



Social vulnerability: A systematic review

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Abstract

Social vulnerability is a topic of concern in many territories of the world. We conducted a systematic review in the international context, contributing to social vulnerability knowledge. This review examined the different approaches from various disciplines that might help understand the use of this concept. It was found that social vulnerability must be understood in terms of exposure and sensitivity to risk and resilience. In turn, these elements are also related to sociodemographic characteristics, poverty, economic issues, health conditions, local security, social networks, and education. All these relationships are directly influenced by the policies and institutions that address or disregard all the elements that play an important role in social vulnerability.

Keywords

social vulnerability, transdisciplinarity, resilience, risk exposure and sensitivity.

Resumen

La vulnerabilidad social es un tema de interés en muchos territorios del mundo. Realizamos una revisión sistemática en el contexto internacional, contribuyendo al conocimiento en materia de vulnerabilidad social. Esta revisión examinó los diferentes enfoques desde diversas disciplinas que podrían ayudar a comprender el uso de este concepto. Se constató que la vulnerabilidad social debe entenderse en términos de exposición y sensibilidad al riesgo y resiliencia. A su vez, estos elementos también están relacionados con las características sociodemográficas, la pobreza, las cuestiones económicas, las condiciones de salud, la seguridad local, las redes sociales y la educación. Todas estas relaciones están directamente influenciadas por las políticas e instituciones que abordan o desatienden todos los elementos que desempeñan un papel importante en la vulnerabilidad social.

Palabras clave

vulnerabilidad social, transdisciplinariedad, resiliencia, exposición al riesgo y sensibilidad.

Introduction

The etymological roots of *vulnerability* come from the Latin word *vulnus*, which means wound, which in turn relates to the capacity for suffering that human beings embody and to their social condition of mutual dependence on other people for support and care. Vulnerability is considered universal, meaning it is a human condition “as a result of our embodied, finite, and socially contingent existence” (Rogers et al. 2012: 12). However, different situations make some people more vulnerable, such as the related contexts of climate and environmental changes. The scenario in which social vulnerability began to be studied.

Social vulnerability has gradually become a broadly used concept to describe populations that are submerged in contexts of danger (Berke et al. 2015; Brouwer et al. 2007; Huang and London 2012; Rubin 2014) or lacking the fulfilment of their vital needs and rights (Oliveira Mendes 2009; Rogers et al. 2012) or both (Doherty and Clayton 2011; Gonzalez 2015; Richaud 2013). It is used in a broad range of disciplines (Vogel et al. 2007) and in policy construction and implementation (Berke et al. 2015; Cho and Chang 2017; Levine et al. 2007). The interpretation of the concept seems relative to the field from which it is being studied (Barnett et al. 2008; Geiß and Taubenböck 2013; Guillard-Gonçalves et al. 2015; Holand 2015; Morss et al. 2011; Nazari et al. 2015; Otto et al. 2017; Rød et al. 2015; Zhou et al. 2014). For instance, urbanism focuses on structural conditions of cities or towns and the spatial distribution of elements that could harm their inhabitants; ecological studies identify vulnerability as a potential of material loss and therefore suggest resilience as the inverse (Barnett et al. 2008); geographers talk about vulnerability levels according to risk exposure as a consequence of spatiotemporal socio-ecological changes (ibid.); those specialised in management disasters focus on domains such as socio-economic conditions and minority status, that affect the capacity to respond to hazards (Berke et al. 2015); economic sciences tend to relate vulnerability to poverty (Brata 2010); and the bioethics arena identify the need to place this concept at the heart of the discussion, but also emphasise a lack of research on the concept (Rogers et al. 2012). Thus, there is a great variety of approaches to social vulnerability.

Likewise, because it is a complex and multidimensional concept and it is not an observable phenomenon that is easily quantified and measured, it has been developed from different theoretical traditions such as biophysical, human ecological, political economy, constructivist, and political ecology perspectives from where each discipline has become focussed. For example, the biophysical perspective which has its focus on environmental and climate changes has been the concern of agriculture and others environmental disciplines, but it has been neglected with the social factors of the natural hazards; the human ecological approach has being assumed by geographers and anthropologists, from this view the society react and adjust to the environmental hazards; others fields has adopted the political economy tradition which found his roots on

the Marx's legacy and has being the ground to study famine and the marginalization which show inequalities based on political and economic powers; the constructivist perspective focus on the role of human agency and culture in risk situations, from this viewpoint it has developed feminist studies in which gender, class and racial categories have being seemed as aspects of exclusion that increase the vulnerability; and the political ecology perspective which assume a relational approach, the historical and cultural diversity and tend to include the others perspectives, like the previous one, feminist studies are the ones that have tried to assume this effort (McLaughlin and Dietz 2008).

