

Article

Evaluation of General Health Status of Persons Living in Socio-Economically Disadvantaged Neighborhoods in a Large European Metropolitan City

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Abstract: Background: Living in socio-economically disadvantaged neighborhoods can predispose persons to numerous health conditions. The purpose of this study was to report the general health conditions of persons living in disadvantaged neighborhoods in Rome, Italy, a large European metropolitan city. Participants were reached through the mobile facilities of the primary care services of the Dicastery for the Charity Services, Vatican City. Methods: People living in disadvantaged neighborhoods were reached with mobile medical units by doctors, nurses, and paramedics. Demographic characteristics, degree of social integration, housing conditions, and history of smoking and/or alcohol use were investigated. Unstructured interviews and general health assessments were performed to investigate common acute and/or chronic diseases, and history of positivity to COVID-19. Basic health parameters were measured; data were collected and analyzed. Results: Over a 10-month period, 436 individuals aged 18–95 years were enrolled in the study. Most lived in dormitories, whereas a few lived in unsheltered settings. Most participants (76%) were unemployed. Smoking and drinking habits were comparable to the general population. The most common pathological conditions were cardiovascular diseases in 103 subjects (23.39%), diabetes in 65 (14.9%), followed by musculoskeletal system disorders (11.7%), eye diseases (10.5%), psychiatric conditions such as anxiety and depression (9.2%), and chronic respiratory conditions (8.7%). Conclusions: Subjects in our sample showed several pathologic conditions that may be related to their living conditions, thus encouraging the development of more efficient and effective strategies for a population-tailored diagnosis and treatment.

Keywords: homelessness; fragile populations; disadvantaged conditions; general health assessment; prevention

1. Introduction

Since 2008, following the economic crisis, Europe has experienced an increase in the number of impoverished citizens, especially those living in socio-economically disadvantaged neighborhoods, and this has posed a significant challenge in terms of disease diagnosis, therapy, screening, and monitoring [1,2]. According to a recent definition, a

neighborhood can be considered “poor” if 20% or more of its residents lack sufficient money to live at a comfortable standard [3]; these neighborhoods are often associated with negative labor, educational, and family outcomes [4,5].

In Italy, there is a lack of regularly updated national data on the subject; most information comes from surveys conducted by the National Institute of Statistics (ISTAT) and by non-profit organizations, and the topic has been seldom reported in the scientific literature [6–10]. People that live in socio-economically disadvantaged neighborhoods often have a medium-low level of education, are unemployed or have a low-status job, have higher levels of negative life events and insecure housing tenure [11,12], and may experience chronic stressors and reduced social support [13]. Among them, fragile individuals such as women and children are more susceptible to experiencing stress and violence, develop behavioral problems and misconduct, and have even fewer chances to receive proper health assistance [13,14]. In addition, living in disadvantaged neighborhoods has shown continuity among generations; studies have shown that people living in poor neighborhoods had higher chances of remaining in these neighborhoods for several decades [3,15,16].

It is known that living in socio-economically disadvantaged neighborhoods can predispose one to numerous health conditions such as respiratory and cardiovascular diseases/infections, diabetes, and hypertension [13,17,18]. Furthermore, environmental conditions can induce a constant state of psychological and social discomfort; indeed, pathologies such as anxiety, depression, psychiatric disorders, alcoholism, substance abuse, and smoking addiction are not unusual [19]. Most of these conditions often have abrupt onsets, require long hospital stays, and increase the mortality rate compared to the general population [20–23].

During the coronavirus disease 2019 (COVID-19) pandemic, the discrimination and health inequalities peculiar to this segment of the society worsened, with additional barriers to accessing primary and specialist care and delays in diagnosis and treatment [24–26].

The purpose of this study was to evaluate the general health conditions of persons living in socio-economically disadvantaged neighborhoods in Rome, Italy reached through the mobile facilities of the primary care services of the Dicastery for the Charity Services, Vatican City.

2. Materials and Methods

The study was performed between 14 March 2021 and 5 December 2021 using data gathered by the mobile facilities of the Dicastery for the Charity Services of the Vatican City, Holy See. The facilities include an advanced mobile medical unit and an ambulance that were used to reach vulnerable populations in socio-economically disadvantaged neighborhoods of the city of Rome, Italy. Participants were recruited on-site through local churches, activities, non-profit organizations, and word of mouth. Oral informed consent was obtained from all subjects included in the study. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Demographic characteristics, including sex, age, and country of origin were recorded. In addition, the degree of social integration (presence or lack of occupation and type of occupation), the housing conditions (availability of a house and type of housing), access to primary care (availability of a family doctor), and history of smoking and/or alcohol use were investigated.

With the help of general practitioners and specialized doctors that supported the patients in reading and responding to the proposed questions, unstructured interviews in the form of a questionnaire were performed to investigate common acute and/or chronic diseases, and history of positivity to COVID-19. The questionnaire was composed of 15 questions; 14 were in the form of: “Do you suffer from . . . ” specifically investigating the following conditions: hypertension, diabetes, respiratory, musculoskeletal, dermatological, neurological, gastrointestinal, ophthalmological, psychiatric disorders, thyroid, prostate,

liver, dental problems, and cancer. The last question investigated a previous COVID-19 infection. Responses to the above questions were gathered through “Yes” or “No” answers.

In addition, a general health assessment was performed, and the following health parameters were measured: body temperature, weight, height, body mass index (BMI), blood pressure, beats per minute (BPM), oxygen saturation, and blood sugar levels. If necessary, based on health evaluation and clinical history, patients were referred to specific services of a tertiary care hospital within the Italian national public health system for further diagnostic exams or treatments.

Collected data were entered in an electronic database (Microsoft Excel, Microsoft Corp., Redmond, WA USA).

