Self-perceived Workplace Discrimination And Mental Health Among Immigrant Workers In Italy: A Cross-sectional Study

Anteo Di Napoli (anteo.dinapoli@inmp.it)
INMP - National Institute for Health Migration and Poverty https://orcid.org/0000-0003-3207-8761
Alessandra Rossi
INMP - National Institute for Health Migration and Poverty
Francesca Baralla
Universita degli Studi del Molise Dipartimento di Medicina e Scienze della Salute Vincenzo Tiberio
Martna Ventura
INMP - National Institute for Health Migration and Poverty
Rosaria Gatta
Medecins Sans Frontieres
Minica Perez
Istituto Nazionale di Statistica
Marco Sarchiapone
Universita degli Studi del Molise Dipartimento di Medicina e Scienze della Salute Vincenzo Tiberio
Concetta Mirisola
INMP - National Institute for Health Migration and Poverty
Alessio Petrelli
INMP - National Institute for Health Migration and Poverty

Research article

Keywords: immigrant; workplace; mental health status; discrimination; mediation analysis

Posted Date: March 19th, 2020

DOI: https://doi.org/10.21203/rs.3.rs-17930/v1

Version of Record: A version of this preprint was published on February 9th, 2021. See the published version at https://doi.org/10.1186/s12888-021-03077-6.

Abstract

Background: Immigration process is associated with poor mental and physical health. The workplace represents an important context of social integration, and previous studies, that evaluated the effect of discrimination experienced at workplace, found worse mental health status among immigrants. The aim of this study investigated the association between self-perceived workplace discrimination and other personal experiences, like self-perceived loneliness, level of life satisfaction, and physical health and mental well-being among immigrants in Italy.

Methods: A cross-sectional study was conducted on a sample of 12,408 immigrants (aged 15-64) living and working in Italy. Data derived from the first national survey on immigrants carried out by the Italian National Institute of Statistics (Istat). Mental health status was measured through the mental component summary (MCS) of the SF-12 questionnaire. A linear multivariate regression was carried out to evaluate the association between mental health status, self-perceived workplace discrimination, and sociodemographic factors; a structural equation model was used to test hypothesized relationships shown in a conceptual path analysis model.

Results: Worse mental health status was independently ($p<0.001$) associated with self-perceived workplace discrimination (β:-1.873), self-perceived loneliness (β:-3.021), level of life satisfaction (β:-2.775), and physical health status (β:-0.088). As confirmed by structural equation model, the self-perceived workplace discrimination effect on MCS was mediated by the other factors considered: self-perceived loneliness (13.6%), level of life satisfaction (13.6%), and physical health status (3.9%).

Conclusions: Our study suggest that self-perceived workplace discrimination is associated with worse mental health status in immigrant workers. These results support the hypothesis that self-perceived workplace discrimination may affect mental health status through personal experiences in the workplace and explain the effect of the exposure to workplace discrimination on immigrants' psychological well-being. Our findings suggest that an overall public health response to facilitate the social integration of immigrants and their access to health services, in particular those dedicated to addressing mental health issues.

Background

Mental health problems experienced by immigrant populations are often related to the migration process [1]. Stressful experiences can result in mental illness in various forms, like schizophrenia, psychological distress, depression, and anxiety as well as post-traumatic stress disorder and suicidal ideation [2–6].

Migration to other countries, as a consequence of war, poverty, or just the dream of a better life is also motivated by the aspiration to find a job that can generate better living conditions: a fulfilling job can represent a key element of the integration process in the host society [7].

However, immigrants often work in more precarious conditions, earn poverty wages, and experience more serious abuse and exploitation in the workplace than do natives. Immigrant workers are more likely to accept jobs that national workers are reluctant to perform, the so-called 3Ds (dangerous, dirty, degrading) [8].

A systematic meta-review showed that lack of value and respect in the workplace, imbalanced job design, and occupational uncertainty may negatively affect mental health [9].

Moreover, in the last decade, the anti-immigrant climate, xenophobia, and discrimination have significantly impacted the lives of immigrants. Many findings show that perceived discrimination is an important post-immigration stressor that is negatively correlated with psychological well-being associated with heightened risk for psychosis [3, 10–14].

Immigrants and ethnic minorities often experience social adversity, and perceived discrimination may be an especially relevant context-dependent stressor for visible minority groups [10]. Moreover, mental health status among immigrants can also be affected by some personal experiences, such as perceived loneliness and life satisfaction, issues that have rarely been studied in this population in association with poor mental health.