In sum, there is no clear shared understanding of its meaning. The different disciplines highlight some aspects of social vulnerability. In this review, we intend to develop a common transdisciplinary understanding. We will describe which disciplines and problems of social vulnerability have been studied. Therefore, the questions guiding this systematic review are as follows: How is social vulnerability described in the academic literature? What are the characteristic elements of social vulnerability? Moreover, what are the relationships between those elements?

Methods

The search for articles was carried out in two steps. The first one explored peer-reviewed articles published between 2000 and 2017, written in English, Spanish and Portuguese, and available on the databases in Figure 1 using "social vulnerability" as keywords. The search generated 170 hits, including 16 duplicates. The second step was conducted via the Web of Science database, searching for all the review articles written between 2000 and 2017 with the keywords "social vulnerability". We identified 61 review articles.

The 231 articles were compiled in NVivo Pro, where they were reviewed one by one according to our inclusion criteria: peer-reviewed articles in English, Spanish or Portuguese and explaining social vulnerability in depth. This screening process reduced the number of articles to 56, namely 23 research articles and 33 review articles. Of the research articles, 11 focused on environment and climate change issues, eight were about health, three were related to social topics, two were associated with urbanism and 27 focused on vulnerability and social vulnerability as a central topic. The review articles were from an interdisciplinary approach. Almost all the articles were written in English, aside from 2 in Spanish and 1 in Portuguese. Although the range of years we used was between 2000 and 2017, the articles found were published between 2004 and 2017. 2015 was the year with the most articles published, namely 12. Moreover, most articles (27) brought research together from different countries; 8 focused on research from the United States, and the remainder were from other individual countries. Moreover, finally, we found a wide variety of journals that were published about social vulnerability, where *Risk Analysis* (5), *Journal of Risk Research* (3), *Global Environmental*

Change (3) and *Regional Environmental Change* (3) were the most common journals in our search.

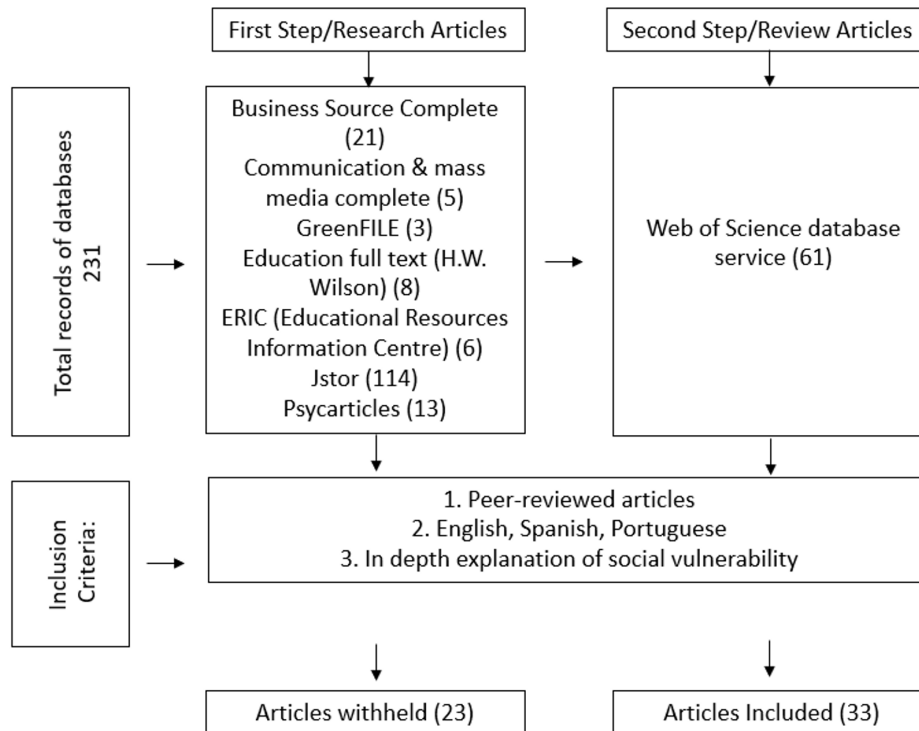


Figure 1. Flow diagram of search strategy of the systematic review (diagram by the authors).

Results

Towards a transdisciplinary conceptualisation of social vulnerability

Based on the literature review, we can conceptualise social vulnerability transdisciplinary as a relational, complex and dynamic process with three dynamic core components: risk exposure, sensitivity and resilience, which are influenced by different factors such as the physical conditions, socio-demography characteristics, poverty, economic issues, education, social network, local security, health/well-being conditions (see Figure 2).

