

<http://mc.manuscriptcentral.com/jph>

How are the undocumented migrants in Rome? Assessment of quality of life and its determinants among migrant population.

Journal:	<i>Journal of Public Health</i>
Manuscript ID	JPH-15-0552.R1
Manuscript Type:	Original Article
Date Submitted by the Author:	22-Apr-2016
Complete List of Authors:	D'Egidio, Valeria; Sapienza University, Mipatrini, Daniele; Sapienza University of Rome, Public Health and Infectious Diseases Masseti, Anna; Sapienza University Vullo, Vincenzo; Sapienza University La Torre, Giuseppe; Sapienza University of Rome, Unit of Clinical Medicine and Public Health
Keywords:	Quality, Communities, Cultural identity

SCHOLARONE™
Manuscripts

1
2
3 **How are the undocumented migrants in Rome? Assessment of quality of life**
4 **and its determinants among migrant population.**
5
6
7

8
9 D'Egidio V¹, Mipatrini D¹, Massetti AP¹, Vullo V¹, La Torre G¹.

- 10
11 1. Department of Public Health and Infectious Diseases of Sapienza University of Rome, Italy
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Peer Review

Aim

The aim of this study is to evaluate the level of Health Related Quality of Life (HRQoL) and its determinants among migrants in irregular situations in Italy.

Methods

This cross-sectional study was held in Rome in 2014. HRQoL was assessed through SF-12 questionnaire and Physical (PCS) and Mental Component Scores (MCS) were calculated; socio-demographic information and medical conditions were collected. Bivariate and multivariate analyses were performed to assess the impact of demographic and pathological variables on the HRQoL.

Results

The median PCS among the 200 migrants enrolled was 46.5 and the median MCS was 37,9, some points below the Italian average. The multivariate analysis revealed a negative association between PCS and age ($P < 0.01$), respiratory ($P: 0.03$) and Poverty Related Diseases (PRDs) ($P < 0.01$). MCS, on the other hand, resulted negatively associated with neuropsychiatric diseases ($P: < 0.01$) and PRDs ($P < 0.01$).

Conclusion

Although multivariate analyses revealed that gender acts as an effect modifier the negative association between PRDs and the two dimensions of HRQoL is confirmed in both genders. This suggests a great impact of socio-economic status on the HRQoL. Public health could contribute to improve the HRQoL of migrants only taking into account social aspects of diseases and tailoring intervention on the specific needs of migrants.

Background

Health- Related Quality of Life (HRQOL) is a multidimensional construct which includes physical, emotional and social health dimensions as delineated by the WHO. (1)

A wide range of research experiences conducted worldwide have showed a decrease in the HRQOL in specific adult migrant populations compared to the native population. (2,3) In the US, minority groups have been found to have a lower quality of life levels.(4,5) In Switzerland children of migrant parents have been found to have lower HRQOL scores than children of non-migrant parents.(6)Latino immigrants in primary care in Los Angeles have impairments in mental health and health-related quality of life mainly due to high prevalence of exposure to political violence before immigrating to the United States. (7) According with a Spanish study Moroccan immigrants, compared to Moroccans living in Morocco, are protected in almost all dimensions of HRQOL but not for the onset of symptoms of anxiety and depression. Spanish people show higher rates of HRQoL compared with Moroccans immigrants but differences seem to be highly dependent on social support variables.(8)

Immigration is a relatively recent phenomenon in Italy, the net migration balance became positive only in the last quarter of the 20th century and now Italy can be recognized as a country of immigration. In a global scenario a migratory flow is going on from the South to the North, from the East to the West of the world and Italy represents a key entry point. (9,10) From 2011 following the North Africa turmoil and the geopolitical instability the migrant flow towards Italy has sharply gone up and continues to increase leading to dramatic disasters still 4 years after the emergency. (11)

Migrants in Italy represent 7% of the total population and are mainly regularly present in the country. However a consistent percentage is in irregular conditions, posing challenges for the National Healthcare Service (NHS). (12) Although the Italian legislation ensures urgent, essential and continuous care to migrants, even in irregular situation, they are still more exposed to health risks than autochthonous citizens. (13,14)