3. Results

3.1. Demographic Characteristics

Over a 10-month period, 436 individuals were enrolled in the study. An amount of 235 were males (53.89%), and 201 were females (46.1%).

The ages varied from 18 to 95 years: 49 participants were between the ages of 18 and 29 years (11.24%), 90 were between the ages of 30 and 40 years (20.64%), 193 were aged between 41 and 60 years and constituted the majority of our sample (44.26%), 92 were between the ages of 61 and 80 years (21.1%), and the remaining 12 were aged 81 years and older (2.75%).

3.2. Country of Origin

The great majority of enrolled patients were born in Italy (149, 34.17%); other countries that were commonly encountered included Romania (65, 14.9%), Peru (37, 8.48%), Morocco (20, 4.58%), Moldova (15, 3.44%), Tunisia (14, 3.21%), and Bangladesh (9, 2.06%). The remaining 164 persons came from 22 other countries in four continents (Asia, America, Africa, and Europe). An amount of 228 patients (52.29%) had a known year of arrival in Italy: 65 (28.51%) arrived between 1968 and 2000, 83 (36.4%) between 2000 and 2010, and the remaining 80 (35.08%) between 2010 and 2021.

3.3. Social Integration and Housing Conditions

We investigated the housing setting, the presence of a family doctor, and the main occupation. The majority of participants reported to be living in accommodation (229, 52.52%); most stayed in dormitories, with a few living in either owned, rented, or squatted houses. In certain cases, it was impossible to determine the housing setting. Regarding the presence of a family doctor, 255 subjects (58.48%) reported having one.

In terms of employment, a significant number of participants (331, 75.92%) reported not having a job. Of the 105 individuals who had an occupation, 76 had occasional jobs, 13 were retired, 8 were students, 4 were caregivers, 3 were housekeepers, 1 was a gas station attendant, and 1 was a mechanic.

3.4. Smoking and Drinking Habits

The smoking and drinking habits were investigated using questions with a “Yes” or “No” answer; in some cases, patients specified the volumes such as cigarettes per day (CPD) or alcoholic units per day (AU/day). In terms of smoking habits, 190 (56.22%) of the 338 individuals (77.52%) who responded to the question stated that they did not smoke, whereas 148 (43.78%) responded affirmatively. Only 16 of the latter indicated the number of cigarettes smoked per day (5–10 CPD, $n = 6$; 10–20 CPD, $n = 6$; >20 CPD, $n = 3$; ex-smoker, $n = 1$). Similarly, 301 (69.03%) respondents provided information on their drinking habits; 219 (72.75%) claimed they did not consume alcohol, whereas 82 (27.24%) answered affirmatively. Only 6 subjects indicated the number of alcoholic units per day, whereas 13 out of 82 cases (15.85%) confirmed the presence of alcoholism.

3.5. COVID-19

COVID-19 information was gathered from 140 (32.11%) participants through an interview. First, patients were asked if they had previously contracted COVID-19; of the 140 individuals, 41 (29.28%) responded positively, and the remaining 99 (70.72%) answered “No”. No specific COVID-19 tests, such as nasopharyngeal swabs, were performed. No information on COVID-19 vaccination status, including drivers and barriers, was investigated.

3.6. Health Assessment

The following parameters were measured: body temperature, weight, height, BMI, blood pressure, BPM, oxygen saturation, blood sugar levels.

Average body temperature was 35.96 °C (range: 34–37.1); weight was 70.71 kg (11–142), height was 1.62 mt (0.75–1.92), and average BMI was 26.3 (range: 13.78–44.92). Of these, 11 were underweight (BMI < 18.5), 42 were overweight (BMI between 25 and 29.9), and 36 were obese, with 3 having third-degree obesity (BMI > 40).

Blood pressure measurements were performed on 340 individuals (77.98%). Average systolic pressure was 131.51 mmHg (range: 85–200); average diastolic pressure was 78.65 (range: 40–110). During the visit, 8 (2.35%) patients exhibited signs of grade 2 hypertension (160–179/100–109) and 4 (1.17%) displayed values compatible with grade 3 hypertension ($\geq 180/\geq 110$).

Heart rate measurements were conducted on 351 of the 436 patients (80.5%) enrolled in the study; of these, 327 (93.16%) had values of beats per minute ranging from 50 to 100, 18 (5.12%) had values > 101, and 14 (3.98%) had values < 60.

Oxygen saturation data were obtained from 345 individuals (79.12%); 322 (93.34%) had a SpO₂ \geq 95, with 84 (24.34%) exhibiting values equal to 99 or 100.

Blood glucose levels were measured in 286 subjects (65.59%). An amount of 53 (18.53%) patients displayed values between 60 and 80 mg/dL, 123 (43%) between 81 and 100 mg/dL, 71 (24.82%) between 101 and 120 mg/dL, 19 (6.64%) between 121 and 140 mg/dL, and 20 (7%) >141 mg/dL; of them, 4 patients displayed blood glucose levels between 280 and 408 mg/dL.

The main health parameters evaluated in our sample are summarized in Figure 1.

3.7. Specific Pathological Conditions

The most common acute and/or chronic pathological conditions were investigated through unstructured interviews. History of hypertension and general cardiovascular diseases currently under treatment were reported by 103 subjects (23.39%), whereas diagnosed diabetes was reported by 65 (14.9%). At the gastrointestinal (GI) level, none reported having ulcers, whereas 28 (6.4%) patients confirmed the presence of other GI disorders. An amount of 4 patients reported suffering from thyroid disorders, whereas 16 had a diagnosis of neurological pathologies, including previous stroke and epilepsy. Concerning the respiratory system and lung diseases, 38 (8.71%) patients reported having some sort of respiratory/pulmonary pathology, including asthma, chronic obstructive pulmonary disease (COPD), and respiratory infections. An amount of 3 patients had liver disease, and 15 had dermatological disorders, including dermatomycosis, onychomycosis, fibroids, pityriasis versicolor, dermatitis, and psoriasis or suspected psoriasis. The presence of prostatic pathologies, dental pathologies, and neoplasms was also examined. An amount of 2 individuals reported having prostate problems, 15 had dental issues, and 7 had been diagnosed with neoplasia (i.e., breast, pancreas). These findings, however, were based on a limited number of patients who provided information (113, 106, and 114, respectively).