Besides, scholars like Rogers et al. (2012) suggested a taxonomy with three kinds of vulnerability: inherent, situational and pathogenic. The first, as mentioned, is proper for all human beings. The second is linked to the specific context where people are located; here, they interfere with social, political, economic, and environmental elements and

can be short, medium or long-term. Moreover, pathogenic vulnerability occurs when there is a dysfunctional social and interpersonal relationship, such as the one that occurs in contexts of political violence, repression and persecution, where the interventions of institutions and policies, rather than reducing vulnerability, increase.

Several authors emphasised the threat or limitation of citizenship rights and the affectation on human welfare during events that prolong social vulnerability (Barnett et al. 2008; Nakamura et al. 2009; Richaud 2013; Vite Pérez 2015). In that sense, it takes place from daily life, such as low income, lack of knowledge of important information, lack of or few social networks, etc. (Garrafa 2014) until events of natural catastrophes and implementation of systematic violence (Brouwer et al. 2007; Gonzalez 2015). Understand it as a reality that is framed in a specific territory and a historical, social, political, economic and cultural dynamics and moment (Brouwer et al. 2007; Fatemi et al. 2017; Frigerio et al. 2016; Morss et al. 2011; Ruiter et al. 2017).

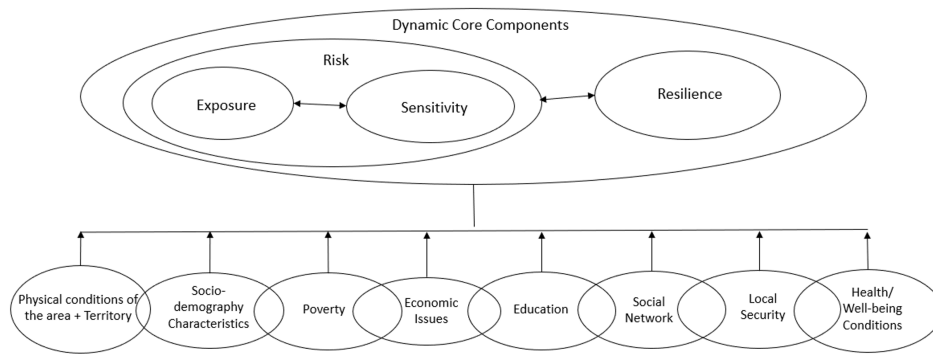


Figure 2. Conceptualisation scheme of social vulnerability (diagram by the authors).

Dynamic core components of social vulnerability

As we mentioned, risk exposure is one of the main elements that play an essential role in conceptualising social vulnerability. The definition of risk exposure depends on the area of knowledge from which it is understood. For instance, in the economic arena, risk can be understood as the complications of suffering money problems and having problems earning money, as well as the loss of goods or the lack of productive activities. From a geographical focus, risk can change through time and location (Beck et al. 2012). However, it is related to the propensity to be in contact with stressful situations (McLaughlin and Dietz 2008).

Based on Brouwer et al. (2007), risk exposure comprises “an exogenous and endogenous component as people are -to some extent- able to protect themselves against (the negative impacts of) environmental risk, by avoiding the risk involved or by taking pro-

protective (preventive) measures before being exposed to the risk or afterwards" (p. 315). It is the likelihood stressed and exacerbated the factors below related. It is related to the events or changes that affect the resources of communities to cope. The rise of storms or droughts owing to climate change, for instance, exposure directly to the communities near forest lands (Fischer et al. 2013).

Sensitivity is understood as a characteristic of the system that makes it prone to suffering the impacts from the stressor factors. It is influenced by the social, cultural, economic, and conditions of the communities. It refers to how changes could affect the communities, and their segments are more affected (ibid.). Many scholars related sensitivity to the degree to which the exposition could affect or impact individuals or communities (Belliveau et al. 2006; Fischer et al. 2013; McLaughlin and Dietz 2008; Morss et al. 2011; Nazari et al. 2015). For instance, Morss et al. (2011) affirmed that gender and poverty could influence sensitivity.

Several authors affirmed that sensitivity and exposure are intimately connected when risk is the subject of discussion, and both are influenced by the factors below mentioned (Belliveau et al. 2006; Preston et al. 2011).

