



ORIGINAL ARTICLE

The invisible wounds of five decades of armed conflict: inequalities in mental health and their determinants in Colombia

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Abstract

Objectives We analyzed the relation between exposure to the armed conflict and violence with mental health disorders in Colombia and assessed the extent and determinants of socioeconomic inequalities in mental health related to differential exposure to the conflict and violence.

Methods Regression and decomposition analyses were used in combination with the 2015 nationally representative Mental Health Survey ($N = 10,853$). Mental health disorders were assessed using the Self-Reporting Questionnaire (SRQ 20), and socioeconomic status by a Multidimensional Poverty Index.

Results 3% of adults have been victim of a violent crime and 13% victim of the armed conflict. Victims of the armed conflict have 1.74 times higher odds ($p < .05$) of suffering mental health disorders compared to non-victims. Differential exposure to the armed conflict among lower socioeconomic groups explains 86% of total inequality in mental health disorders.

Conclusions Interventions that increase quality and access of mental health treatments among victims of the conflict will not only lead to improvements in mental health among victims but also significantly reduce inequalities in mental health in Colombia.

Keywords Colombia · Conflict · Inequality · Mental health · Violence

Introduction

The historic peace agreement between the Colombian government and the FARC (Revolutionary Armed Forces of Colombia) has brought the end in sight of the longest civil war in the Western Hemisphere that has already resulted in over 220,000 deaths and more than seven million internally displaced individuals. While the peace accord has received much praise, there remain daunting challenges to its success including uncertainty about the implementation, continuing guerilla activities as well as

opposition from the center-right. One significant, yet largely ignored, challenge for the peace process is that millions of Colombians suffer from mental health disorders as a direct or indirect consequence of the armed conflict that lasted more than five decades (Idrobo et al. 2018). On the one hand, discrimination and stigmatization of victims, combined with poor job prospects, can fuel the vicious cycle of mental disorder, poverty and violence (Crisp et al. 2000; Patel and Kleinman 2003). In addition, due to its disproportionate impact on poor and rural communities and welfare losses of displaced populations (Ibáñez and Moya 2010a, b) the conflict has also significantly exacerbated socioeconomic inequalities in mental health. As a result, the high prevalence of common mental health disorders [being around 15% according to this study, mainly as a result of anxiety, depression and post-traumatic stress disorder (PTSD) (Palacio Acosta 2016)], in particular among victims of the conflict, is not only of a concern for victims but also for the success of the peace process itself, given that inequality and social exclusion are widely regarded as

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important causes for the conflict that has plagued Colombia for decades (Gillin 2015). Furthermore, evidence also shows that inequality may not only be a result of high rates of poor health, homicides and violence, but also a cause of the latter (Flores 2014; Wilkinson and Pickett 2017).

Successfully overcoming the legacy of more than half a century of armed conflict is particularly difficult in a context characterized by continuously high rates of crime, violence, abuse, poverty and collective trauma (Ribeiro et al. 2017; Wilkinson and Pickett 2017). Moreover, due to insufficient mental health and social care services, as in many Latin American countries, there exists a very large treatment gap for mental health conditions (Alarcón 2003; Organization for Economic Co-Operation and Development (OECD) 2015; United Nations Office on Drugs and Crime (UNODC) 2006). This situation is aggravated by the existence of deep-rooted cultural beliefs related to shame and guilt with regard to mental illness, poor mental health literacy, the lack of financial resources and other factors that prevent individuals from seeking help or treatment (Garcia-Subirats et al. 2014; Jankovic et al. 2011; Kaltman et al. 2016; Kantor et al. 2017; Kohn et al. 2004). Although the peace agreement bounds the Colombian government to provide adequate mental health treatment for victims, access and quality of services will likely be modest in poor rural areas where most of the conflict victims live. Furthermore, appropriate epidemiological information about the magnitude of mental health disorders, their determinants and distribution is lacking. However, such evidence is urgently needed to develop and assess programs and interventions aimed not only at addressing immediate causes of mental health disorders but also the underlying social determinants (Alarcón 2003). This is particularly the case as one of the explicit expectation of the peace process is that it will help to reduce inequality in Colombia (Marmot et al. 2008).

Using new data from the nationally representative Mental Health Survey (ENSM), this study aims to address this gap by systematically assessing the determinants of mental health disorders in Colombia, with a particular focus on factors linked to exposure to conflict and violence. Furthermore, using a decomposition approach, this study provides the first evidence on magnitude and determinants of socioeconomic inequalities in mental health in Colombia.