Arthralgia and musculoskeletal system disorders (i.e., osteoarthritis, lumbosciatalgia, post-traumatic arthralgia, and previous fractures) were reported by 51 cases (11.7%); eye and vision disorders were described by 46 persons (10.55%).

From a psychiatric standpoint, 25 (5.73%) patients reported anxiety, and 15 (3.44%) patients reported depression; of these, 4 reported both. In addition, few cases of bipolar disorder (n = 1) and psychosis (n = 2) were documented.

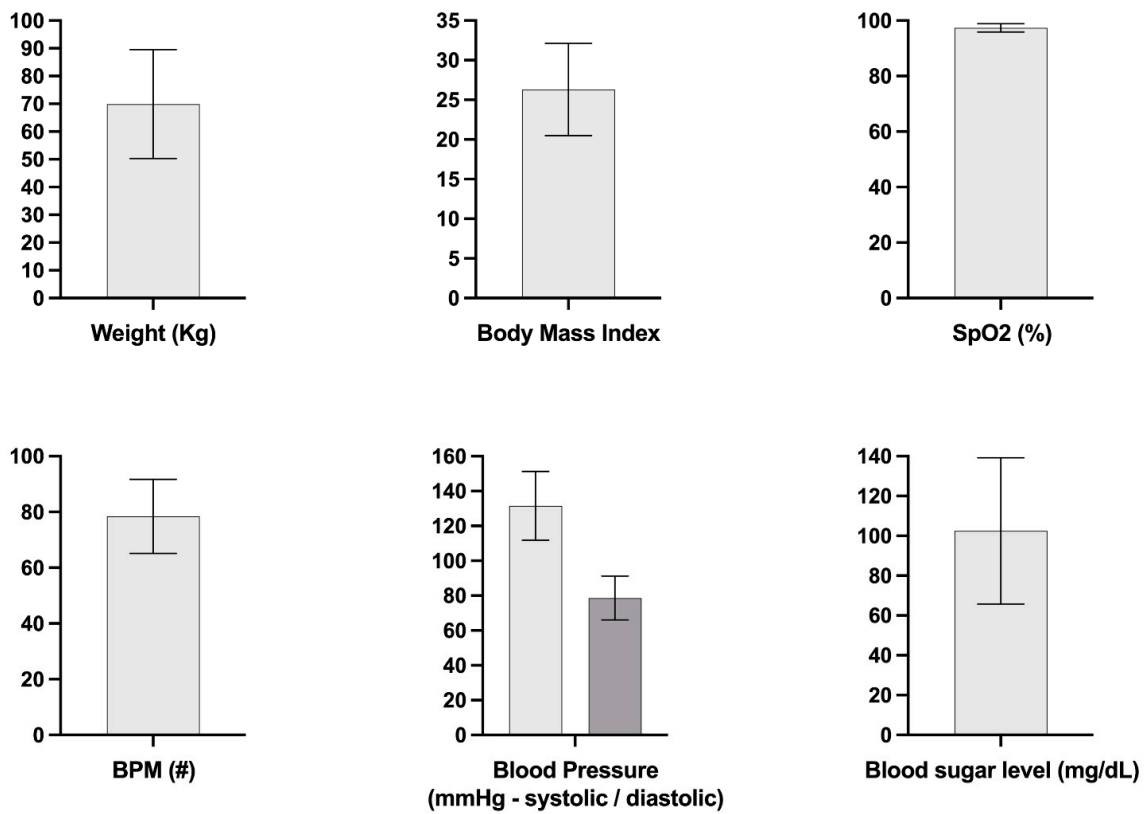


Figure 1. Main health parameters evaluated in our sample.

The most common pathological conditions found in our sample are detailed in Figure 2.

Pathological conditions

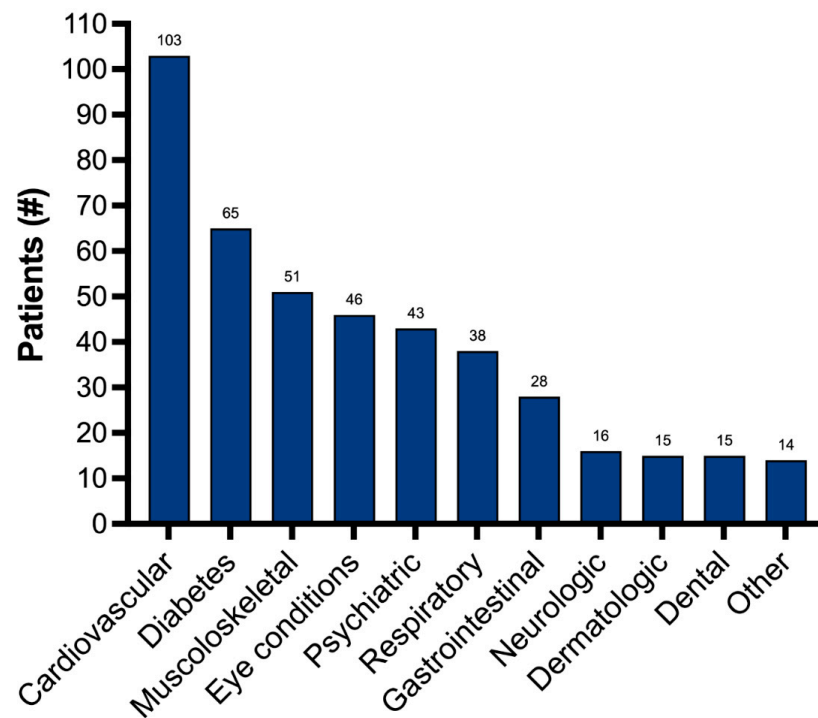


Figure 2. The most common pathological conditions found in our sample.