More than other categories the weight of health determinants affects their health status: migration, in fact, leads to deep transformations in people's life as social and family relationship, climate, language culture and diet changes. Moreover migrants break down the existing social ties and strive to adapt their life to a new social and cultural environment often unconnected with their previous world. (15)

In Italy according with our knowledge only one study evaluated the HRQoL among migrant population. Domnich and colleagues compare migrant with Italian population and assesse the causes of low HRQoL levels. Lower scores in the physical dimension of HRQoL were associated with the presence of morbidities and immigration for work and religious reasons, while those who had migrated for family reasons displayed a lower probability of lower scores in the mental dimension of HRQoL. Moreover mental component of the index was significantly lower than the physical one. (9) HRQoL has been

1
2
3 proven to be a quick and effective tool to assess the health status considering socio-
4 economic determinants. (16) Nevertheless no study was conducted on irregular migrants in
5 relation to HRQoL.
6

7 8 **Aim**

9
10 The aim of the present study is, therefore, to evaluate the level of HRQoL of migrants in
11 irregular situations in Italy and its determinants.
12

13 14 **Methods**

15 16 17 **Study design, setting, participants**

18 Enrollment in this cross-sectional study took place between June and September 2014. To
19 be eligible for inclusion, subjects had to be born abroad, not have Italian nationality, have
20 a sufficient knowledge of Italian, English, French, or Spanish in order to talk with the
21 interviewer, and to be Foreign person temporary present (STP) without the residency
22 permit.
23

24 Patients were recruited in the STP outpatient clinic of the teaching hospital Policlinico
25 Umberto I in Rome. All participants were contacted personally and were informed about
26 the objectives of the survey and the voluntary nature of participation.
27
28

29 30 **Questionnaire and variables**

31 Anonymous questionnaires were administered to participants. Questionnaires were
32 composed by two parts:
33

- 34 • the Short Form Health Survey (SF-12) assessing the HRQoL. The SF-12 yields two
35 composite scores, the Physical Component Score (PCS-12) and the Mental Component
36 Score (MCS-12), a higher score corresponds to a better health status; (17)

37 An Italian version has been adopted, similar experience has been performed in Germany
38 among ethnic groups with the German version. (18)

- 39 • socio-demographic characteristics and immigration background (gender, age, birth of
40 country, year of arrival in Italy).
41

42 Moreover pathological conditions were obtained by the outpatient records.

43 Diseases were classified in different categories. The category Poverty Related Diseases
44 (PRDs) was created according with the WHO document "Diseases of poverty". (19)
45 Conditions included in the category are listed in table 1.
46

47 Only fully completed questionnaires were considered.

48 All results were recorded on paper and subsequently filled into the database.
49
50

51
52 **Insert table 1 here**
53
54

55 56 **Statistical analysis**

57 Statistical analysis included descriptive statistics (mean, standard deviation and
58 proportion) and inferential statistics. In order to assess association between PCS and MCS
59 of HRQoL and socio-demographic variables non parametric test were performed: the
60

1
2
3 Mann Whitney test was applied for dichotomous qualitative variables (civil status,
4 smoking status, years of detention, nationality) and the Kruskal Wallis' test for
5 qualitative variables with more than two modalities (geographical area).

6
7 Multivariate linear regression analyses were performed. According to Hosmer and
8 Lemeshow variables associated to PCS and MCS with probability level of 0,25 or less at the
9 bivariate analysis were included in the model. (22) The model chosen was the
10 multivariate with backward elimination. Only covariates still present at the last
11 elimination step were reported in tables 4 and 5. Multivariate analyses were performed
12 for males and females separately, in order to assess whether gender acted as effect
13 modifier. The goodness of fit of the models was tested using the value of R^2 (the larger the
14 value, tending to 1, the better the model). Statistical significance was set at $p < 0.05$. The
15 statistical package used was SPSS for Windows, release 21.0.
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Results

Out of 215 200 agreed to be interviewed (93%). Table 2 shows the demographic characteristics of the sample and differences between male and female patients in terms, geographical area of origin and clinical history. Males come mainly from Asia (45.5%) and Africa (38.6%) while the majority of females interviewed come from Europe (49.1%) and South America (21.8%). In terms of diseases the diabetes, Poverty-Related Diseases (PRDs) and gastrointestinal diseases occurred more often among males while the other conditions are equally distributed among the two genders. Only 18% of female population refers problems in access the NHS while among males 40% encounter problems.