Methods

Data

Data for this study came from the 2015 Mental Health Survey of Colombia (ENSM). ENSM is a cross-sectional

nationally representative survey representative of all age-groups and the five main geographic regions of the country (Presidency of the Republic of Colombian 2016). It includes information on individual and household socioeconomic characteristics, perceptions about individuals' lives, exposure to the armed conflict and violence, as well as mental health. The total number of interviewed individuals aged 18 and above was 10,870. Due to item non-response, the present study included 10,853 individuals with complete information.

Measures

Mental health disorders

Prevalence of mental health disorders was assessed through the Self-Reporting Questionnaire (SRQ 20). SRQ 20 was developed by the World Health Organization (WHO) to assess prevalence of common mental disorders, including major depression, anxiety disorders or suicidality, in resource-poor settings when diagnoses of specific illnesses are not required. It has been assessed widely regarding its validity and reliability in developing countries and also used in the Colombian context (Gómez-Restrepo et al. 2016). Following standard scoring defined by the WHO to assess prevalence of depression and anxiety (Harpham et al. 2004; Husain et al. 2016), each of the 20 items was scored 0 or 1, where a score of 1 indicates that the symptom was present in the last 30 days. Subsequently, a summary score was calculated, ranging from 0 (no symptoms are present) to 20. (All symptoms are present.) Finally, a cutoff score of 7/8 was used to identify individuals with a clinically significant distress (Beusenberg et al. 1994).

Socioeconomic status

As measure of socioeconomic status, we used the Multidimensional Poverty Index (MPI) (van der Westhuizen et al. 2016). Developed by the Colombian government, the index applies the so-called Alkire–Foster method (Oxford Poverty & Human Development Institute (OPHI) 2011) by counting multiple deprivations that individuals experience in different dimensions: (1) health (including health insurance and access to social care services), (2) education (including literacy and years of education), (3) access to public utilities and housing conditions (including access to water, adequate floor and wall materials as well as coverage of sewer waste), (4) labor (including long-term unemployment and access to the formal job market) and (5) childhood and youth conditions (including children's school attendance, access to early childhood care services and child labor) (Alkire and Foster 2011). For calculating

the MPI, a weighted count of deprivations is derived, thus ranging from 0 (indicating no deprivations) to a maximum of 11 deprivations.

Determinants of socioeconomic inequalities in mental health

We included a comprehensive set of variables to assess their contribution to socioeconomic inequality in depressive disorders that have been previously shown to be associated with mental health outcomes in Latin America, as well as exposure to violence and armed conflict (Oxford Poverty & Human Development Institute (OPHI) 2011): (a) age-group (18–45, 46–65 and 66+), (b) gender, (c) rural versus urban residency and (d) labor market status (working in the formal sector, working in the informal sector and out of the labor force). Furthermore, (e) respondents were asked whether they had been victims of the armed conflict (e.g., through forced displacement, torture, massacres, armed encounters, kidnapping, personal or sexual violence or anti-person mines), or (f) of a violent crime (including robbery or extortion).

Statistical analyses

In a first step, we used logistic regression to assess the association between prevalence of mental health disorders, exposure to violence, the armed conflict and covariates. In a second step, we used decomposition analysis to quantify overall socioeconomic inequality in mental health as well as their determinants. For this purpose, we first calculated the health concentration index (HCI) for depressive disorders according to the MPI. The HCI is a standard method to measure and describe inequalities in health-related outcomes (Muntaner et al. 2013; Ortiz-Hernández et al. 2007; Puac-Polanco et al. 2015), measuring inequality in one variable relative to the ranking of another. While it shares the same basic characteristics with the relative index of inequality (RII) (Wagstaff et al. 1989), the main advantages of the HCI are that it represents inequality across the entire socioeconomic distribution and can be decomposed into its parts. Similar to the Gini coefficient, the HCI is based on a Lorenz curve that reflects the cumulative share of a population's health as a function of the cumulative share of the population, whereas the population is ranked from the worst to the best health. A Lorenz curve for a given health outcome with a 45° slope represents a situation of perfect equality, where each individual shares the same health. In most cases, the actual Lorenz curve for a given health outcome will lie above the 45° line, meaning that health is unequally distributed within a population. The HCI then represents deviation from the line of equality and ranges between -1 (implying that the health outcome

is more prevalent among individuals at the lower end of the socioeconomic distribution) and 1 (implying that the health outcome is more prevalent among individuals at the higher end of the socioeconomic distribution). Empirically, the HCI can be estimated by linear regression in cases where the health outcome is continuous (Koolman and Van Doorslaer 2004). However, since our health outcome is binary, we follow the literature in estimating the HCI using a probit model (Wagstaff et al. 2007). The overall inequality in health can be decomposed into the contributions of different factors, whereas each respective contribution reflects the strength of the association between each variable and the health outcome, as well as the extent of socioeconomic inequality within the same variable (Yiengprugsawan et al. 2010).