Based on Brouwer et al. (2007), including mitigation measures, adaptive capacity, or resilience to understanding social vulnerability helps to broaden the possibility of appreciating other social, cultural, historical, economic, and institutional dynamics in the physical and territory context. Indeed, the inclusion of the available resources to prevent the effects of environmental risk helps to broaden the comprehension of the broad frame of social vulnerability because those resources play an essential role in the problematic and complex dynamics with the other elements such as health conditions, poverty, education, whose intervene on this phenomenon. This component enhances comprehension of social vulnerability in at least two levels: individual and collective. Indeed, recently, there has been a tendency to recognise social vulnerability as the capacity to cope, anticipate, and resist hazardous situations. Under this perspective, the attention turns around the inadequate social, political, economic, and cultural conditions that affect the capacity to recover and how to change them (Rubin 2014). It is the measures that communities and individuals consider to reduce risk exposure and modify the sensibility to the impacts of stressor situations. It is linked with the capacity to face the impacts (Fischer et al. 2013).

From the perspective of resilience, it is of vital importance to provide resources such as family education programs that help those who are in situations of high vulnerability, both children and adults, to overcome feelings of helplessness and frustration and may experience other possibilities (Caba Collado and Rojas 2010). Meanwhile, Zahran et al. (2011) identified the resistance capacity and the recovery time that affected the resilience of vulnerable inhabitants who live in adversities. In this sense, they affirmed that "mental health resilience is conditioned by social vulnerability status" (p. 1114). It

is on adaptive capacity, resistance and recovery ability, and the sensitivity of the communities where it is possible to cope with the adversities (Rød et al. 2015). The capacity of the agency to improve the social conditions that help to resist harm is included (Rogers et al. 2012).

The inclusion of resilience in the definition of social vulnerability and putting it in relation to the exposure and sensitivity to risk forces us to consider the relationship they have and not only emphasise one or the other elements. Likewise, it implies considering other aspects that positively or negatively affect each of these elements and their relationship. An example of this relationship is when there are natural adversities that permanently put communities at risk; however, the inhabitants do not assume any preventative measures to resist the risk and the dangers that entail a natural disaster because they believe they cannot do anything in that regard (Brouwer et al. 2007).

The relationship between exposure and sensitivity to risk and resilience is still relatively unknown and depends on their definitions. On this topic, Guillard-Gonçalves et al. (2015) mentioned that those concepts (vulnerability and resilience) cannot be opposite. Rød, Opach, & Neset (2015), McLaughlin & Dietz (2008) and Holand (2015) recognise the ability to resist and cope with situations of danger as part of social vulnerability, such as Zahran et al. (2011) identified the relationship of mental health resilience and the vulnerability on sceneries of catastrophes. In addition, Geiß and Taubenböck (2013) mentioned that social vulnerability has two sides, one external related to the exposure to dangerous events and the other (internal) connected with the capacity to resist and recover. Both sides are interdependent and affected by processes of contexts where harmful events happen.

Under those dynamic approaches to understanding the core components of social vulnerability are also developed measures and indexes that have intended to grab them through the simplification of the concepts, which made them blurred and flawed (Barnett et al. 2008; Fischer et al. 2013; Holand 2015). According to Garbutt, Ellul, and Fujiyama (2015), those indexes focus more on environmental topics and have been created at household, regional or national levels. However, other scholars affirmed that the complex reality and implementation policies cannot be limited by quantitative measures that, in many ways, narrow social and environmental processes. Indeed, elements related to social vulnerability have been given less attention due to the difficulty quantifying them (Cho and Chang 2017; Ruiter et al. 2017).

Although there is no consensus on the aspects of social vulnerability (Ruiter et al. 2017), in the following section, we will describe the factors that, according to the analysed documents, affect the dynamic relationship between exposure and sensitivity to risk and resilience.

Factors Influencing Social Vulnerability

Physical conditions of the area

Many authors emphasised the importance of the physical conditions of the area where social vulnerability happens. That means recognising the environmental risks and hazards such as pollution sites, problems with hazardous waste treatment, exposure to pesticides for agricultural use, invading of plant pests, collapsed buildings, lifelines affectation, and so forth (Holand 2015; Huang and London 2012; Soliman et al. 2016) connected with context, habitat, territory and/or basic infrastructure, where, for example, climate change and their consequences take place, and where relationships and social practices are established (Garbutt et al. 2015; Ho et al. 2017; Morss et al. 2011; Nazari et al. 2015; Rubin 2014; Rød et al. 2015; Zhou et al. 2014). Besides, that recognition depends on the discipline from where the study takes place. For instance, some urbanists related environmental risk and climate change with infrastructure (Matko et al. 2016); social scientists and geographers discussed the environmental consequences in terms of the socioeconomic and political contexts (Guillard-Gonçalves et al. 2015; Ho et al. 2017; Richaud 2013; Rubin 2014; Rød et al. 2015) and how those context influence on the process of recovery (Bang and Few 2012; Rendall 2011; Zhou et al. 2014); and a plural amount of disciplines are referred on territory understood it as a physical space which embodies meanings, beliefs and habits to their inhabitants (Doherty and Clayton 2011; Gonzalez 2015; Oliveira Mendes 2009). However, experts in biophysical sciences are the ones who have done the most research on this factor (McLaughlin and Dietz 2008). Although, in physic vulnerability studies and environmental approaches, the focus on social vulnerability has been little analysed, it has been seen at an aggregated level due to the lack of empirical data quantifiable (Ruiter et al. 2017).