In this context, it is crucial to provide a conceptual framework of the interrelations between discrimination, psychophysical mediators, and health outcomes. The model proposed by Pascoe & Smart Richman [10] hypothesized three pathways through which discriminatory experiences may affect health: directly, partially mediated through stress responses to a discriminatory event, or through health risk behaviours that may emerge as possible coping mechanisms when discrimination is experienced.

In Italy, the number of resident immigrants has doubled, from 2.4 million people (4.1% of the resident population) in 2005 to 5.3 million (8.7%) in 2019 [15]. Probably also because of this rapid and strong increase, Italian public opinion has recently taken a more hostile turn, sometimes even outright xenophobic, at least in part because of the reduction in social cohesion induced by the global crisis. Native workers are concerned that immigrants will take their jobs, and discrimination against immigrants has been frequently reported, albeit more in work-related settings than outside work [16].

There are about 2.3 million immigrant workers in Italy (10% of the total workforce), whose occupational injury risk is higher than that of Italian workers [17, 18]. A previous study found that self-perceived workplace discrimination was more likely among immigrants than among Italians [19]. However, there are still few data on how discrimination affects the mental health of the immigrant workforce in Southern Europe [20, 21].

Methods

Aim

The aim of our study was to evaluate the association between self-perceived workplace discrimination and mental health status, quantifying the contribution of loneliness, life satisfaction, and perceived physical health as mediators of this relationship, among immigrants living and working in Italy.

Study design and participants

A cross-sectional study was conducted on a sample of 12,408 immigrants aged 15–64 years, residing in Italy and employed at the time of the survey, or formerly employed with work history in Italy in the previous few years. Immigrants with no history of employment in Italy were excluded. Data were obtained from the first unique national survey “Social Conditions and Integration of Foreign Citizens” (SCIF), conducted in 2011–2012 by the Italian National Institute of Statistics (Istat) [22]. The SCIF survey covers many items concerning the living conditions and social integration of immigrants in Italy. In particular, the SCIF survey collected information on socioeconomic status, migratory routes, work history, physical and mental health status, and self-perceived discrimination in the workplace. SCIF also collected and analysed other factors potentially influencing mental

health status, such as self-perceived physical health status, self-perceived loneliness, and self-perceived level of life satisfaction.

The survey was conducted through a two-stage sampling method: in the first stage, 833 of the 8,047 Italian municipalities were selected, with the probability of being selected proportional to their size; in the second stage, 9,600 families, with at least one foreign member, were selected with random criteria from the municipal registry lists. The sample is representative of the 5,014,437 foreigners residing in Italy in 2011–2012. Information on each family member was collected through computer-assisted personal interviewing, conducted in the family home by interviewers trained by Istat.

Measures

Mental Component Summary (MCS) and Physical Component Summary (PCS)

Mental and physical health status were calculated on the basis of the Italian validated version of the SF-12, a subset of the larger SF-36 questionnaire [23, 24]. Mental health-related scales (MCS) include vitality, social functioning, role emotional, and mental health. Physical health-related (PCS) domains include general health, physical status and functioning, and body pain. Both MCS and PCS are indexes with a score ranging from 0 (the worst condition) to 100 (the best condition).

MCS was the outcome variable of the present study.

Self-perceived discrimination in the workplace (S-PDW)

Information was obtained by asking, “During your stay in Italy, have you ever experienced discrimination or any prejudices in the workplace?” (yes vs no was considered as the reference category). The SCIF collected information solely about discrimination among adults in the workplace.

Self-perceived loneliness (S-PL)

The question “Do you feel lonely in Italy?” was used to assess immigrants’ level of loneliness in the host country. We dichotomized the four possible alternatives: subjects who responded “very much/a fair amount” were considered to have self-perceived loneliness, while those who answered “little/not at all” were considered not to have self-perceived loneliness (reference category).

Life satisfaction (LS)

Information about immigrants’ level of life satisfaction was assessed through the question, “On a scale of one to ten, how satisfied are you with your life right now?”. We considered those who declared a number > = 8 point (3rd quartile of score distribution) as having a high level of satisfaction (reference category), while those who declared a number < 8 as having a low level of life satisfaction.

Sociodemographic factors

We also considered, according to past studies [7, 9], some factors that may influence the association between S-PWD and MCS. In particular, we analyzed the following variables: age (two categories 15–39 and 40–64), sex, education level (high – >11 years of schooling or medium/low – up to 11 years of schooling), employment status (currently employed or formerly employed), area of origin (Europe, North Africa, Sub-Saharan Africa, Central-

western Asia, Eastern Asia/ Pacific, the Americas), duration of stay in Italy (< = 9 or > = 10 years). Information about age and duration of stay in Italy were dichotomized, using the median value of their distribution as a cut-off.