Results

Descriptive statistics

Table 1 presents an unweighted descriptive overview of the sample ($N = 10,853$). As the table shows, prevalence of

Table 1 Sample overview: Colombia, 2015

	<i>n</i>	%
Mental health disorders (yes)	1076	9.92
Multidimensional Poverty Index (MPI)	Mean = 2.49	SD = 1.78
Covariates		
Women	6474	59.66
Men	4378	40.34
Aged 18–44	5878	54.17
Age 45–64	3623	33.39
Aged 65+	1351	12.45
No minority	8864	81.68
Minority	1988	18.32
Urban	8262	76.13
Rural	2590	23.87
Working (formal)	2145	19.77
Working (informal)	3255	29.99
Out of the labor force	5381	49.59
Victim of violent crime	351	3.23
Victim of armed conflict	1440	13.27
<i>N</i>	10,853	

Information derived from the 2015 Colombian Mental Health Survey. Mental health disorders were assessed using the Self-Reporting Questionnaire (SRQ 20). The Multidimensional Poverty Index measures the number of (weighted) deprivations on the level of the household. All information in the table is unweighted

N number of cases, *SD* standard deviation

mental health disorders in the total adult population is approximately 10%. However, among victims of the conflict, it is nearly 15% (results not shown in table). Around 13% of the sample report having been victim of displacement or violence as result of the armed conflict, and more than 3% of respondents have been victim of a violent crime. Around 24% suffer from four or more material or social deprivations, representing the official definition of poverty in Colombia.

Exposure to the armed conflict or violence and mental health disorders

In the first step, we assessed associations between socio-demographic variables, exposure to armed conflict and violence with mental health disorders. As Table 2 (Panel A) shows, men are 49% less likely to suffer from mental health disorders (OR = 0.51, 95% CI 0.43–0.60) than

women. Compared to those aged between 18 and 44 years, individuals aged 45–64 years are about 52% more likely to suffer from a mental health disorder (OR = 1.52, 95% CI 1.32–1.75), while individuals older than 65 years are 38% more likely (OR = 1.38, 95% CI 1.13–1.67). Members of minority ethnic groups or those living in rural areas are not significantly more likely to suffer from mental health disorders. Compared to individuals having a formal job, those working in the informal sector (OR = 1.99, 95% CI 1.54–2.56) or not currently employed (OR = 3.07, 95% CI 2.42–3.89) are significantly more likely to suffer from a mental health disorder.

Turning to the variables associated with exposure to violence and armed conflict, Table 2 (Panel A) shows that having been victim of a violent crime is associated with a 82% greater risk of reporting a mental health disorder (OR = 1.82, 95% CI 1.35–2.46). Finally, individuals that have been victim of forceful displacement of violence

Table 2 Determinants of mental health disorders and inequality: Colombia, 2015

Variable	Panel A: multivariate regression analysis			Panel B: decomposition analysis	
	OR ^a	95% CI	<i>P</i> value	Concentration index (CI) ^b	Contribution (%) ^c
Women	1	1	1		
Men	0.51	(0.43–0.60)	< .05	– 0.01	– 39.2
Age 18–44	1	1	1		
Age 45–64	1.52	(1.32–1.75)	< .05	0.01	– 12.5
Aged 65+	1.38	(1.13–1.67)	< .05	– 0.11	30.8
No minority	1	1	1		
Minority	0.95	(0.80–1.13)	0.56	– 0.18	– 13.0
Urban	1	1	1		
Rural	1.02	(0.88–1.18)	0.83	– 0.35	11.7
Working in formal sector	1	1	1		
Working in informal sector	1.99	(1.54–2.56)	< .05	– 0.21	35.6
Out of the labor force	3.07	(2.42–3.89)	< .05	– 0.10	46.1
Victim of violent crime	1.82	(1.35–2.46)	< .05	0.03	– 5.7
Victim of armed conflict	1.74	(1.47–2.05)	< .05	– 0.15	85.7

Analyses are based on the 2015 Colombian Mental Health Survey. Mental health disorders were assessed using the Self-Reporting Questionnaire (SRQ 20). The Multidimensional Poverty Index (MPI) measures the number of (weighted) deprivations on the level of the household. The overall HCI was – 0.12 (95% CI – 0.10, – 0.15)