Insert Table 2 here

Insert Table 3 here

The median PCS among the 200 participants was 46.5, with younger patients showing higher levels of PCS ($P: <0.01$) and Africans showing the best physical QoL and patients from South America the worst ($P: 0.05$). No differences were observed between males and females.

Median MCS among the studied population was 37,9 and not differences were observed for gender, age groups or geographical origin.

Insert Table 4 here

The multivariate analysis reveals the negative impact on PCS of age ($\beta: -0.41$; $P < 0.01$) and PRDs ($\beta: -0,20$ $P < 0.01$) and a positive association with diagnosis of diabetes ($\beta: 0,14$; $P: 0,04$). It is important to underline that the clinical history has been taken from each patient attending the surgery. The comparison is between patients affected by different kind of diseases and not between patients and healthy people. Diabetes compared with other pathologies may be better controlled.

A multivariate analysis stratified for gender shows different associations among gender with clinical diagnoses and geographical origin. Males confirm what shown for general population while PCS among females results positively associated with the Asian origin ($\beta: 0.24$; $P: 0.04$) and negatively with age ($\beta: -0.34$; $P: <0.01$) and cardiovascular diseases ($\beta: -0.30$; $P: 0.01$). Even if the P value does not reach the significance value it is remarkable that NHS accessibility problems seem to play an important role in the female PCS ($\beta: -0,236$; $P: 0,058$).

Insert Table 5 here

Multivariate analysis for MCS shows a direct correlation with infectious diseases ($\beta: 0,17$; $P: 0,02$) and an inverse correlation with PRDs ($\beta: -0,29$; $P: <0,001$) and Neuropsychiatric diseases ($\beta: -0,20$; $P: <0,01$). Multivariate analysis performed in male population shows that elder age directly correlates with MCS ($\beta: 0,19$; $P: 0,02$) and confirms the inverse correlation between MCS and PRDs ($\beta: -0,17$; $P: 0,04$) and Neuropsychiatric diseases ($\beta:$

0,19; P: 0,02). The only condition that seems to have a negative impact on the MCS in female population is being affected by PRDs (β : -0,32; P: 0,02).

Discussion

The main result of this study

Physical component score (PCS) and mental component score (MCS) were evaluated for irregular migrants. The median PCS was 46.5 with younger patients showing higher levels of PCS, Africans showing the best physical QoL and patients from South America the worst. The median MCS was 37,9 and not differences were observed for gender, age groups or geographical origin. A survey conducted by the National Institute for Statistic (ISTAT) assessed the HRQoL among the Italian native population. (23) Compared with the mean value of the survey (mean PCS= 50.3; mean MCS= 50.0), migrants in our study experience 4% points less for PCS and 12% points for MCS of HRQoL. Domnich conducted in 2013 the only Italian study on the migrants HRQoL but he performed the survey among a sample including only regular migrants finding median PCS=51.6; median MCS=47.3. In comparison migrants participating in the present study show lower levels of both Physical and Mental components of HRQoL with a difference of 5 percent points for physical and almost 10 percent points for mental components.

Among our sample relatively to the scores of HRQoL we noticed a different attitude in the two genders. Males seem to have better physical health while women better mental health.

After adjusting it is evident that gender does not affect neither the physical HRQoL nor the mental HRQoL but realizing different models for men and women we noticed that the determinants of good health status differ among the two genders. Among males those affected by Diabetes are the ones experiencing the best physical HRQoL.