Statistical analysis

We performed the Wilcoxon-Mann-Whitney test to evaluate the differences in the distribution of MCS score by the characteristics of the study population.

We evaluated the association between immigrants' S-PWD and MCS by calculating regression coefficients (β) through univariate and multivariate linear regression models, taking into account sociodemographic and self-perceived individual factors that could affect the association considered.

Additionally, in order to conceptualize a framework of the interrelationship between all these factors, a path analysis was performed as shown in the Fig. 1. This approach allowed for the decomposition of the total effect of S-PWD on MCS into direct effects (independent of all mediating factors and confounders) and indirect effects, through each of the mediating factors (S-PL, LS and PCS) [25, 26]. The arrows in Fig. 1 represents regression equations used to assess mediation. The regression coefficients were estimated through a structural equation model (SEM) adjusted for all the confounders. The direct relationship between exposure factor (S-PWD) and outcome (MCS) was estimated by the coefficient β_3, while their indirect relationship was decomposed into the coefficients $\beta_{1,i}$ estimating the connection between S-PWD and each mediation factor (S-PL, LS, PCS), and into the coefficients $\beta_{2,i}$ estimating the connection between each mediation factor (S-PL, LS, PCS) and MCS, where i represents the three mediation factors (i = 1,2,3). The indirect effects were then calculated by multiplying the coefficients estimated ($\beta_{1,i}$*$\beta_{2,i}$). We also calculated the proportions of the direct and indirect effects of the S-PWD out of the total effect on the MCS. The model was adjusted for sociodemographic factors.

Our analyses were performed with SAS 9.3 for linear regression models and with STATA 15 for SEM.

Results

In the sample of 12,408 immigrants, they were mainly young (mean age 38.9 years ± 10.2), with an average duration of stay in Italy equal to 10.7 years ± 6.4.

Table 1 summarises the characteristics of the study population by MCS score. At the time of the interview, 83.1% of subjects were employed, while 16.9% had a work history in Italy but had lost their job. Most of immigrants had a middle/low education level (61.3%) and came from Europe (61.3%). Of all interviewed subjects, 17.3% reported self-perceived discrimination in the workplace in Italy, 16.3% declared they felt lonely, and 44.4% felt low satisfaction with their life. Subjects who reported S-PWD had lower MCS mean score than those who did not (51.4 vs 53.9), as did those who reported S-PL (50.2 vs 54.1) and those reported having a low LS (51.6 vs 54.9). We found the worst mental health status (the lowest mean MCS scores) among subjects with the best physical health status (the 4th quartile of the PCS score distribution).

Table 1
Individual characteristics and Mental Component Summary (MCS). SCIF survey 2011–2012.

		n = 12,408			
VARIABLES		n.	%	MCS score (mean ± SD)	p-value
	Total	12,408	100	(53.5 ± 7.1)	-
Self-perceived workplace discrimination	No	10,262	82.7	(53.9 ± 6.7)	< 0.0001
	Yes	2,146	17.3	(51.4 ± 8.4)	
Self-perceived loneliness	No	10,385	83.7	(54.1 ± 6.5)	< 0.0001
	Yes	2,023	16.3	(50.2 ± 9.1)	
Level of life satisfaction	High	6,900	55.6	(54.9 ± 6.0)	< 0.0001
	Low	5,508	44.4	(51.6 ± 7.9)	
Physical Component Summary (PCS)	1st quartile	3076	24.8	(52.4 ± 7.7)	< 0.0001
	2nd quartile	3089	24.9	(56.3 ± 3.7)	
	3rd quartile	4106	33.1	(56.0 ± 4.8)	
	4th quartile	2137	17.2	(46.0 ± 7.9)	
Length of stay (years)	<=9	6,050	48.8	(53.7 ± 6.8)	0.04
	>=10	6,358	51.2	(53.3 ± 7.4)	
Age group (years)	15–39	6,746	54.4	(53.9 ± 6.9)	< 0.0001
	40–64	5,662	45.6	(53.0 ± 7.4)	
Sex	Male	6,217	50.1	(53.8 ± 6.8)	< 0.0001
	Female	6,191	49.9	(53.1 ± 7.4)	
Education level	High	4,808	38.7	(53.7 ± 7.2)	< 0.0001
	Middle/Low	7,600	61.3	(53.3 ± 7.1)	
Employment status	Employed	10,316	83.1	(53.8 ± 6.7)	< 0.0001
	Formerly employed	2,092	16.9	(51.8 ± 8.7)	
Area of origin	Europe	7,604	61.3	(53.4 ± 7.1)	< 0.0001
	North Africa	1,526	12.3	(52.8 ± 7.7)	
	Sub-Saharan Africa	711	5.7	(53.3 ± 7.3)	
	Central-western Asia	873	7	(54.3 ± 6.1)	
	East Asia / Pacific	854	6.9	(54.6 ± 6.2)	
	The Americas	840	6.8	(53.3 ± 7.4)	

