatism	304	8.37 ± 3.84	11.8 (36)	27.3 (83)	60.9 (185)
Peptic ulcer	239	7.59 ± 3.90	16.3 (39)	33.9 (81)	49.8 (119)
Kidney disease	261	7.99 ± 3.81	13.4 (35)	29.5 (77)	57.1 (149)
Chronic respiratory disease	257	7.06 ± 4.00	21.4 (55)	35.8 (92)	42.8 (110)
Liver disease	23	9.48 ± 3.88	0 (0)	39.1 (9)	60.9 (14)
Total	2,038	5.63 ± 5.63	34.2 (696)	35.5 (724)	30.3 (618)

SD standard deviation

**Table 4**

Physical impairment in complex sample logistic regression models

	<b>Model 1 OR (95% CI)</b>	<b>Model 2 OR (95% CI)</b>	<b>Model 3 OR (95% CI)</b>	<b>Model 4 OR (95% CI)</b>
(A) Correlates of middle (vs. low)				
Age	1.04 (1.03–1.06)	1.04 (1.03–1.06)	1.04 (1.02–1.06)	1.04 (1.02–1.06)
Gender: female	2.15 (1.39–3.33)	2.13 (1.37–3.30)	2.09 (1.29–3.37)	1.55 (0.87–2.76)
Depression		2.26 (0.77–6.64)	1.77 (0.59–5.35)	1.76 (0.62–5.03)
Heart			0.81 (0.17–3.78)	0.90 (0.19–4.35)
Hypertension			1.44 (0.63–3.30)	1.31 (0.61–2.84)
Stroke			1.41 (0.11–18.77)	1.68 (0.10–28.18)
Diabetes			1.57 (0.51–4.84)	1.38 (0.42–4.56)
Rheumatism			2.22 (1.24–4.00)	2.14 (1.21–3.80)
Peptic ulcer			1.82 (0.97–3.40)	2.12 (1.09–4.11)
Kidney			1.76 (1.08–2.89)	1.63 (1.02–2.61)
Respiratory			1.39 (0.68–2.85)	1.43 (0.79–2.62)
Smokers			1.07 (0.72–1.61)	1.09 (0.75–1.59)
Non-Muslim				1.69 (0.78–3.66)
Non-Arab				1.04 (0.65–1.65)
Married				1.00 (0.65–1.54)
Formal zone				1.35 (0.85–2.16)
Education ≤6 years				1.03 (0.64–1.64)
Employed/student				0.76 (0.40–1.42)
SES				
Low versus high				1.76 (1.09–2.84)
Middle versus high				1.69 (1.13–2.54)
(B) Correlates of high (vs. low)				
Age	1.07 (1.06–1.09)	1.07 (1.06–1.09)	1.05 (1.03–1.07)	1.04 (1.02–1.06)
Gender: female	3.35 (2.15–5.21)	3.23 (2.09–4.99)	2.98 (1.87–4.76)	1.51 (0.84–2.73)
Depression		4.85 (1.93–12.15)	2.81 (0.96–8.25)	2.61 (0.91–7.52)
Heart			2.24 (0.77–6.46)	2.17 (0.81–5.77)
Hypertension			1.72 (0.81–3.64)	1.53 (0.72–3.22)
Stroke			1.83 (0.10–33.00)	1.12 (0.09–13.16)
Diabetes			2.84 (0.88–9.20)	2.66 (0.81–8.76)
Rheumatism			6.14 (3.37–11.18)	6.18 (3.23–11.81)
Peptic ulcer			2.66 (1.53–4.63)	2.83 (1.63–4.92)
Kidney			6.67 (3.61–12.35)	6.38 (3.44–11.83)
Respiratory			1.45 (0.79–2.68)	1.61 (0.90–2.88)
Smokers			1.28 (0.75–2.17)	1.29 (0.77–2.14)
Non-Muslim				1.03 (0.54–1.97)
Non-Arab				1.39 (0.80–2.41)
Married				1.26 (0.79–2.01)
Formal zone				1.29 (0.78–2.13)

	<b>Model 1</b> <b>OR (95% CI)</b>	<b>Model 2</b> <b>OR (95% CI)</b>	<b>Model 3</b> <b>OR (95% CI)</b>	<b>Model 4</b> <b>OR (95% CI)</b>
Education $\leq$ 6 years				1.16 (0.73–1.84)
Employed/student				0.59 (0.31–1.12)
SES				
Low versus high				2.48 (1.32–4.67)
Middle versus high				1.64 (0.92–2.94)

OR odds ratio, CI confidence interval, SES socio-economic status