Additional specialist visits, such as cardiologist, dermatologist, dentist, ophthalmologist, pediatrician, and psychiatrist consultations, were recommended in 196 cases (44.95%).

4. Discussion

Over the last decade, the number of people living in disadvantaged conditions in Italy has increased, posing a considerable problem in terms of disease screening, diagnosis, and treatment. As known, this population is highly vulnerable to a variety of health problems, often having sudden onsets, demanding long hospital stays, and resulting in higher death rates when compared to the general population [20–23]. In this study, we examined through unstructured interviews and general health assessment the conditions of 436 participants who lived in socioeconomically disadvantaged neighborhoods, with the help of general practitioners and specialized doctors that reached them in their living settings. From a clinical standpoint, the main health parameters were measured and focused on the presence or absence of both acute and/or chronic diseases, as well as data pertaining to COVID-19.

From a demographic point of view, the subjects included in this type of study tend to display comparable characteristics. The majority are often males aged 20 to 70 years, with an average age of 40 to 50 years [27–30]. Most individuals live in shelters or were, indeed, not homeless; most participants were living in dormitories at the time of the interview, whereas others lived in owned, rented, or squatted houses. In terms of employment, only a few had a job, and even fewer had stable ones; the majority were indeed unemployed, thus affecting the personal perception of health [28,31].

Smoking-related deaths, particularly lung cancer-related deaths, are common in the homeless community [32,33]. As indicated in most studies on the matter, the smoking habits of this demographic group differ from those of the general population and are characterized by a greater consumption of tobacco [34–37]. COPD and respiratory tract infections are also frequent medical problems in disadvantaged populations [38,39]. In our study cohort, a portion of the patients reported having some type of respiratory/pulmonary illness, such as asthma, COPD, respiratory infections, respiratory failure, and bronchitis/pneumonia. Due to crowded shelter conditions, these subjects are also at an increased risk of contracting tuberculosis and, during the COVID-19 pandemic, were at higher risk of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) contagion [40,41].

A significant percentage of our sample reported alcohol use. As known, the homeless community comprises individuals who frequently suffer from advanced alcoholism, which is often used as a coping mechanism, and which negatively impacts participation in support programs. A study conducted on 78 homeless adults found that 75% matched the alcohol dependence criterion, with significant connections between age, preferred coping strategy, and amount of alcohol consumption [27,28,30,42–44].

During the general health assessment, both vital signs and blood glucose levels were assessed. Blood pressure readings showed a prevalence of systolic measurements between 121 and 130 mmHg, with only a few patients displaying values ≥ 180 . In terms of diastolic pressure, many participants exhibited values ≤ 85 mmHg, whereas eight displayed grade 2 hypertension (160–179/100–109 mmHg) and four displayed grade 3 hypertension (180/110 mmHg). According to the literature, disadvantaged communities are especially prone to hypertension for a variety of reasons [45–48], with a significant risk of displaying cardiovascular events and strokes. A study conducted on 390 homeless adults showed that more than half (average age, 51 years) suffered from this pathology, with a total prevalence of 61.52% [43]. On the contrary, in a study by Romaszko et al. [28], hypertension was detected in 35% of patients, with less than a third of the subjects being aware of the condition; the lack of awareness could possibly be related to the often-vague symptoms characterizing this condition. Heart attacks and strokes, on the other hand, tend to be more frequently reported.

In terms of metabolic diseases and associated pathologies, 40 patients reported suffering from CVD, 15 suffered from diabetes, 42 were overweight, and 36 were obese. Research conducted on 297 homeless adults in Taipei City analyzed the participants' obesity-related

markers and identified patients at risk of CVD [49]. The authors observed that the prevalence of hyperglycemia, hypertension, and hyperlipidemia in the examined patients was significantly higher than in the general population and that the obesity-related indicators, including BMI, were all risk factors for hypertension and hyperlipidemia. Furthermore, a history of myocardial infarction was shown to be more common in participants with higher BMIs; no such link was detected for strokes [49]. In contrast, Yamamoto et al. [50] found that the mean BMI and blood pressure in participants living in temporary residences were similar to those of the general population and confirmed the presence of significant correlations between hypertension, liver dysfunction, and dyslipidemia and the duration of both homelessness and residence status. In our patient cohort, only one participant had liver disease. Even though few of our patients reported a prior or recent history of CVD, the latter is a known primary cause of mortality among fragile urban populations [51–53]. A study conducted by Gozdzik et al. [51] in Toronto, Canada, analyzed the CVD risk factors and the 30-year CV risk of 352 fragile adults. The CVD risk of participants was more than double compared to the baseline, and males were at a greater risk. The majority of patients displayed blood glucose levels values between 81 and 100 mg/dL, with only a few exhibiting values between >160 mg/dL. Analogously to what we observed, Bernstein et al. [47] conducted a systematic evaluation of five databases that included hypertension and diabetes prevalence for US homeless individuals and contained data from 97,366 homeless adults. Diabetes was found in 8% of patients. There were no differences in the prevalence of hypertension or diabetes between the homeless and the general population. Heart rate measurements and SpO₂ values in our patient cohort were in most cases within the normal range.