Table 2 shows the results of the univariate and multivariate linear regression models assessing the association between MCS score, S-PWD, and other factors. We observed a statistically significant association between MCS score and the presence of S-PWD (β:-1.873), of S-PL (β:-3.021), low levels of LS (β:-2.775), a length of stay in Italy longer than 9 years (β:-0.658), having lost one's job at the time of the survey (β:-1.694), middle/low education level (β:-0.265), an unitary increment of PCS score (β:-0.088), being a woman (β:-0.702), and being 40–64 years old compared with subjects 15–39 years old (β:-0.704).

Table 2

Factors associated with Mental Component Summary (MCS). Crude and adjusted ß coefficients with 95% confidence intervals (CI). SCIF survey 2011–2012.

VARIABLES		Crude β	95%CI		p-value	Adjusted β	95%CI		p-value
Self-perceived workplace discrimination	No	0	-	-	< 0.0001	0	-	-	< 0.0001
	Yes	-2.496	-2.168	-2.824		-1.873	-1.555	-2.191	
Self-perceived loneliness	No	0	-	-	< 0.0001	0	-	-	< 0.0001
	Yes	-3.898	-4.230	-3.566		-3.021	-3.352	-2.69	
Level of life satisfaction	High	0	-	-	< 0.0001	0	-	-	< 0.0001
	Low	-3.334	-3.579	-3.089		-2.775	-3.021	-2.529	
Physical Component Summary (PCS)	1 more PCS value	-0.026	-0.048	-0.004	0.022	-0.088	-0.109	-0.066	< 0.0001
Length of stay (years)	<=9	0	-	-	0.002	0	-	-	< 0.0001
	>=10	-0.388	-0.639	-0.138		-0.658	-0.908	-0.408	
Age group (years)	15–39	0	-	-	< 0.0001	0	-	-	< 0.0001
	40–64	-0.914	-1.165	-0.663		-0.704	-0.954	-0.455	
Sex	Male	0	-	-	< 0.0001	0	-	-	< 0.0001
	Female	-0.705	-0.955	-0.455		-0.702	-0.955	-0.45	
Education level	High	0	-	-	0.019	0	-	-	0.038
	Middle/Low	-0.308	-0.565	-0.051		-0.265	-0.514	-0.015	
Employment status	Employed	0	-	-	< 0.0001	0	-	-	< 0.0001
	Formerly employed	-1.948	-2.281	-1.616		-1.694	-2.016	-1.372	
Area of origin	Europe	0	-	-	-	0	-	-	-
	North Africa	-0.597	-0.988	-0.206	0.003	-0.107	-0.492	0.277	0.584
	Sub-Saharan Africa	-0.136	-0.682	0.410	0.625	0.658	0.134	1.183	0.014
	Central-western Asia	0.902	0.404	1.400	0.000	0.998	0.518	1.477	0.000
	East Asia / Pacific	1.158	0.656	1.661	0.000	0.999	0.519	1.479	0.000

VARIABLES		Crude β	95%CI		p-value	Adjusted β	95%CI		p-value
	The Americas	-0.112	-0.618	0.395	0.666	-0.182	-0.663	0.299	0.459

Table 3 shows the results from SEM, which decomposed the total effect of workplace discrimination on MCS into direct effects and indirect effects. The direct effect of S-PWD on MCS accounted for 68.9% of the total (β:-1.912 out of -2.493). The proportion of total effect mediated by psychophysical factors was 31.1%, of which 13.6% was attributable to S-PL (indirect effect $\beta_{1.1}*\beta_{2.1}$:-0.339), 13.6% to low level of LS (indirect effect $\beta_{1.2}*\beta_{2.2}$:-0.339), and 3.9% to PCS (indirect effect $\beta_{1.3}*\beta_{2.3}$:0.097).

Table 3
Path coefficients and proportion (*100) of effects of self-perceived workplace discrimination (S-PWD) on mental component summary (MCS) mediated by psychophysical factors. Results from structural equation model. SCIF survey 2011–2012.