Women seem to be more influenced by socio-demographic factors such as the geographical origin, and NHS accessibility. Asian women experienced the highest levels of physical HRQoL and results suggest that even if only 20% of women refer limitations in healthcare accessibility (e.g. language) barriers to healthcare services affect female physical HRQoL more than males' one. The International Organization for Migration, in fact, in 2009 noticed that the gender divide may be particularly marked in migrant populations, as it is well known that immigrant women are particularly vulnerable to health problems and often have less access to prevention and healthcare. (24)

According with WHO we classified Poverty Related Diseases (PRDs) as those mainly influenced by social factors and lack of availability of drugs and vaccine or lack of accessibility to National Health Services (NHS). (19) We assumed the presence of one of those diseases as a proxy of socio-economic status. The multivariate analysis reveals that patients affected by one of these conditions experienced the worst physical and mental HRQoL compared with patients affected by other diseases. In particular Mental score of HRQoL is higher among women and affected in both genders by PRDs that seem to weigh surprisingly more than neuropsychiatric diseases. It is important to be aware that all the participants have been recruited in an outpatient service and thus are affected by some

1
2
3 pathology, the comparison is not between healthy people and people affected by PRDs
4 but between patients affected by different kinds of pathologies. This evidence suggests
5 that pathologies due to lack of accessibility to NHS and poor socio-economic status
6 heavily weight on migrants' quality of life.
7

8 Despite the growing importance and the media attention devoted to the migration
9 phenomenon few evidences are available on health status of migrants especially referring
10 to migrants in irregular conditions. Migrants are part of our social texture, the main part
11 of those living in irregular condition have previously obtained and/or will obtain their
12 residency permit in Italy contributing to the Italian fiscal intake and participating to the
13 Italian political, cultural and social life. The safeguard of their health conditions is
14 important even when passing through trouble in obtaining or renewing the residency
15 permit.
16
17

18 19 **What is already known on this topic**

20 Few studies have been conducted worldwide evaluating the level of HRQoL among
21 migrants and no studies, at least in Italy at the time we are writing, among a population of
22 irregular migrants. The only Italian study assessing the HRQoL among a regular migrant
23 population was conducted in Genova in 2013 by Domnich et Al . (9) Previous works
24 conducted on the issue agreed on the poorest migrant HRQoL levels compared to native
25 population (2,3,6,7,9) however a discussion is ongoing on the impact of the legal status on
26 the migrant HRQoL. While Castaneda et Al. state that "illegality" is an important risk
27 factor for the development of diseases unavoidably worsening the individual health status
28 (25) Pikheart et Al. report no differences between regular and irregular migrants quality of
29 life in Czech Republic . (26) However the use of Self Related Health (SRH) as
30 measurement tool in the Pikheart study, downplaying socioeconomic differences, may
31 have had a key role in determining those results. (16)
32
33
34
35
36
37

38 39 **What this study adds**

40 This is the first Italian research on the quality of life of irregular migrants.
41 This study found that irregular migrants living in Italy experience lower levels of HRQoL
42 compared to Italian citizens and of regular migrants.
43 Moreover this study pinpoints different attitude in the two genders toward HRQoL. Males
44 seem to have better physical health while women better mental health.
45 This study reveals that patients affected by PRDs experienced the worst physical and
46 mental HRQoL compared with patients affected by other diseases.
47

48 49 **Limitations of the study**

50 Our study presents some limitations.
51 First of all the results cannot be generalized to the entire irregular migrant community
52 living in Rome. Our sample has been selected opportunistically thus it is subject to the
53 selection bias. Our sample is not homogeneous in terms of gender distribution and
54 continent of origin and the sample size could seem limited. However sampling a
55 population not subject to census is not even possible because demographic characteristics
56 of the reference population are unknown. Moreover the possibility of interviewing 200
57 persons from an irregular population is a rare privilege due the difficulties of recruitment
58
59
60

1
2
3 of people avoiding contacts with resident community and the sample size has to be
4 positively considered respect with the reference population. Secondly we recruited
5 participants among an outpatient service, heal migrants have not been included in this
6 study and this could affect the scores of HRQoL. However, the setting choice has been
7 mainly due to the need of intercepting a population not easy to be interviewed elsewhere
8 and the choice of an outpatient service is not casual, diseases controllable outpatient are
9 less disabling than those requiring hospitalization or emergency care thus probably
10 affecting softly patients' HRQoL.