OR odds ratio, CI confidence interval

^aThe OR refers to the association between each variable and the risk of suffering from a mental health disorder derived from a multivariate logistic regression model. In order to be included in the decomposition analysis, variables do not necessarily have to be associated significantly with the outcome (e.g., as in the case of rural vs. urban residency). Rather, they only have to be associated to some degree with the outcome, meaning that the association should not equal zero

^bThe health concentration index (HCI) measures inequality in mental health disorders according to the MPI. The HCI ranges between – 1 and 1. A negative sign indicates that mental health disorders are more concentrated among poorer individuals (i.e., with a lower MPI), and a positive sign indicates that mental health disorders are more concentrated among more affluent individuals (i.e., with a higher MPI)

^cThe contribution (%) indicates the share by which total inequality in mental health disorders according to the MPI would be reduced if socioeconomic inequality within a given dimension would be entirely reduced. Rather, they only have to be associated with some degree with the outcome, meaning that the association should not equal zero. It should be noted that the overall contribution of all variables together to inequality can be larger than 100%, as the contribution only refers to each individual variable, independently from the others

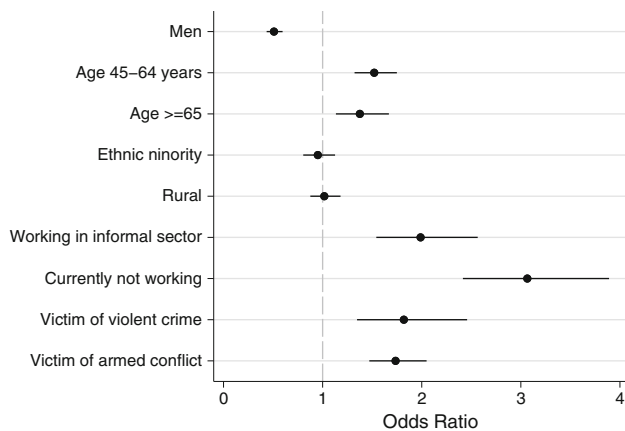


Fig. 1 Association between Exposure to Violence and the Armed Conflict with Mental Health Disorders: Colombia, 2015. Note: Information derived from the 2015 Colombian Mental Health Survey. Odds ratios and 95% confidence intervals are based on logistic regression analyses assessing the relation between mental health disorders and each covariate as shown in Table 2 (Panel A). Prevalence of mental health disorders was assessed using the Self-Reporting Questionnaire (SRQ 20). The Invisible Wounds of Five Decades of Armed Conflict: Inequalities in Mental Health and their Determinants in Colombia, 2019

related to the conflict are 74% more likely to suffer from a mental health disorder compared to those that have not directly been exposed to conflict (OR = 1.74, 95% CI 1.47–2.05). Figure 1 graphically shows odds ratios associated with the association between socio-demographic variables, exposure to armed conflict and violence with mental health problems.

Decomposition of socioeconomic inequality in mental health disorders

Overall inequality, as measured by the HCI, was -0.12 (95% CI -0.10 , -0.15), thus indicating that poorer individuals share a disproportionately larger burden of mental health disorders compared to richer ones. Figure 2 shows the concentration curve graphically illustrating that mental health disorders are more concentrated among poorer individuals.

Table 2 (Panel B) shows results of the decomposition analysis. The value of the concentration index (HCI) indicates the magnitude of socioeconomic inequality within each variable (on the scale from -1 to 1), as well as whether prevalence is more concentrated among the poorer (negative sign) or richer (positive sign) individuals. For example, there were more individuals with a higher number of deprivations according to the MPI in rural areas compared to urban ones (HCI = -0.35). Overall, the socioeconomic inequality between rural and urban areas

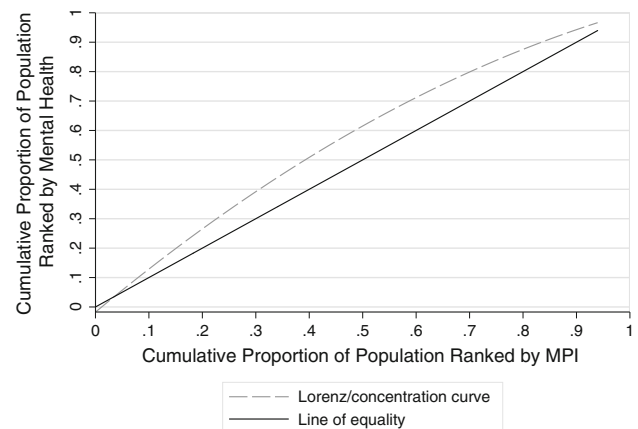


Fig. 2 Socioeconomic Inequality in Mental Health Disorders: Colombia, 2015. Note: The figure shows the Lorenz curve for mental health disorders as **a** a 45-degree line representing a situation of perfect equality, where each individual shares the same health, and **b** the estimated concentration curve indicating that mental health disorders are disproportionately concentrated among poor individuals. The Invisible Wounds of Five Decades of Armed Conflict: Inequalities in Mental Health and their Determinants in Colombia, 2019

accounted for 11.7% of measured inequality in mental health disorders. In other words, if socioeconomic inequality between rural and urban areas would be completely reduced—and only if the effect of rural residence on mental health would be causal—overall inequality in mental health disorders in Colombia could be 11.7% lower.