Additional pathologies were observed, including gastrointestinal, genitourinary, ophthalmological, and dermatological conditions, thyroid-related and neurological pathologies, dental pathologies, anemia, infections, neoplasms, and allergies. In this regard, Shiue [54] explored whether living in precarious conditions was related to allergies and skin conditions. This study was based on the assumption that emotional stress and negative life events might act as triggers for skin diseases and the development of allergies [54–56]. On the other hand, arthralgia and other musculoskeletal system disorders (i.e., osteoarthritis, lumbosciatalgia, post-traumatic arthralgia, and previous fractures) were more commonly encountered.

Regarding mental illnesses, there are several reports in the literature concerning their incidence in the vulnerable urban communities [57–59]. According to epidemiological data, the prevalence of mental, neurological, and substance use disorders among fragile individuals ranges between 25% and 92% [60–62]. Depressive disorders are among the most prevalent, and frequently result in concomitant physical conditions [63–67]. In our patient cohort, several patients reported anxiety and depression. In addition, few cases of bipolar disorder and psychosis were encountered. On this account, a subset of 16 homeless patients in Dublin were evaluated in a study by Hynes et al. [68]. An amount of 5 of the 16 participants exhibited serious mental illnesses (i.e., paranoid schizophrenia and bipolar affective disorder), and 2 received multiple diagnoses.

Limits of the Study

This study presents some strengths and some limits. Strengths include a large number of patients in our sample that was reached over a 10-month period, and the homogeneous living characteristics of the target population, thanks to the specific methodology adopted in the study of reaching this population with mobile units. Among the limits, the size of the sample did not allow us to stratify results by specific factors, such as country of origin. In addition, subjects self-referred to our care units, therefore patients feeling healthy could not be evaluated for potential unnoticed pathological conditions. Many conditions were self-reported by patients without full clinical documentation, and only basic health assessment could be performed in the setting in which the study took place. Last, patients that required further diagnostic exams or treatments were referred to tertiary care hospitals within the Italian national public health system; however, responses from these centers were not available and therefore not included in the results of this study.

5. Conclusions

This study provided an overview of the general health status of persons living in socio-economically disadvantaged neighborhoods in the city of Rome, Italy. Subjects in our sample showed several pathologic conditions that may be related to their living conditions, thus encouraging the development of more efficient and effective strategies for a population-tailored diagnosis and treatment.

Author Contributions: C.I.: conceptualization, investigation, writing original draft; F.D.-G.: investigation, writing original draft; G.P.: formal analysis, data curation; M.F.: investigation, data analysis; A.A.: supervision, data curation; M.R.: supervision, review final manuscript. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Yerramilli, P.; Fernandez, O.; Thomson, S. Financial protection in Europe: A systematic review of the literature and mapping of data availability. *Health Policy* **2018**, *122*, 493–508. [[CrossRef](#)] [[PubMed](#)]
2. Del Pozo-Rubio, R.; Minguez-Salido, R.; Pardo-Garcia, I.; Escribano-Sotos, F. Catastrophic long-term care expenditure: Associated socio-demographic and economic factors. *Eur. J. Health Econ* **2019**, *20*, 691–701. [[CrossRef](#)] [[PubMed](#)]
3. Li, M.; Johnson, S.B.; Newman, S.; Riley, A.W. Residential mobility and long-term exposure to neighborhood poverty among children born in poor families: A U.S. longitudinal cohort study. *Soc. Sci. Med.* **2019**, *226*, 69–76. [[CrossRef](#)] [[PubMed](#)]
4. Kavanagh, A.M.; Aitken, Z.; Emerson, E.; Sahabandu, S.; Milner, A.; Bentley, R.; LaMontagne, A.D.; Pirkis, J.; Studdert, D. Inequalities in socio-economic characteristics and health and wellbeing of men with and without disabilities: A cross-sectional analysis of the baseline wave of the Australian Longitudinal Study on Male Health. *BMC Public Health* **2016**, *16*, 1042. [[CrossRef](#)] [[PubMed](#)]
5. Bradshaw, D.; Jay, S.; McNamara, N.; Stevenson, C.; Muldoon, O.T. Perceived discrimination amongst young people in socio-economically disadvantaged communities: Parental support and community identity buffer (some) negative impacts of stigma. *Br. J. Dev. Psychol.* **2016**, *34*, 153–168. [[CrossRef](#)]
6. Consolazio, D.; Murtas, R.; Tunesi, S.; Gervasi, F.; Benassi, D.; Russo, A.G. Assessing the Impact of Individual Characteristics and Neighborhood Socioeconomic Status During the COVID-19 Pandemic in the Provinces of Milan and Lodi. *Int. J. Health Serv.* **2021**, *51*, 311–324. [[CrossRef](#)]
7. Gelormino, E.; Melis, G.; Marietta, C.; Costa, G. From built environment to health inequalities: An explanatory framework based on evidence. *Prev. Med. Rep.* **2015**, *2*, 737–745. [[CrossRef](#)]
8. Simonelli, N.; Gorini, A.; Giroli, M.; Amato, M.; Vigo, L.; Tremoli, E.; Werba, J.P. Barriers and facilitators for physical activity in sedentary people residing in a disadvantaged Italian neighbourhood. *Epidemiol. Prev.* **2018**, *42*, 226–234.
9. Marinacci, C.; Demaria, M.; Melis, G.; Borrell, C.; Corman, D.; Dell’Olmo, M.M.; Rodriguez, M.; Costa, G. The Role of Contextual Socioeconomic Circumstances and Neighborhood Poverty Segregation on Mortality in 4 European Cities. *Int. J. Health Serv.* **2017**, *47*, 636–654. [[CrossRef](#)]
10. Materia, E.; Spadea, T.; Rossi, L.; Cesaroni, G.; Area, M.; Perucci, C.A. Health care inequalities: Hospitalization and socioeconomic position in Rome. *Epidemiol. Prev.* **1999**, *23*, 197–206.
11. van Vuuren, C.L.; Reijneveld, S.A.; van der Wal, M.F.; Verhoeff, A.P. Neighborhood socioeconomic deprivation characteristics in child (0–18 years) health studies: A review. *Health Place* **2014**, *29*, 34–42. [[CrossRef](#)] [[PubMed](#)]
12. Tanggaard Andersen, P.; Holst Algren, M.; Fromsejer Heiberg, R.; Joshi, R.; Kronborg Bak, C. Social network resources and self-rated health in a deprived Danish neighborhood. *Health Promot. Int.* **2018**, *33*, 999–1009. [[CrossRef](#)] [[PubMed](#)]
13. Ralli, M.; Cedola, C.; Russo, L.; Urbano, S.; Cimino, M.; Fonte, E.; Morrone, A.; Arcangeli, A.; Ercoli, L. Health and social conditions of children living in disadvantaged neighborhoods in the city of Rome, Italy. *Eur. Rev. Med. Pharmacol. Sci.* **2020**, *24*, 12350–12357. [[PubMed](#)]
14. Ralli, M.; Urbano, S.; Gobbi, E.; Shkodina, N.; Mariani, S.; Morrone, A.; Arcangeli, A.; Ercoli, L. Health and Social Inequalities in Women Living in Disadvantaged Conditions: A Focus on Gynecologic and Obstetric Health and Intimate Partner Violence. *Health Equity* **2021**, *5*, 408–413. [[CrossRef](#)]
15. Timberlake, J.M. Effects of household and neighborhood characteristics on children’s exposure to neighborhood poverty and affluence. *Soc. Sci. Res.* **2009**, *38*, 458–476. [[CrossRef](#)]