Scholars such as Levine et al. (2007) and Zhou et al. (2014) considered the spatial dimension to map the scenarios where the population is considered vulnerable, such as sceneries where there are high possibilities of living in physical and social damage (Guillard-Gonçalves et al. 2015). For example, Beck et al. (2012) found that inhabitants can believe their places are strong against earthquakes, but that is not always the case. Also, floods, landslides, storms and extreme changes in weather that take place in a specific location and involve different kinds of hazard expositions that could suffer their inhabitants (Ho et al. 2017; Rubin 2014; Rød et al. 2015; Zahran et al. 2011).

Some urbanism studies have recognised that social vulnerability increases with the processes of diffused urbanisation, as demographic dynamics become more complex as they increase population density and living conditions become precarious. Therefore, those studies suggest that a reduction in social vulnerability can be influenced by urban de-concentration and the diversification of productive investment (Frigerio et al. 2016; Guillard-Gonçalves et al. 2015; Oliveira Mendes 2009; Zhou et al. 2014).

Socio-demographic characteristics

A factor that is very recurrent in the analysed studies has to do with the socio-demographic characteristics, such as age, gender, linguistic isolation, race/ethnicity, familiarity (composition, relational dynamic, etc), and so forth (Beck et al. 2012; Huang and London 2012; Laska and Morrow 2006; Levine et al. 2007; Rendall 2011; Rød et al. 2015; Williams 2015; Zahran et al. 2011; Zhou et al. 2014). In the case of age, scholars affirmed that it plays a vital role in knowing the possibility of vulnerability, and it is related to other factors such as education and economic issues (Caba Collado and Rojas 2010; Richaud 2013; Williams 2015; Zhou et al. 2014). Therefore, for instance, Beck et al. (2012) mentioned that young people and workers have more knowledge to face risky situations and get ahead because they are in information systems that are accessible in their education or work centres and that allows them to facilitate a favourable response in case of being in a hazardous situation. In that sense, children and older people are an important part of the population with high levels of risk (Rendall 2011). For instance, children have basic physical and psychological needs that must be met by the adults in their environment, either parents or guardians. They have difficulties with “attachment, inhibition control, development of planning ability and self-regulation, positive emotionality, social abilities, and coping” (Richaud 2013: 753) when they live in socially vulnerable situations. Older people are also prone to suffer social vulnerability given the social isolation and family factors that affect the resolution of their needs and health (Laska and Morrow 2006; Souza et al. 2015).

Minority status also affects vulnerability (Berke et al. 2015; Laska and Morrow 2006). Although in some parts of the world, belonging to a minority represents a disadvantage and being subject to discrimination and violation, in other places, this aspect is not strongly linked to social vulnerability. Scholars increasingly debate this last statement because many minority groups suffer discrimination that is evident in their poor access to education, poor political representation, and unemployment, among others (Guillard-Gonçalves et al. 2015).

Some scholars identified that *being a woman increases the risk of being* part of a population that suffers from social vulnerability. The women assume caregiver roles, such as mothers or caregivers of the sick and elderly. They are linked to poverty, lack of mobility and unemployment (Laska and Morrow 2006; Zhou et al. 2014).

The *house composition*, where there is no presence of a spouse, with children under 18, or there are persons more than 65 years of age, are aspects that also increase social vulnerability (Berke et al. 2015; Frigerio et al. 2016; Guillard-Gonçalves et al. 2015). The household structure has been marginally studied as an element influencing social vulnerability. However, Rendall (2011) found that in natural disasters like Hurricane Katrina, it was disregarded by many studies; in a few cases, single-mother families were considered, and in others, it was detected that families were divided after the catastro-

phe, but the predominant focus has been the individual as analysis unit even though the family plays a fundamental role in the recovery process. In fact, ignoring this element as a coping strategy could be amplified by pre-existing social, economic and even racial inequalities. Economic pressures, temporary separation, and psychological stresses, among others, affect family cohesion and expose families to excess ruptures in the face of disasters and risk situations.