While around 3% of the adult population has been victim of violent crimes, exposure to violent crimes is more prevalent among individuals with fewer deprivations (HCI = 0.03). Despite the significant and strong association between exposure to violence and mental health disorders, because overall prevalence is relatively low (3.3%) with only a relatively small degree of socioeconomic inequality to disadvantage of better-off individuals (HCI = 0.03), the contribution to overall inequality is only -5.7% . In contrast, exposure to the armed conflict in terms of displacement and violence is disproportionately concentrated among poorer individuals (HCI = -0.15). While around 14% of the sample has been victim of the armed conflict, reducing socioeconomic inequalities between victims and non-victims could reduce overall inequality in mental health by 86%, if the association between armed conflict exposure and mental health would be causal.

As Table 2 (Panel B) also shows, very large inequality exists between those working in the formal sector of the economy and those working in the informal sector (HCI = -0.45) or those out of the labor market (HCI = -0.62).

Discussion

Summary

Using recent nationally representative data for Colombia, this study assessed the relationship between exposures to violence, armed conflict and mental health disorders, as well as the contribution of those factors to socioeconomic inequality in mental health. The results show that victims of violent crimes or the armed conflict are substantially more likely to suffer from mental health disorders compared to non-victims. Furthermore, reducing inequality between individuals that have been victims of conflict and those that have not may lead to a significant reduction in overall inequality in mental health disorders.

Interpretation

Results show that exposure to violent crimes or the armed conflict is associated with a considerably increased risk of mental health disorder is in line with several studies in Latin American countries (Wagstaff et al. 2007). For example, a recent study found that victims of violence during the civil war in Guatemala were around four times as likely to suffer a mental health disorder compared to non-victims (Murthy and Lakshminarayana 2006; Puac-Polanco et al. 2015). The association between exposure to violence during Guatemala's civil war and mental health disorders appears to be much larger compared to findings for Colombia. Yet, an important difference and advantage of this study over many related studies are that the Colombian Mental Health Survey asks specifically about violence related to armed conflict, thus making it possible to differentiate the latter from other forms of violent crimes.

A key contribution of this study is assessing the role of exposure to the armed conflict in explaining inequalities in mental health. The strong association between direct exposure to conflict and mental health disorders, as well as the large share of inequality explained by the latter, likely stems from the economic and social hardships that this population has suffered. Internally displaced people (IDP) in Colombia suffered reductions in around half their labor income and one-third in consumption (Puac-Polanco et al. 2015). Most of the displacement in Colombia has been from poor rural to urban areas, often ending up in the most poorest areas of those cities (Ibáñez and Moya 2010a), thus exacerbating regional inequalities in Colombia. Moreover, IDPs face a myriad of barriers in recovering their socioeconomic well-being in subsequent years due to diminished opportunities to generate income (Franco et al. 2006) and due to potential behavioral poverty traps caused by trauma

(Ibáñez and Moya 2010a). Despite the formal end of the conflict, forced displacement continues due to clashes between FARC dissidents, other armed groups and narco-traffickers (Moya 2018).

The previous studies reveal victims of the conflict experience a higher prevalence of mental health symptoms, mostly related to PTSD, depression and social phobia (Norwegian Refugee Council (NRC) 2017) as direct or indirect consequence of discrimination, disruption of social and family networks or physical and sexual abuse (Tamayo Martínez et al. 2016). Violence caused by armed conflicts has been associated, specifically also in Colombia, with poor mental health outcomes such as relational, social and occupational impairment, persistent painful memories and impairment in their ability to work or look for a job (Franco et al. 2006). Additionally, victims of conflict are likely to have symptomatology associated with mostly mild and moderate PTSD, depression and anxiety because of their personal experiences of threats and violence (Richards et al. 2011). Exposure to armed conflict may not only directly affect mental health but also indirectly through disruptions of medical supplies and health care in affected areas, including direct attacks against medical facilities (Richards et al. 2011; Shultz et al. 2014). Our findings suggest that reductions in inequality between conflict victims and non-victims could potentially be associated with substantial reductions in socioeconomic inequality in mental health in Colombia.