11
12
13 Thirdly we enrolled only migrants with sufficient knowledge of Italian, English, French or
14 Spanish language, around 7% of patients were unable to answer the questions.

15 Finally important pieces of information are missing such as socio-demographic data,
16 housing, employment and working conditions, and detailed clinical history.
17

18 19 **Conclusion**

20 Migrants in irregular condition experience worse HRQoL compared with native population
21 and also with regular migrants.
22

23 Among a population of irregular migrants visiting an outpatient clinic those affected by
24 PRDs and thus in a disadvantaged socio-economic condition experience the worse HRQoL
25 both in physical and mental aspects.
26

27 Socio-demographic factors and NHS accessibility affect females' HRQoL more than the
28 males' one.

29 Improving research concerning migrants health needs is a priority for the Italian situation.
30 From the NHS point of view ensuring high level of accessibility to medical services to
31 irregular migrants could be the key to reduce the gap between natives and migrants. The
32 Italian legal framework points in this direction: preventive, emergency, and continuing
33 cares are assured to irregular migrants.
34

35 However there is a lack of clarity in primary healthcare responsibility and a need of
36 concrete measures to reduce barriers and actively promote accessibility through the
37 implementation of prevention programs for infectious diseases acting on immunization
38 levels and risk behaviors, promotion of healthy lifestyles with attention to addiction
39 prevention and information regarding the range of primary care services available.
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

References

1. World Health Organization: Constitution of the World Health Organization. Geneva, Switzerland: World Health Organization. 1946.
2. Chou K-L., Wong WKF., Chow NWS. Interaction Between Pre- and Post-Migration Factors on Depressive Symptoms in New Migrants to Hong Kong from Mainland China. *Community Ment Health J.* 2010; 47(5): 560–7.
3. Daher AM., Ibrahim HS., Daher TM., Anbori A k. Health related quality of life among Iraqi immigrants settled in Malaysia. *BMC Public Health.* 2011; 11(1):407.
4. Committee on Quality of Health Care in America/Institute of Medicine: Crossing the Quality Chasm: A New Health System for the 21st Century. Washington DC, USA. The National Academies Press; 2001.
5. Committee on Understanding - Eliminating Racial Ethnic Disparities in Health Care: Unequal treatment: confronting racial and ethnic disparities in health care (full printed version). Washington DC, USA. The National Academies Press; 2003.
6. Puder J., Pinto AM., Bonvin A., Bodenman P., Munsch S., Kriemler S., et al. Health-related quality of life in migrant preschool children. *BMC Public Health.* 2013; 13(1):384.
7. Eisenman DP., Gelberg L., Liu H., Shapiro MF. MEntal health and health-related quality of life among adult latino primary care patients living in the united states with previous exposure to political violence. *JAMA.* 2003; 290(5): 627–34.
8. Rodríguez Álvarez E., Lanborena Elordui N., Errami M., Rodríguez Rodríguez A., Pereda Riguera C., Vallejo de la Hoz G., et al. Relación del estatus migratorio y del apoyo social con la calidad de vida de los marroquíes en el País Vasco. *Gac Sanit.* 2009; 23:29–37.
9. Domnich A., Amicizia D., Panatto D., Signori A., Perelli V., Adamoli S., et al. Use of different subjective health indicators to assess health inequalities in an urban immigrant population in north-western Italy: a cross-sectional study. *BMC Public Health.* 2013; 13(1):1006.
10. Alfino D., Cannavò G., Squeri R., La Fauci V., Sindoni L., Squeri L., et al. Indagine sulle condizioni sociali e sanitarie degli immigrati presenti nella città di Messina. *Ig Sanità Publ.* 61° ed. 2005: 149–62.
11. WHO. Sicily, Italy: Assessing health-system capacity to manage sudden large influxes of migrants (Eng). 2014.
12. XXIII Rapporto Immigrazione 2013, Caritas Migrantes [Internet]. [citato 27 aprile 2015]. http://www.chiesacattolica.it/cc_i_new_v3/allegati/53507/SINTESI%20XXIII%20Rapporto%20Immigrazione.pdf
13. Consolidated Act on Immigration - Title V [Internet]. [citato 2015]. <http://www.altalex.com/index.php?idnot=51629>
14. Geraci S., El Hamad I. Migranti e accessibilità ai servizi sanitari: luci e ombre. *IJPH.* 8° ed. 2011
15. Toselli S., Gualdi-Russo E., Marzouk D., Sundquist J., Sundquist K. Psychosocial health among immigrants in central and southern Europe. *Eur J Public Health.* 2014; 24(suppl 1):26–30.