Economic issues

The third factor is related to economic issues that include (the increase in social vulnerability), among other elements: low income, means of subsistence, lack of savings, food reserves, and unemployment (Bang and Few 2012; Brata 2010; Mandić and Hrast 2015; Rendall 2011; Zhou et al. 2014). Likewise, for Guillard-Gonçalves et al. (2015), the conditions of the homes, such as whether they have electricity, installation of toilets, access to drinking water, gas, etc., are also part of the factors that are included in the comprehension of the social vulnerability. Moreover, other scholars added that people who are outside the work system, such as housewives, spouses, the unemployed, and retirees, do not know the necessary instructions to attend to situations of risk and natural catastrophes (Beck et al. 2012; Frigerio et al. 2016). Also, low or unequal incomes and the reduced possibility of accessing productive resources raise the risk of vulnerability (Brouwer et al. 2007; Rubin 2014).

For instance, in the territories where climate change is affected, economic issues are becoming a factor of deep preoccupation, even more so in developed countries. In this sense, Rubin (2014) mentioned a negative correlation between household income and natural disaster mortality or an explicative factor that increases social vulnerability (Frigerio et al. 2016). Likewise, Brata (2010) found that, mainly in developing countries, the informal sector of the economy generates a high vulnerability. However, this factor is not only related to those countries; even in countries such as Norway, where there are no significant socioeconomic differences, where salaries are not different according to gender and where unemployment rates are low and social service is universal, a degree of segregation still persists, which, in case of exposure hazardous situations, differentially affects the population that is the object of it (Rød et al. 2015).

To counteract the social vulnerability directly produced by this factor, Brouwer et al. (2007) identified that if, on the communal level, there is income equality between the inhabitants of the communities, it is more possible to produce collaborative support among each other. Besides, on the individual or household level, if the persons start to diversify their source of income and not just depend on a single economic option, they could resist moments of crisis, which means that this would work as a coping strategy.

Poverty

The fourth factor that stands out in vulnerability studies is poverty. This factor is intimately related to the two previous factors, so in Figure 2, poverty is located between socio-demographic characteristics and economic issues. When we talk about poverty, we recognise elements such as the quality of housing, the living conditions (lack of basic services such as electricity and water), the lack of material satisfaction, and the emotional and educational needs. Governments have defined the poverty line as including socio-economic elements such as household size and age composition.

The concept of vulnerability is very close to that of poverty because people living in poverty must face risky situations daily. In the same way, this population is more vulnerable when external factors are overwhelmed that go beyond their capacity to resist; as Brata (2010) said, “deprivation issues of the poor should be related to their risk and vulnerability issues” (p. 49). Nevertheless, this relationship is not as simple as anticipated (Laska and Morrow 2006). The relationship between poverty and vulnerability is not predictable and directionally associable (Brouwer et al. 2007; Williams 2015). For instance, in Cape Town, Williams (2015) found that the migrants who live in poverty are protected, in a certain sense, from different kinds of danger, including violence.

According to Brouwer et al. (2007), “poverty is an important determinant of (endogenous) environmental risk -and hence (in)directly of socioeconomic vulnerability- and an important constraint of adaptive capacity. Poorer people tend to be more (often) exposed to environmental risk than wealthy people” (p. 315). Poor people are most vulnerable because they live constantly in environmental risk and because they are affected by different aspects such as income (Rubin 2014; Rød et al. 2015; Williams 2015). However, it has also been proven that people with better economic income are also sensitive to loss of money in risky environments (Brouwer et al. 2007).

Health and well-being conditions

The fifth factor that interferes with the relationship between exposure and sensitivity to risk and resilience is the health and well-being conditions. Under the idea of recognising health holistically and including not only the absence of diseases but also the presence of a state of well-being, vulnerable populations constantly exposed to risk are susceptible to suffering various diseases. With the condition of vulnerability, it is usual to suffer disadvantages and deprivations that are associated with a lack of health (Grabovschi et al. 2013; Otto et al. 2017; Zahran et al. 2011) or there are even those who already have a disease and are more likely to suffer another (Grabovschi et al. 2013; Rogers et al. 2012).