Effects	Path coefficients		Proportion of total effect (calculated by model coefficients) mediated by each factor	Proportion of total effect (absolute values of model coefficients) mediated by each factor
	Estimate	95%CI	%	%
Direct of S-PWD on MCS	-1.912	-2.229 ; -1.595	76.7	68.9
Indirect of S-PWD on MCS	-0.581	-0.679 ; -0.484	23.3	31.1
Indirect of S-PWD mediated by self-perceived loneliness on MCS	-0.339	-0.403 ; -0.276	13.6	13.6
Indirect of S-PWD mediated by level of life satisfaction on MCS	-0.339	-0.410 ; -0.269	13.6	13.6
Indirect of S-PWD mediated by Physical Component Summary on MCS	0.097	0.064; 0.130	-3.9	3.9
Total of S-PWD on MCS	-2.493	-2.818 ; -2.169	100	100

Discussion

This study investigated the association between self-perceived workplace discrimination and mental well-being among immigrant workers in Italy, including other personal experiences like self-perceived loneliness, level of life satisfaction, and perceived physical health.

We hypothesize that S-PWD may affect MCS directly and through the influences of some psychophysical factors like personal experiences (like S-PL and LS) as well as self-reported physical status. Our results underline and quantify the relationship between S-PWD and mental health outcomes, directly as well as through S-PL, LS, and PCS as mediators, having defined a path analysis from the conceptual model proposed by Pascoe and Smart Richman [10]. In our study S-PWD acted on MCS both through a direct relationship, which we estimated as 68.9% of the total effect, and also through an indirect relationship mediated by S-PL (13.6%), LS (13.6%), and PCS (3.9%). In particular, we found negative effect of S-PWD on MCS when it was mediated by S-PL and low level of LS, while the indirect effect mediated by PCS was positive, as the product of two negative effects (S-PWD on PCS and PCS on MCS).

In our study, discrimination was a subjective construct without verification of related events. Our findings confirmed previous research that underlined the relationship between workplace discrimination and mental health in a large and heterogeneous immigrant sample [27]. It would seem that perceived discrimination - whether suffered during a current or a past job - can act as a predictor of deterioration in perceived mental health, as already demonstrated by other studies [9, 11, 20, 21, 27].

Moreover, our findings confirm that low life satisfaction and a perception of loneliness could have a negative effect on good mental health status among immigrants in Italy. Indeed, our results seem to support the hypothesis that discriminatory experiences may affect mental health through stress responses, which explain part of the effect on MCS of exposure to S-PWD, as suggested by the indirect negative effect of loneliness and low life satisfaction on MCS.

Previous research found that perceived discrimination experiences may vary in relation to many contextual factors [28] as well as to other personal and economic resources [29]. Immigrants who experienced discrimination were most likely to report worsening self-reported mental health, with a higher risk of feelings of sadness, depression, and loneliness [30].

The workplace is a social context where discrimination is experienced due to limited access to certain types of jobs, bad relationships between workers and management, or to the characteristics of the job itself [11]. Not being valued and respected in the workplace, imbalanced job design, and occupational uncertainty may negatively affect mental health, as can interacting with individual personality characteristics, attitudes, and coping [9]. Workplace discrimination can be extremely stressful, especially among immigrant populations [27], who experience more difficulties in finding and changing jobs or obtaining more qualified positions, especially in these recent years of social and economic crisis [31].

Our findings suggest that also physical health status, measured through PCS index, is part of the pathway by which the experience of perceiving discrimination may be related to negative mental health outcomes, suggesting that perceived discrimination could be related also to negative health behaviours. Furthermore, the worse perceived mental health in people who had been in Italy longer than 10 years, similar to previous Canadian studies, showing a poorer mental health status among long-term immigrants than among recent immigrants [32, 33]. We also found that having lost one's job (and therefore being unemployed at the time of the interview) may have negatively affected good mental health status among immigrants. The immigration process itself constitutes a pool of life goals and expectations from people who have decided to change their own life; achieving these goals can greatly influence overall life satisfaction [34, 35].

Strengths and limitations

The strength of this study is that it was conducted in Italy, where the first generation of immigrants still makes up most of the foreign population, which has been strongly affected by the economic crisis and which has been subjected to a concerning increase in xenophobic episodes. Italy is therefore an ideal setting for the study of the relationship between mental health and migration characteristics. Moreover, to the best of our knowledge, there have been few studies in Southern Europe that have investigated the implications of perceived discrimination in the workplace [19–21, 36].