16. Delpierre C., Kelly-Irving M., Munch-Petersen M., Lauwers-Cances V., Datta GD., Lepage B, et al. SRH and HrQOL: does social position impact differently on their link with health status? *BMC Public Health*. 2012; 12:19.
17. Apolone G., Mosconi P., Ware JJ. Questionario sullo stato di salute SF-36 [Internet]. Guerini ed Associati; 1997.
18. Nesterko Y., Braehler E., Grande G., Glaesmer H. Life satisfaction and health-related quality of life in immigrants and native-born Germans: the role of immigration-related factors. *Qual Life Res Int J Qual Life Asp Treat Care Rehabil*. 2013; 22(5):1005–13.
19. Diseases of Poverty - International Policy Network - WHO. WHO; 2004.
20. Pourmovahed Z., Yassini-Ardakani SM. Responsible of Socio-economic Factors with Addiction in Yazd, Iran: An Opinion Survey. *Addict Health*. Summer-Autumn 2013; 5(3-4):134–9.
21. Grant TM., Jack DC., Fitzpatrick AL., Ernst CC. Carrying the burdens of poverty, parenting, and addiction: depression symptoms and self-silencing among ethnically diverse women. *Community Ment Health J*. 2011; 47(1): 90–8.
22. Hosmer DW., Hosmer T., Le Cessie S., Lemeshow S. A comparison of goodness-of-fit tests for the logistic regression model. *Stat Med*. 1997;16(9): 965–80.
23. ISTAT. Le condizioni di salute della popolazione. Indagine Multiscopo sulle famiglie «Condizioni di salute e ricorso ai servizi sanitari». 2001.
24. International Organization for Migration (IOM). Maternal and child healthcare for immigrant populations. 2009.
25. Castañeda H. Illegality as risk factor: A survey of unauthorized migrant patients in a Berlin clinic. *Soc Sci Med*. 2009; 68(8):1552–60.
26. The self-reported health of legal and illegal/irregular immigrants in the Czech Republic - Springer. <http://link.springer.com/article/10.1007/s00038-010-0156-1/fulltext.html>

Table 1. Conditions classified as Poverty Related Diseases (PRDs)

Category	Pathological condition	Description
Infectious diseases	Tuberculosis	WHO associated the diseases listed in this section with low socio-economic status on the basis of a wide literature on the issue. (19)
	Malaria	
	HIV	
	Chronic osteomyelitis	
	Poliomyelitis	
	Visceral Leishmaniasis	
	Diffuse Staphylococcal impetigo	
	Scabies	
Psychiatric diseases	Acute Stress	Socio economic status plays an important role in physiological reactivity to cognitive stressors leading to social marginalization and difficulties in healthcare access. (2,15)
	Post-traumatic stress disorder (PTSD)	
	Adjustment disorder (AD)	
Addictive Disorders	Drug addiction	These conditions are mainly due to lifestyles and have been proven to have wider spread among low socio-economic status. (20,21)
	Alcohol related cirrhosis	

Table 2. Demographic characteristics of the sample, gender differences for geographical origin, age and diagnosis