Exposure to violence has been repeatedly identified as a predictor of poor mental health in Latin America, particularly among individuals of lower socioeconomic status (Franco et al. 2006). Studies also found that people exposed to various forms of violence such as physical and sexual abuse during childhood and/or adulthood have a higher prevalence of poor mental health (Muntaner et al. 2013; Ortiz-Hernández et al. 2007). Furthermore, research has consistently found that direct victimization to violent acts is associated with mental disorders, a relationship that is more evidently seen in women, since they are more likely to be victims of domestic violence and abuse than men (Cutajar et al. 2010). These topics are particularly important in contemporary Colombia, when the de-escalation of the civil conflict has been accompanied by increments in urban-related crimes, such as personal injuries and violent theft to people (Oram et al. 2017). Although on the individual level being a victim of a violent crime is significantly associated with increased risk of suffering mental health disorders, our findings based on the decomposition approach suggest that reducing inequality between victims of violence and non-victims would likely not lead to a substantial reduction in overall inequality. The latter is due to the circumstance that exposure to violent

crimes is comparatively rare and affects a nearly equal proportion of poorer as well as more affluent individuals.

Besides exposure to violence and armed conflict, in particular, labor market disadvantage in the form of informal working conditions is strongly associated with mental health disorders and explains a substantial share of inequality therein. Whereas informal work has been shown to be associated with lower levels of well-being in Colombia (Mejía et al. 2015), exposure to armed conflict likely also has detrimental consequences on mental health by its adverse effects on working conditions. Although the interaction between mental health and labor market status is complex, poor mental health conditions among a large share of the population can present a significant hurdle to post-conflict recovery, social integration (Hurtado et al. 2016) as well as reducing inequality. Mental health limitations may also lead to poverty and in turn to a higher risk of exposure to conflict (Lund et al. 2011).

Strengths and limitations

This study is the first to analyze determinants of mental health inequalities in a Latin American country using a decomposition approach. While other studies have previously shown that civilians in conflict-affected areas of Colombia are more likely to suffer from mental health problems (Ekblad et al. 2004; Muscat 2011), this is the first nationally representative study to quantify the risk of mental health disorders associated with armed conflict in Colombia. An additional strength of the present study is that it includes explicit questions about the exposure to the armed conflict, allowing distinguishing the latter from other forms of violence. A limitation associated with most cross-sectional studies is that reverse causation and omitted variables cannot be ruled out. In consequence, the results have no causal interpretation. A limitation of the decomposition approach used in this paper is that it is based on a nonadditive regression model that does not account for multimorbidity in a way that other methods do (e.g., Nusselder et al. 2018; Palazzo et al. 2014). Furthermore, the measure used to assess mental disorders is self-reported, which may cause measurement biases. However, the SRQ 20 has been previously validated in several contexts including Colombia, thus reducing this concern (Bell et al. 2012; Londoño et al. 2012). Unfortunately, however, we are unable to assess the association between exposure to conflict and violence with specific disorders. Although the survey is based on a nationally representative sample that uses as its base the entirety of individuals registered with the healthcare system (representing around 98% of the population), unfortunately sampling weights or detailed information about the construction of sampling units was

inaccessible. In consequence, prevalence estimates presented in this study may be imprecise.

Conclusions

Classified as a middle-income country, Colombia remains one of the most unequal countries in the world with continuously high rates of homicides, crimes and violence (Harpham et al. 2004; Husain et al. 2016). Over five decades of internal armed conflict have led to widespread trauma, among not only victims, and one of the highest numbers of internally displaced people worldwide. Whereas around 10% of adults suffer from mental health disorders, victims of violence and the conflict bear the highest burden. To move from an era of civil conflict to a time of sustainable peace, psychological scars among victims will have to be addressed. Interventions that, for example, increase quality and access of mental health treatments among victims of the conflict and also increased access to formal work will not only lead to improvements in mental health among victims but also significantly reduce inequalities in mental health in Colombia.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