For instance, people with intellectual disabilities have been historically marginalised and victimised (e.g. sexual abuse). However, whether they are included in inclusive education settings, they can have developed social interactions (Fisher et al. 2016). The

infant mortality rates, families with disabled persons (Oliveira Mendes 2009), asthma hospitalisation, years of potential life lost before age 65 years (Huang and London 2012), and so forth are elements that increase social vulnerability. Health conditions are also connected with environmental hazards. In places where the population is exposed to pesticides, pollution, and other environmental contaminants, health deteriorates and becomes another problematic and risky situation (*ibid.*). Likewise, the absence of an adequate environment where adults can offer emotional security and stability to those around them, for example, children, alters social development, and personal health is compromised (Caba Collado and Rojas 2010). In sum, adding more vulnerability factors increases health problems (Grabovschi et al. 2013). On the contrary, having spaces for sports and leisure is important for improving living conditions and reducing social vulnerability.

It could also be said that even a double process of vulnerability occurs when, in addition to suffering from a disease, health or pharmaceutical institutions turn to populations that require health care to include them in their studies and research where the placebo is used as part of the experiments and that after finishing the time of the study, these populations are again abandoned without any follow-up or monitoring of their disease. In these cases, the economic interests of institutions foreign to the social situations that these populations live and intervene in are prioritised, regardless of the damage caused or with a legitimate interest to support a vulnerability reduction, which could be understood as a double ethical standard in clinical practice and biomedical research (Garrafa 2014). This aspect also recognises the lack of consent, the exposure to coercion and the risk of damage in research (Rogers et al. 2012).

Social network

The sixth factor is a social network. Although it is not a recurrent factor in the reviewed studies (Brouwer et al. 2007; Frigerio et al. 2016; Gonzalez 2015; Ho et al. 2017), we consider that the relationship with friends, family, neighbours and others, has a relevant importance in the increase or decrease of risk exposure as well as in the possibility of resisting risk. Social isolation is unknown as a factor that intervenes in social vulnerability (Ho et al. 2017); conversely, if solid social networks exist, the ability to resist increases (Holand 2015; Nazari et al. 2015).

For instance, in the reconstruction of Chile, when this country suffered an earthquake and tsunami in 2010, the families were moved to different contexts with fewer opportunities and without their original social network. This was a problem not planned by the institutions responsible for serving the population. Breaking the bonds established in a space alters the well-being of people. The physical space is, in turn, involved with the possibility of resisting and overcoming the difficulties faced by the communities. Moving people away from the places they have historically occupied would put them in a condition of vulnerability if they do not recognise that the social network is also an

element that must be taken care of at the moment of intervention of these populations (Gonzalez 2015).

Education

The seventh factor is related to the education. For instance, being part of the education system helps to be informed of the precedents of evacuation or coping strategies. As we mentioned earlier, the youngest professionals and active workers can have more opportunities to solve hazardous situations, contrary to what happens with older people who are more exposed to risk based on misinformation and ignorance of strategies to mitigate the damage that is taught at schools (Beck et al. 2012). Then, unfamiliarity increases the risk of exposure to danger and difficulty resisting risk (Zhou et al. 2014). High levels of education could be a protective factor against social vulnerability because it allows access to better jobs and increased incomes and understanding of information relative to prevention and reaction strategies to recover from disasters (Frigerio et al. 2016).

In addition, the educational environment is a scenario where different intervention processes can be carried out for children and young people, helping them, in their natural environment, to improve their resilience skills when they are in a situation of social vulnerability. In this context, children can make friends and feel part of a social group that welcomes them (Richaud 2013).

Local security

The last factor is local security, which is only mentioned tenuously in the articles reviewed (Fatemi et al. 2017; Vite Pérez 2014). However, in part, it is related to the presence of violence or dangerous practices that are managed in the territories inhabited by vulnerable communities. Likewise, this factor relates to the institutional strategies and the policies that are implemented since a way to accompany the communities recognised as vulnerable could be from the increase of the institutional presence. However, it is necessary to deepen the understanding of this factor and its relationship with social vulnerability.

The role of policies and institutions in social vulnerability

Authors have discussed that governments and their institutions, policymakers, and non-governmental organisations (NGOs) have a fundamental role in understanding social vulnerability (Cho and Chang 2017; Levine et al. 2007; Nazari et al. 2015). It is a transversal component among all the factors above. Through policies and strategies that seek social transformation and care for vulnerable populations, resilience could improve or, on the contrary, increase risk exposure and sensitivity, for example, making the problematic context worse and causing worse difficulties than could be expected if the institutions do not apply their policies.

For instance, Berke et al. (2015) determined that some local plans increase vulnerability because they do not identify the variability of factors that affect some populations more than others. In fact, Laska and Morrow (2006) and Levine et al. (2007) affirmed that several local plans are not consistent with the areas with high vulnerability or there are plans to attend high-risk areas but do not contemplate social vulnerability as part of the main issues to be addressed.