		Males (%)	Females (%)	Tot (%)	P
Age	< 40	79 (54.5)	26 (47.3)	105 (52.5)	0.362
	>= 40	66 (45.5)	29 (52.7)	95 (47.5)	
Geographical area	Asia	66 (45.5)	9 (16.4)	75 (37.5)	<0.001
	Africa	56 (38.6)	7 (12.7)	63 (31.5)	
	Europe	15 (10.3)	27 (49.1)	42 (21.0)	
	South America	8 (5.5)	12 (21.8)	20 (10.0)	
Diagnosis	Diabetes	18 (12.9)	1 (3.3)	19 (11.2)	0.022*
	Hypertension	20 (14.3)	6 (20)	26 (15.4)	0.588*
	Infectious diseases	22 (15.8)	9 (30)	31 (18.3)	0.835*
	Cardiovascular diseases	4 (2.9)	1 (3.3)	5 (3.0)	0.704*
	Poverty related diseases	35 (25.2)	6 (20)	41 (24.3)	0.039*
	Neuropsychiatric diseases	12 (8.6)	5 (16.7)	17 (10.1)	0.854*
	Gastrointestinal diseases	27 (19.4)	2 (6.7)	29 (17.2)	0.007*
Accessibility problems	No	85 (58.6)	45 (81.8)	130 (65.3)	0.003
	Yes	59 (40.7)	10 (18.2)	69 (34.7)	
Total		145	55	200	

* Chi-Square Test comparing number of patients affected by the disease with rest of the sample not affected by the same disease category.

Table 3. Univariate Analysis for the outcomes the Physical Components Score (PCS) and the Mental Components Score (MCS)

		Physical Components Score (PCS)		Mental Components Score (MCF)	
		Median (IQD)	P	Median (IQD)	P
Gender	Male	47.4 (14.1)	0.153	37.0 (13.1)	0.057
	Female	43.7 (14.7)		43.2 (19.1)	
Age	< 40	49.2 (11.3)	<0.001	37.1 (14.6)	0.236
	>= 40	42.1 (17.7)		39.1 (14.4)	
Geographical area	Asia	47.7 (13.3)	0.049	39.4 (14.6)	0.583
	Africa	50.2 (13.5)		37.0 (11.8)	
	Europe	43.5 (13.3)		39.6 (19.2)	
	South America	41.1 (16.7)		36.5 (18.9)	
Diagnosis	Diabetes	48.3 (13.1)	0.146*	41.6 (12.0)	0.216*
	Hypertension	43.6 (9.5)	0.931*	37.8 (15.5)	0.951*
	Infectious d.	47.3 (15.1)	0.282*	40.7 (9.7)	0.309*
	Cardiovascular d.	38.7 (34.9)	0.141*	43.7 (18.4)	0.368*
	Poverty related d.	40.0 (17.7)	0.003*	35.3 (9.6)	0.001*
	Neuropsychiatric d.	46.5 (15.9)	0.614*	30.5 (12.4)	0.001*
	Gastrointestinal d.	46.5 (15.8)	0.508*	33.7 (8.7)	0.012*
Accessibility problems	No	44.5 (12.2)	0.316	39.0 (15.4)	0.137
	Yes	48.3 (16.3)		35.8 (13.8)	

* Mann-Whitney Test comparing the median value among patients affected by the disease with the median value of the rest of the sample not affected by the same disease category whose median values are not reported in the table.

Table 4. Multivariate Analysis presenting as outcome the Physical Components Score (PCS) for total sample and stratified for gender

Covariates	Physical Components Score (PCS)					
	Tot		Male		Female	
	Beta	P	Beta	P	Beta	P
Age	-0.412	<0.001	-0.341	<0.001	-0.343	0.005
Diabetes	0.139	0.038	0.190	0.016		
Hypertension	0.138	0.051				
Poverty Related d.	-0.204	0.002	-0.226	0.004		
Cardiovascular d.					-0.301	0.013
Coming from Asia					0.244	0.041
Accessibility problems					-0.236	0.058
R ²	0.204		0.200		0.312	

Table 5. Multivariate Analysis presenting as outcome Mental Components Score (MCS) for total sample and stratified for gender

Covariates	Mental Components Score (MCS)					
	Tot		Male		Female	
	Beta	P	Beta	P	Beta	P
Age			0.191	0.019		
Infectious d.	0.169	0.019			0.242	0.070
Poverty related d.	-0.285	<0.001	-0.167	0.039	-0.318	0.019
Neuropsychiatric d.	-0.201	0.003	-0.193	0.017		
Gastrointestinal d.			-0.142	0.079		
R ²	0.121		0.111		0.101	