16. Nau, C.; Schwartz, B.S.; Bandeen-Roche, K.; Liu, A.; Pollak, J.; Hirsch, A.; Bailey-Davis, L.; Glass, T.A. Community socioeconomic deprivation and obesity trajectories in children using electronic health records. *Obesity* **2015**, *23*, 207–212. [[CrossRef](#)]
17. Braveman, P.; Gottlieb, L. The social determinants of health: It's time to consider the causes of the causes. *Public Health Rep.* **2014**, *129* (Suppl. S2), 19–31. [[CrossRef](#)]
18. Cockerham, W.C.; Hamby, B.W.; Oates, G.R. The Social Determinants of Chronic Disease. *Am. J. Prev. Med.* **2017**, *52*, S5–S12. [[CrossRef](#)]
19. Ribeiro, A.I.; Fraga, S.; Severo, M.; Kelly-Irving, M.; Delpierre, C.; Stringhini, S.; Kivimaki, M.; Joost, S.; Guessous, I.; Severi, G.; et al. Association of neighbourhood disadvantage and individual socioeconomic position with all-cause mortality: A longitudinal multicohort analysis. *Lancet Public Health* **2022**, *7*, e447–e457. [[CrossRef](#)]
20. Alagna, E.; Santangelo, O.E.; Raia, D.D.; Gianfredi, V.; Provenzano, S.; Firenze, A. Health status, diseases and vaccinations of the homeless in the city of Palermo, Italy. *Ann. Ig.* **2019**, *31*, 21–34.
21. Llerena, K.; Gabrielian, S.; Green, M.F. Clinical and cognitive correlates of unsheltered status in homeless persons with psychotic disorders. *Schizophr. Res.* **2018**, *197*, 421–427. [[CrossRef](#)]
22. Paiva, I.K.; Lira, C.D.; Justino, J.M.; Miranda, M.G.; Saraiva, A.K. Homeless people's right to health: Reflections on the problems and components. *Cien. Saude. Colet.* **2016**, *21*, 2595–2606. [[CrossRef](#)] [[PubMed](#)]
23. Neisler, J.; Reitzel, L.R.; Garey, L.; Kenzior, D.E.; Hebert, E.T.; Vijayaraghavan, M.; Businelle, M.S. Concurrent nicotine and tobacco product use among homeless smokers and associations with cigarette dependence and other factors related to quitting. *Drug Alcohol Depend.* **2018**, *185*, 133–140. [[CrossRef](#)] [[PubMed](#)]
24. Ralli, M.; Arcangeli, A.; Ercoli, L. Homelessness and COVID-19: Leaving No-One Behind. *Ann. Glob. Health* **2021**. [[CrossRef](#)] [[PubMed](#)]
25. Ralli, M.; Cedola, C.; Urbano, S.; Morrone, A.; Ercoli, L. Homeless persons and migrants in precarious housing conditions and COVID-19 pandemic: Peculiarities and prevention strategies. *Eur. Rev. Med. Pharmacol. Sci.* **2020**, *24*, 9765–9767.
26. Ralli, M.; Cedola, C.; Urbano, S.; Latini, O.; Shkodina, N.; Morrone, A.; Arcangeli, A.; Ercoli, L. Assessment of SARS-CoV-2 infection through rapid serology testing in the homeless population in the City of Rome, Italy. Preliminary results. *J. Public Health Res.* **2020**, *9*, 1986. [[CrossRef](#)]
27. van Laere, I.R.; de Wit, M.A.; Klazinga, N.S. Pathways into homelessness: Recently homeless adults problems and service use before and after becoming homeless in Amsterdam. *BMC Public Health* **2009**, *9*, 3. [[CrossRef](#)]
28. Romaszko, J.; Kuchta, R.; Opalach, C.; Bertrand-Bucinska, A.; Romaszko, A.M.; Giergielewicz-Januszko, B.; Bucinski, A. Socioeconomic Characteristics, Health Risk Factors and Alcohol Consumption among the Homeless in North-Eastern Part of Poland. *Cent. Eur. J. Public Health* **2017**, *25*, 29–34. [[CrossRef](#)]