In that sense, Berke et al. (2015) acknowledged the relevance of the relationship between institutions and communities because it is possible to improve plans and reduce natural and social hazards. Besides, if the mitigation plans do not involve different institutions or each one has its plan and is not integrated with the others, there is a considerable possibility of increasing social vulnerability, even though the plans have been created to mitigate social vulnerability (Berke et al. 2015). That is why de Oliveira Mendes (2009) and Frigerio et al. (2016) recommend planning prior to disasters, and a strategy to achieve this is through social cartography or mapping of vulnerable populations so that these effective policies can be built to ensure the rights of citizenship and social inequalities can be overcome.

Indeed, many scholars recognised that public policies are called to respond to social dynamics in the territories and to identify their social capital and the individual, social and community possibilities to struggle with social vulnerability. Planning from the territories allows security in the population, the reduction of inequalities, leverage of strengths of the communities and attend to specific needs that would otherwise not be met (Levine et al. 2007; Morss et al. 2011; Oliveira Mendes 2009; Rubin 2014; Vite Pérez 2014). Otherwise, de Almeida Costa (2014) found that communities with the highest social vulnerability are invisible and plunged into a profound disadvantage in exercising their right to citizen participation, partly also because of the precariousness that these communities have of developing a capacity to reflect on their problematic context. In this sense, they become submissive and dominated communities. Similarly, Gonzalez (2015) and Vite Perez (2014) acknowledge that the abandonment and the weak presence of the government and its institutions leave communities more vulnerable and reduce the possibilities of social transformation.

That is why it is imperative to establish a network that has a collaborative character among the institutions and their professionals to, in turn, offer multidisciplinary interventions that are truly effective. The isolated and unidisciplinary investments cause fatigue in the communities, tend to over-simplify the real world, involve more resources, and are ineffective (Caba Collado and Rojas 2010; Nazari et al. 2015). The same problem happens when politics are disconnected from recent research (Garbutt et al. 2015; Morss et al. 2011).

Conclusions and recommendations for further research

The concept of social vulnerability is growing notoriously; it has gone from a reduced concept focused on, e.g. lack of basic needs to an integrated conceptual resource that helps to understand the complex realities experienced in specific contexts. Understanding social vulnerability makes sense in the territories sheltered by cultural, political, economic, and social practices. Besides, including resilience in the dynamic core components opens possibilities for understanding and agency for social transformation.

The factors mentioned must be addressed differentially to reduce or increase social vulnerability. For instance, the cumulation of environmental hazards, where different problematic conditions of socio-demography characteristics, poverty, economic issues, health conditions, local security, social network and education intervene, increases exposure and sensitivity and adversely affects resilience. Moreover, this is greatly enhanced when policies to address vulnerable communities are absent, erratic, slow and inefficient, and institutions responsible for implementing policies do not work together, are unidisciplinary, and do not recognise the physical context as a place that embodies social, cultural, historical and economic processes based on the interaction of those who inhabit the spaces.

Likewise, the studies on social vulnerability must have a more holistic understanding (Levine et al. 2007) that includes a collaborative transdisciplinary perspective and recognises the complexity of this phenomenon (McLaughlin and Dietz 2008), even more so when situational and pathogenic social vulnerability coexist in a complex relationship and in a vicious cycle that enhances or reduce the possibility of resisting and developing coping skills. There is a huge gap in knowledge about social vulnerability in the context of man-made disasters, especially in violent situations.

Furthermore, integrating other elements these days, such as communication technologies, especially social networks, is important. They already play to inform about catastrophes and different adversities which affect little communities or whole countries. Also, they are becoming a coping strategy that helps collect money, food, professional help, etc., that sometimes overflows the capacity of the institutions responsible for arranging aid or even act faster than those responsible for dealing with calamities.

The empowerment of communities based on the support of institutions and their policies could be a powerful strategy to tip the balance towards an exemplary recognition of the exercise of citizen rights. Unfortunately, this review has shown that those with high-risk exposure are the least prepared to face situations of vulnerability. This is partly because governments and their policies are assumed without considering the communities most at risk (Brouwer et al. 2007). The institutional performance must address identifying and overcoming the situations and conditions of vulnerability, even more in the context of pathogenic social vulnerability, such as where corruption and

the criminalisation of poverty are part of the daily life of communities or embody the complete structure of States.

Finally, it is essential to invite researchers to balance out the research methods. This literature review found an overload of quantitative methods. However, a qualitative approach might also help to develop a more profound and integrative understanding of social vulnerability (Morss et al. 2011; Schmidtlein et al. 2008). This review deepens, informs, and integrates the knowledge about social vulnerability until now.

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