Our study also extended existing research by examining the independent effects of mental health on other factors strictly related to the perception of one's life condition. In particular, we considered the potential role of some personal experiences (loneliness, level of life satisfaction) and self-perceived physical health in the association between discrimination and self-perceived mental health.

One possible limitation of this study is that cross-sectional data can make it difficult to discern causality in the association observed. However, theoretical perspectives support the idea that perceived discrimination adversely affects mental health outcomes [10].

Furthermore, this study relies exclusively on self-reporting. However, many of the current studies in this area involve perceptions of discriminatory treatment based on self-reporting of life events and personal experiences rather than on objectively observed discrimination [10]. Moreover, it has been demonstrated that self-perceived health is a reliable predictor of mortality [37], reason for which it has frequently been used as an outcome measure in numerous studies on immigrant health [38].

Conclusions

Overall, we observed that perceived workplace discrimination and other factors considered, such as self-reported loneliness, dissatisfaction with life, perceived physical health, and longer duration of stay in Italy, were important stressors that played a role in immigrant workers' mental health status. We also found that having lost one's job could have a negative effect on good mental health status among immigrants. Work connects minority group members with their host society and is a key element in the integration process; increased workplace discrimination could have substantial negative effects, determining a subjective sense of social exclusion in minority group members [7].

The literature shows that immigrants expect to be recognised as individuals who contribute to the host society in terms of experience and resources as well as in terms of social and cultural wealth [39]. A collapse of these expectations could negatively affect personal life satisfaction in the host country [34, 35].

Our findings of an association between perceived workplace discrimination and mental health status among immigrants suggest that an overall public health response is essential since these workers are the weakest link in the labour market in developed countries, particularly during a global recession [8, 34, 40, 41].

These policies, in addition to any workplace-based interventions, should be to facilitate the social integration of immigrants and their access to health services, in particular those dedicated to addressing mental health issues.

Further investigation is needed to disentangle how the multiple dimensions of perceived discrimination may affect health. In particular, long-term prospective studies on immigrant workers exploring mechanisms that mediate the

effects of perceived discrimination on mental health should be the focus of future efforts.

Abbreviations

• Istat
• Italian National Institute of Statistics
• LS
• Life satisfaction
• MCS
• Mental Component Summary
• PCS
• Physical Component Summary
• SCIF
• Social Conditions and Integration of Foreign Citizens
• SEM
• structural equation model
• S-PDW
• Self-perceived discrimination in the workplace
• S-PL
• Self-perceived loneliness

Declarations

Ethics approval and consent to participate

An approval of an institutional review board/ethics review committee was not required for the present study, being a record-based study that was part of the activities included in the National Statistical Program approved by the Italian Presidency of the Council of Ministers. The selected families were informed by a letter from Istat about the purposes of the survey and about how it would be conducted. Participants were also reassured about confidentiality and protection of personal data. Except for some sensitive information specified in the informative letter, the response to the survey was mandatory by law and formal consent to participate was therefore not required.

Consent for publication

All of the authors have contributed significantly to the study and have approved the present version of the manuscript, its submission and publication.

Availability of data and materials

The data that support the findings of this study are available from Istat but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available.

Competing interests

The authors do not have any financial or other relationships that might lead to a conflict of interest.

Funding

This study was conducted as part of institutional activities and did not receive specific funding.

Authors' contributions

Anteo Di Napoli took part to conceptualization of the study, bibliographic research, development and implementation of methods, statistical analysis and preparation of manuscript; Alessandra Rossi took part to development and implementation of methods and statistical analysis, and preparation of manuscript; Francesca Baralla took part to conceptualization of the study, bibliographic research, preparation of manuscript; Martina Ventura took part to development and implementation of methods and statistical analysis; Rosaria Gatta took part to conceptualization of the study, bibliographic research, preparation of manuscript; Monica Perez took part to development and implementation of methods; Marco Sarchiapone took part to conceptualization of the study; Concetta Mirisola took part to conceptualization of the study; Alessio Petrelli took part to conceptualization of the study, bibliographic research, development and implementation of methods, statistical analysis and preparation of manuscript.

Acknowledgements

We thank Jacqueline M. Costa for the English translation and language editing of this paper.