29. Smith, O.M.; Chant, C.; Burns, K.E.A.; Kaur, M.; Ashraf, S.; DosSantos, C.C.; Hwang, S.W.; Friedrich, J.O. Characteristics, clinical course, and outcomes of homeless and non-homeless patients admitted to ICU: A retrospective cohort study. *PLoS ONE* **2017**, *12*, e0179207. [[CrossRef](#)]
30. Matteoli, M.; Scaringi, C.; Carella, P.; Fruttaldo, L.; Angeloni, U.; Laurenza, M. A Mobile Health Service to Manage Diabetic Foot in Homeless Patients. *J. Am. Podiatr. Med. Assoc.* **2015**, *105*, 424–428. [[CrossRef](#)]
31. Pacelli, B.; Zengarini, N.; Broccoli, S.; Caranci, N.; Spadea, T.; Di Girolamo, C.; Cacciani, L.; Petrelli, A.; Ballotari, P.; Cestari, L.; et al. Differences in mortality by immigrant status in Italy. Results of the Italian Network of Longitudinal Metropolitan Studies. *Eur. J. Epidemiol.* **2016**, *31*, 691–701. [[CrossRef](#)] [[PubMed](#)]
32. Baggett, T.P.; Tobey, M.L.; Rigotti, N.A. Tobacco use among homeless people—addressing the neglected addiction. *N. Engl. J. Med.* **2013**, *369*, 201–204. [[CrossRef](#)] [[PubMed](#)]
33. Baggett, T.P.; Chang, Y.; Singer, D.E.; Porneala, B.C.; Gaeta, J.M.; O'Connell, J.J.; Rigotti, N.A. Tobacco-, alcohol-, and drug-attributable deaths and their contribution to mortality disparities in a cohort of homeless adults in Boston. *Am. J. Public Health* **2015**, *105*, 1189–1197. [[CrossRef](#)] [[PubMed](#)]
34. Baggett, T.P.; Rigotti, N.A. Cigarette smoking and advice to quit in a national sample of homeless adults. *Am. J. Prev. Med.* **2010**, *39*, 164–172. [[CrossRef](#)]
35. Snyder, L.D.; Eisner, M.D. Obstructive lung disease among the urban homeless. *Chest* **2004**, *125*, 1719–1725. [[CrossRef](#)]
36. Weinreb, L.; Goldberg, R.; Perloff, J. Health characteristics and medical service use patterns of sheltered homeless and low-income housed mothers. *J. Gen. Intern. Med.* **1998**, *13*, 389–397. [[CrossRef](#)]
37. Holowatyj, A.N.; Heath, E.I.; Pappas, L.M.; Ruterbusch, J.J.; Gorski, D.H.; Triest, J.A.; Park, H.K.; Beebe-Dimmer, J.L.; Schwartz, A.G.; Cote, M.L.; et al. The Epidemiology of Cancer Among Homeless Adults in Metropolitan Detroit. *JNCI Cancer Spectr.* **2019**, *3*, pkz006. [[CrossRef](#)]
38. Hwang, S.W. Homelessness and health. *CMAJ* **2001**, *164*, 229–233.
39. Crowe, C.; Hardill, K. Nursing research and political change: The street health report. *Can. Nurse* **1993**, *89*, 21–24.
40. Ralli, M.; Arcangeli, A.; Morrone, A.; Ercoli, L. Characteristics of COVID-19 in Homeless Shelters: The Importance of Asymptomatic Transmission. *Ann. Intern. Med.* **2020**, *174*, 42–49.
41. Ralli, M.; Morrone, A.; Arcangeli, A.; Ercoli, L. Asymptomatic patients as a source of transmission of COVID-19 in homeless shelters. *Int. J. Infect. Dis.* **2020**, *103*, 243–245. [[CrossRef](#)] [[PubMed](#)]
42. Opalach, C.; Romaszko, J.; Jaracz, M.; Kuchta, R.; Borkowska, A.; Bucinski, A. Coping Styles and Alcohol Dependence among Homeless People. *PLoS ONE* **2016**, *11*, e0162381. [[CrossRef](#)]