References

- Alarcón RD (2003) Mental health and mental health care in Latin America. *World Psychiatry* 2:54–56
- Alkire S, Foster J (2011) Counting and multidimensional poverty measurement. *Journal of public economics* 95:476–487
- Bell V, Méndez F, Martínez C et al (2012) Characteristics of the Colombian armed conflict and the mental health of civilians living in active conflict zones. *Conflict and health* 6:10
- Beusenberg M, Orley JH, World Health Organization DoMH (1994) A User's guide to the self reporting questionnaire (SRQ). World Health Organization, Geneva
- Crisp AH, Gelder MG, Rix S et al (2000) Stigmatisation of people with mental illnesses. *Br J Psychiatry* 177:4–7
- Cutajar MC, Mullen PE, Ogloff JR et al (2010) Psychopathology in a large cohort of sexually abused children followed up to 43 years. *Child Abuse Negl* 34:813–822
- Ekblad, S, Blight KS, Lindencrona K (2004) Employment focused interventions in post-conflict societies. In: Mollica RF, Guerra R,

- Bhasin R, Lavelle J (eds) Book of best practices: trauma and the role of mental health in post-conflict recovery. Harvard Programme in Refugee Trauma, Boston, pp. 326–348
- Flores TE (2014) Vertical inequality, land reform, and insurgency in Colombia. *Peace Econ Peace Sci Public Policy* 20:5–31
- Franco S, Suarez CM, Naranjo CB et al (2006) The effects of the armed conflict on the life and health in Colombia. *Ciência Saúde Coletiva* 11:1247–1258
- García-Subirats I, Vargas I, Mogollón-Pérez AS et al (2014) Inequities in access to health care in different health systems: a study in municipalities of central Colombia and north-eastern Brazil. *Int J Equity Health* 13:10
- Gillin J (2015) Understanding the causes of Colombia's conflict: inequality. <https://colombiareports.com/understanding-colombia-conflict-inequality/>. Accessed 20 April 2019
- Gómez-Restrepo C, de Santacruz C, Rodríguez MN et al. (2016) Encuesta Nacional de Salud Mental Colombia 2015. Protocolo del estudio Revista Colombiana de Psiquiatría 45
- Harpham T, Grant E, Rodríguez C (2004) Mental health and social capital in Cali, Colombia. *Soc Sci Med* 58:2267–2277
- Hurtado DA, Hessel P, Avendano M (2016) The hidden costs of informal work: lack of social protection and subjective well-being in Colombia. *Int J Public Health* 62:1–10
- Husain N, Chaudhry N, Rhouma A et al (2016) Validation of the self-reporting questionnaire (SRQ 20) in British Pakistani and White European population in the United Kingdom. *J Affect Disord* 189:392–396
- Ibáñez AM, Moya A (2010) Do conflicts create poverty traps? Asset losses and recovery for displaced households in Colombia. In: Di Tella R, Edwards S, Schargrofsky E (eds) *The economics of crime: lessons for and from Latin America*. University of Chicago Press, pp. 137–172
- Ibáñez AM, Moya A (2010b) Vulnerability of victims of civil conflicts: empirical evidence for the displaced population in Colombia. *World Dev* 38:647–663
- Idrobo F, Hessel P, Harker A et al (2018) Mental health of victims and ex-FARC members: a challenge for the peace process in Colombia. *Lancet Psychiatry* 5:467–468
- Jankovic J, Vidakovic I, Matanov A et al (2011) Reasons for not receiving treatment in people with posttraumatic stress disorder following war. *J Nerv Ment Dis* 199:100–105
- Kaltman S, Hurtado de Mendoza A, Serrano A et al (2016) A mental health intervention strategy for low-income, trauma-exposed Latina immigrants in primary care: a preliminary study. *Am J Orthopsychiatry* 86:345
- Kantor V, Knefel M, Lueger-Schuster B (2017) Perceived barriers and facilitators of mental health service utilization in adult trauma survivors: a systematic review. *Clin Psychol Rev* 52:52–68
- Kohn R, Saxena S, Levav I et al (2004) The treatment gap in mental health care. *Bull World Health Organ* 82:858–866
- Koolman X, Van Doorslaer E (2004) On the interpretation of a concentration index of inequality. *Health Econ* 13:649–656
- Londoño A, Romero P, Casas G (2012) The association between armed conflict, violence and mental health: a cross sectional study comparing two populations in Cundinamarca department, Colombia. *Conflict Health* 6:12
- Lund C, De Silva M, Plagerson S et al (2011) Poverty and mental disorders: breaking the cycle in low-income and middle-income countries. *Lancet* 378:1502–1514
- Marmot M, Friel S, Bell R et al (2008) Closing the gap in a generation: health equity through action on the social determinants of health. *Lancet* 372:1661–1669