References

1. American Psychological Association. Crossroads: The psychology of immigration in the new century. APA Presidential Task Force on Immigration. Washington, DC: 2012.
2. Lindert J, et al. Depression and anxiety in labor migrants and refugees: a systematic review and meta-analysis. Soc Sci Med. 2009;69:246-57.
3. Berg AO, et al. Perceived discrimination is associated with severity of positive and depression/anxiety symptoms in immigrants with psychosis: a cross-sectional study. BMC Psychiatry. 2011;11:77. doi:10.1186/1471-244X-11-77.
4. Cantor-Graae E, Selten J. Schizophrenia and migration: A Meta-Analysis and Review. Am J Psychiatry. 2005;162:12-24.
5. Coid JW, et al. Raised incidence rates of all psychoses among migrant groups: findings from the East London first episode psychosis study. Arch Gen Psychiatry. 2008;65:1250-8.
6. Bourque F, van der Ven E, Malla A. A meta-analysis of the risk for psychotic disorders among first- and second-generation immigrants. Psychol Med 2011;41(5):897-910.
7. Berry JW, et al. Immigrant youth: acculturation, identity, and adaptation. Appl Psychol. 2006;55:303-32.
8. Benach J, et al. Immigration, employment relations, and health: developing a research agenda. Am J Ind Med. 2010;53:338-43.
9. Harvey SB, et al. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. Occup Environ Med. 2017;74:301-10.
10. Pascoe EA, Smart Richman L. Perceived discrimination and health: a meta-analytic review. Psychol Bull. 2009;135:531-54.

11. Rospenda KM, Richman JA, Shannon CA. Prevalence and mental health correlates of harassment and discrimination in the workplace: results from a national study. J Interpers Violence. 2009;24:819-43.
12. Schmitt MT, et al. The consequences of perceived discrimination for psychological well-being: a meta-analytic review. Psychol Bull. 2014;140:921-48.
13. Karlsen S, et al. Racism, psychosis and common mental disorder among ethnic minority groups in England. Psychol Med. 2005,35:1795-1803.
14. Veling W, et al. Discrimination and the incidence of psychotic disorders among ethnic minorities in The Netherlands. Int J Epidemiol. 2007;36:761-8.
15. Demography in Figures. Resident Foreigners. Roma: 2019. http://demo.istat.it/strasa2019/index.html
16. Di Napoli A. [The health of immigrant workers as a mirror of the health of Italy]. Epidemiol Prev. 2018;42:259-60.
17. Salvatore MA, et al. Work-related injuries among immigrant workers in Italy. J Immigr Minor Health. 2013;15:182-7.
18. Giraudo M, Bena A, Costa G. Migrant workers in Italy: an analysis of injury risk taking into account occupational characteristics and job tenure. BMC Public Health. 2017;17:351. doi:10.1186/s12889-017-4240-9
19. Salvatore MA, et al. [Discrimination at the workplace among immigrants in Italy]. Med Lav. 2012;103:249-58.
20. Agudelo-Suárez A, et al. Discrimination, work and health in immigrant population in Spain. Soc Sci Med. 2009;68:1866-74.
21. Agudelo-Suárez AA, et al. The effect of perceived discrimination on the health of immigrant workers in Spain. BMC Public Health. 2011;11:652. doi:10.1186/1471-2458-11-652.
22. Multipurpose survey on households: condition and social integration of foreign citizens. Roma: 2011. http://siqual.istat.it/SIQual/modelli.do?id=8888950
23. Ware J, Kosinski M, Keller SD. A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. Med Care. 1996;34:220-33.
24. Apolone G, Mosconi P. The Italian sf-36 health survey: translation, validation and norming. J Clin Epidemiol. 1998;51:1025-36.
25. Kahn JH. Factor Analysis in counseling psychology research, training, and practice: principles, advances, and applications. Couns Psychol. 2006;34:684-718.
26. VanderWeele T, Vansteelandt S. Mediation Analysis with Multiple Mediators. Epidemiol Methods. 2014;2:95-115.
27. Williams DR, Mohammed SA. Discrimination and racial disparities in health: evidence and needed research. J Behav Med. 2009;32:20-47.
28. Schwartz SJ, et al. The identity dynamics of acculturation and multiculturalism: Situating acculturation in context. Oxford Handbook of Multicultural Identity: http://dx.doi.org/10.1093/oxfordhb/9780199796694.013.014
29. Berry JW. Immigration, acculturation, and adaptation. Appl Psychol 1997;46:5-34.
30. De Maio FG, Kemp E. The deterioration of health status among immigrants to Canada. Glob Public Health. 2010;5:462-78.
31. Córdoba-Doña JA, et al. How are the employed and unemployed affected by the economic crisis in Spain? Educational inequalities, life conditions and mental health in a context of high unemployment. BMC Public