43. Ngo, A.N.; Islam, M.A.; Aoyagi, J.; Sandor, Z.; Sandor, S. Prevalence of Hypertension in Homeless Adults: An Interprofessional Education Community-Based Health Fairs Cross-Sectional Study in Urban Long Beach, California. *High Blood Press Cardiovasc. Prev.* **2021**, *28*, 63–68. [[CrossRef](#)] [[PubMed](#)]
44. Reitzel, L.R.; Chinamuthevi, S.; Daundasekara, S.S.; Hernandez, D.C.; Chen, T.A.; Harkara, Y.; Obasi, E.M.; Kendzor, D.E.; Businelle, M.S. Association of Problematic Alcohol Use and Food Insecurity among Homeless Men and Women. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3631. [[CrossRef](#)] [[PubMed](#)]
45. Fischer, P.J.; Breakey, W.R. The epidemiology of alcohol, drug, and mental disorders among homeless persons. *Am. Psychol.* **1991**, *46*, 1115–1128. [[CrossRef](#)]
46. Drake, M.A. The nutritional status and dietary adequacy of single homeless women and their children in shelters. *Public Health Rep.* **1992**, *107*, 312–319.
47. Bernstein, R.S.; Meurer, L.N.; Plumb, E.J.; Jackson, J.L. Diabetes and hypertension prevalence in homeless adults in the United States: A systematic review and meta-analysis. *Am. J. Public Health* **2015**, *105*, e46–e60. [[CrossRef](#)]
48. Asgary, R.; Sckell, B.; Alcabes, A.; Naderi, R.; Schoenthaler, A.; Ogedegbe, G. Rates and Predictors of Uncontrolled Hypertension Among Hypertensive Homeless Adults Using New York City Shelter-Based Clinics. *Ann. Fam. Med.* **2016**, *14*, 41–46. [[CrossRef](#)]
49. Chen, C.L.; Chen, M.; Liu, C.K. The Effects of Obesity-Related Anthropometric Factors on Cardiovascular Risks of Homeless Adults in Taiwan. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6833. [[CrossRef](#)]
50. Yamamoto, M.; Horita, R.; Sado, T.; Nishio, A. Non-communicable Disease among Homeless Men in Nagoya, Japan: Relationship between Metabolic Abnormalities and Sociodemographic Backgrounds. *Intern. Med.* **2020**, *59*, 1155–1162. [[CrossRef](#)]
51. Gozdzik, A.; Salehi, R.; O'Campo, P.; Stergiopoulos, V.; Hwang, S.W. Cardiovascular risk factors and 30-year cardiovascular risk in homeless adults with mental illness. *BMC Public Health* **2015**, *15*, 165. [[CrossRef](#)] [[PubMed](#)]
52. Baggett, T.P.; Liauw, S.S.; Hwang, S.W. Cardiovascular Disease and Homelessness. *J. Am. Coll. Cardiol.* **2018**, *71*, 2585–2597. [[CrossRef](#)] [[PubMed](#)]
53. Al-Shakarchi, N.J.; Evans, H.; Luchenski, S.A.; Story, A.; Banerjee, A. Cardiovascular disease in homeless versus housed individuals: A systematic review of observational and interventional studies. *Heart* **2020**, *106*, 1483–1488. [[CrossRef](#)]
54. Shiue, I. Is being homeless or worried about housing associated with allergies and skin problems? *Ann. Allergy Asthma. Immunol.* **2014**, *112*, 384–386. [[CrossRef](#)] [[PubMed](#)]
55. Huynh, M.; Gupta, R.; Koo, J.Y. Emotional stress as a trigger for inflammatory skin disorders. *Semin. Cutan. Med. Surg.* **2013**, *32*, 68–72. [[CrossRef](#)]
56. Orion, E.; Wolf, R. Psychological factors in skin diseases: Stress and skin: Facts and controversies. *Clin. Dermatol.* **2013**, *31*, 707–711. [[CrossRef](#)]
57. Ayano, G.; Assefa, D.; Haile, K.; Chaka, A.; Solomon, H.; Hagos, P.; Yohannis, Z.; Haile, K.; Bekana, L.; Agidew, M.; et al. Mental, neurologic, and substance use (MNS) disorders among street homeless people in Ethiopia. *Ann. Gen. Psychiatry* **2017**, *16*, 40. [[CrossRef](#)]
58. Fazel, S.; Khosla, V.; Doll, H.; Geddes, J. The prevalence of mental disorders among the homeless in western countries: Systematic review and meta-regression analysis. *PLoS Med.* **2008**, *5*, e225. [[CrossRef](#)]
59. Hadland, S.E.; Marshall, B.D.; Kerr, T.; Qi, J.; Montaner, J.S.; Wood, E. Depressive symptoms and patterns of drug use among street youth. *J. Adolesc. Health* **2011**, *48*, 585–590. [[CrossRef](#)]
60. Scott, J. Homelessness and mental illness. *Br. J. Psychiatry* **1993**, *162*, 314–324. [[CrossRef](#)]
61. Breakey, W.R.; Fischer, P.J.; Kramer, M.; Nestadt, G.; Romanoski, A.J.; Ross, A.; Royall, R.M.; Stine, O.C. Health and mental health problems of homeless men and women in Baltimore. *JAMA* **1989**, *262*, 1352–1357. [[CrossRef](#)] [[PubMed](#)]
62. Gelberg, L.; Linn, L.S. Demographic differences in health status of homeless adults. *J. Gen. Intern. Med.* **1992**, *7*, 601–608. [[CrossRef](#)] [[PubMed](#)]
63. Lee, K.H.; Jun, J.S.; Kim, Y.J.; Roh, S.; Moon, S.S.; Bukonda, N.; Hines, L. Mental Health, Substance Abuse, and Suicide Among Homeless Adults. *J. Evid. Inf. Soc. Work* **2017**, *14*, 229–242. [[CrossRef](#)] [[PubMed](#)]
64. Berg, J.; Nyamathi, A.; Christiani, A.; Morisky, D.; Leake, B. Predictors of screening results for depressive symptoms among homeless adults in Los Angeles with latent tuberculosis. *Res. Nurs. Health* **2005**, *28*, 220–229. [[CrossRef](#)]
65. Brown, R.T.; Kiely, D.K.; Bharel, M.; Mitchell, S.L. Factors associated with geriatric syndromes in older homeless adults. *J. Health Care Poor Underserved* **2013**, *24*, 456–468. [[CrossRef](#)]
66. Coohy, C.; Easton, S.D.; Kong, J.; Bockenstedt, J.K. Sources of psychological pain and suicidal thoughts among homeless adults. *Suicide Life Threat. Behav.* **2015**, *45*, 271–280. [[CrossRef](#)]
67. Crawford, D.M.; Trotter, E.C.; Hartshorn, K.J.; Whitbeck, L.B. Pregnancy and mental health of young homeless women. *Am. J. Orthopsychiatry* **2011**, *81*, 173–183. [[CrossRef](#)]
68. Hynes, F.; Kilbride, K.; Fenton, J. A survey of mental disorder in the long-term, rough sleeping, homeless population of inner Dublin. *Ir. J. Psychol. Med.* **2019**, *36*, 19–22. [[CrossRef](#)]