- Mejía D, Ortega D, Ortiz K (2015) Un análisis de la criminalidad urbana en Colombia. <http://scioteca.caf.com/handle/123456789/810>. Accessed 20 April 2019
- Moya A (2018) Violence, psychological trauma, and risk attitudes: evidence from victims of violence in Colombia. *J Dev Econ* 131:15–27
- Muntaner C, Baksai PB, Solar O et al (2013) Clase social, desigualdades en salud y conductas relacionadas con la salud de la población trabajadora en Chile. *Rev Panam Salud Publica* 33:340–348
- Murthy RS, Lakshminarayana R (2006) Mental health consequences of war: a brief review of research findings. *World Psychiatry* 5:25
- Muscat RJ (2011) Mental health disabilities and post-conflict economic and social recovery textbook of global mental health: trauma and recovery, A companion guide for field and clinical care of traumatized people worldwide, 403
- Norwegian Refugee Council (NRC) (2017) New wave of violence threatens Colombia's peace prospects. <https://www.nrc.no/news/2017/august/new-wave-of-violence-threatens-colombias-peace-prospects/>. Accessed November 22 2017
- Nusselder WJ, Wapnerom D, Looman CW et al (2018) Contribution of chronic conditions to disability in men and women in France. *Eur J Public Health* 29:99–10
- Oram S, Khalifeh H, Howard LM (2017) Violence against women and mental health. *Lancet Psychiatry* 4:159–170
- Organization for Economic Co-Operation and Development (OECD) (2015) Colombia: policy priorities for inclusive development. OECD, Paris
- Ortiz-Hernández L, López-Moreno S, Borges G (2007) Desigualdad socioeconómica y salud mental: revisión de la literatura latinoamericana Socioeconomic inequality and mental health: a Latin American literature review. *Cad saúde pública* 23:1255–1272
- Oxford Poverty & Human Development Institute (OPHI) (2011) Colombia's Multidimensional Poverty Index. <http://www.ophi.org.uk/policy/national-policy/colombia-mpi/>. Accessed 20 Apr 2019
- Palacio Acosta CA (2016) Mental Health and Post-conflict. *Revista Colombiana de Psiquiatría* 45:229–229
- Palazzo C, Ravaud J-F, Papelard A et al (2014) The burden of musculoskeletal conditions. *PLoS ONE* 9:e90633
- Patel V, Kleinman A (2003) Poverty and common mental disorders in developing countries. *Bull World Health Organ* 81:609–615
- Presidency of the Republic of Colombian (2016) Summary of Colombia's agreement to end conflict and build peace. Presidencia de la República, Bogotá
- Puac-Polanco VD, Lopez-Soto VA, Kohn R et al (2015) Previous violent events and mental health outcomes in Guatemala. *Am J Public Health* 105:764–771
- Ribeiro WS, Bauer A, Andrade MCR et al (2017) Income inequality and mental illness-related morbidity and resilience: a systematic review and meta-analysis. *Lancet Psychiatry* 4:554–562
- Richards A, Ospina-Duque J, Barrera-Valencia M et al (2011) Posttraumatic stress disorder, anxiety and depression symptoms, and psychosocial treatment needs in Colombians internally displaced by armed conflict: A mixed-method evaluation. *Psychol Trauma* 3:384
- Shultz JM, Garfin DR, Espinel Z et al (2014) Internally displaced “victims of armed conflict” in Colombia: the trajectory and trauma signature of forced migration. *Curr Psychiatry Reports* 16:475
- Tamayo Martínez N, Rincón Rodríguez CJ, de Santacruz C et al (2016) Mental problems, mood and anxiety disorders in the population displaced by violence in Colombia; results of the National Mental Health Survey 2015. *Revista colombiana de psiquiatría* 45:113–118
- United Nations Office on Drugs and Crime (UNODC) (2006) Violence, crime and illegal arms trafficking in Colombia. UNODC, Bogotá

- van der Westhuizen C, Wyatt G, Williams JK et al (2016) Validation of the self reporting questionnaire 20-item (SRQ-20) for use in a low-and middle-income country emergency centre setting. *Int J Mental Health Addict* 14:37–48
- Wagstaff A, Van Doorslaer E, Paci P (1989) Equity in the finance and delivery of health care: some tentative cross-country comparisons. *Oxford Rev Econ Pol* 5:89–112
- Wagstaff A, O'Donnell O, Van Doorslaer E et al (2007) Analyzing health equity using household survey data: a guide to techniques and their implementation. World Bank Publications, Washington, DC
- Wilkinson R, Pickett K (2017) Inequality and mental illness. *Lancet Psychiatry* 4:512–513
- Yiengprugsawan V, Lim LL, Carmichael GA et al (2010) Decomposing socioeconomic inequality for binary health outcomes: an improved estimation that does not vary by choice of reference group. *BMC Res Not* 3:57

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