Health. 2016;16:267. doi:10.1186/s12889-016-2934-z

32. Stafford M, Newbold BK, Ross NA. Psychological distress among immigrants and visible minorities in Canada: a contextual analysis. Int J Soc Psychiatry. 2011;57:428-41.
33. Veenstra G. Racialized identity and health in Canada: results from a nationally representative survey. Soc Sci Med. 2009;69:538-42.
34. Colic-Peisker V, Tilbury F. Integration into the Australian labour market: the experience of three “visibly different” groups of recently arrived refugees. Int Migr. 2007;45:59-85.
35. Verkuyten M. Life satisfaction among ethnic minorities: the role of discrimination and group identification. Soc Indic Res. 2008;89:391-404.
36. Di Napoli A, et al. [Perceived discrimination at work for being an immigrant: a study on perceived mental health among immigrants in Italy]. Epidemiol Prev. 2017;3-4(S1):33-40.
37. Idler EL. Self-rated health and mortality: a review of twenty-seven community studies. J Health Soc Behav. 1997;38:21-37.
38. Nielsen SS, Krasnik A. Poorer self-perceived health among migrants and ethnic minorities versus the majority population in Europe: a systematic review. Int J Public Health. 2010;55:357-71.
39. Giamo LS, Schmitt MT, Outten HR. Perceived discrimination, group identification, and life satisfaction among multiracial people: a test of the rejection-identification model. Cult Divers Ethn Minor Psychol. 2012;18:319-28.
40. Dipboye R, Colella A. The dilemmas of workplace discrimination. In: Dipboye R, Colella A, eds. The psychological and organizational bases of discrimination at work. Hove, UK: Larence Erlbaum Associates 2005: 305-27.
41. Borrell C, et al. Perceived discrimination and health among immigrants in Europe according to national integration policies. Int J Environ Res Public Health. 2015;12:10687-99.

Figures

Figure 1 – Graphic display of the conceptual framework analysis model

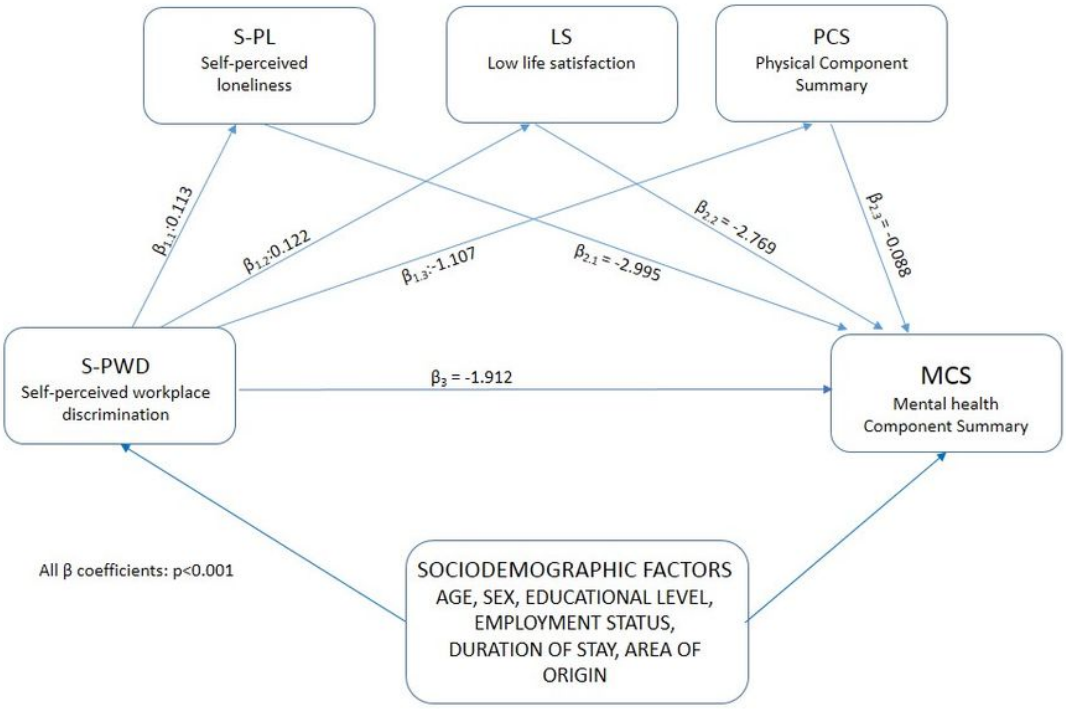

Figure 1

Graphic display of the conceptual framework analysis model