



Qualitative examination of the perceived effects of a comprehensive smoke-free law according to neighborhood socioeconomic status in a large city

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ABSTRACT

Smoke-free legislations aim to protect non-smokers from second-hand smoke (SHS) exposure and improve population health outcomes. The aim of this study was to explore residents' perceptions to understand how people living in distinctive SES neighborhoods are differently affected by comprehensive smoke-free laws in a large city like Madrid, Spain.

We conducted a qualitative project with 37 semi-structured interviews and 29 focus group discussions in three different SES neighborhoods within the city of Madrid. Constructivist grounded theory was used to analyze the transcripts.

One core category arose in our analyses: Neighborhood inequalities in second-hand smoke (SHS) exposure in outdoor places. The enactment of the comprehensive smoke-free law resulted in unintended consequences that affected neighborhoods differently: relocation of smokers to outdoor setting, SHS exposure, noise disturbance and cigarette butt littering. Changes in the urban environment in the three neighborhoods resulted in the denormalization of smoking in outdoor public places, which was more clearly perceived in the high SES neighborhood. Changes in the built environment in outdoor areas of hospitality venues were reported to actually facilitate smoking. Comprehensive smoke-free laws resulted in denormalization of smoking, which might be effective in reducing SHS exposure. Extending smoking bans to outdoor areas like bus stops and hospitality venues is warranted and should include a public health inequalities perspective.

1. Introduction

Smoke-free legislations aim to protect non-smokers from second-hand smoke (SHS) exposure and improve their health outcomes. Moreover, they may help denormalizing smoking, establishing positive smoke-free models for youth, reducing youth opportunities to smoke, and facilitating smoking cessation (Hyland, Barnoya, & Corral, 2012). Furthermore, smoke-free laws are the second most important tobacco control measure, only after tobacco price regulations (Neuberger, 2019). In January 2011, Spain passed comprehensive smoke-free legislation

(Law 42/2010) that amended the previous law (Law 28/2005), banning smoking in all public places and workplaces without exceptions. Moreover, it was the first time in Europe that a smoke-free law also banned smoking in specific outdoor places, including hospital grounds, school courtyards, and playgrounds (Fernández & Nebot, 2011). Smoking has been considered as a deeply rooted practice in Spanish society in certain places such as hospitality venues (Fernández et al., 2017). Furthermore, the failed approach of the partial ban enacted in 2006 (so-called Spanish model) has been discussed because of its similarities with tobacco industry's Courtesy of Choice programme developed by Philip Morris

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International (Fernández, 2006; Schneider, Sebríe, & Fernández, 2011). In recent times, there has been growing interest in studying the effectiveness of the current comprehensive smoke-free law enacted 9 years ago (Fernández et al., 2017).

It is widely accepted that nowadays in western societies there is a social gradient in health (Glymour, Avendano, & Kawachi, 2014) and a social gradient in smoking (Pearce Barnett & Moon, 2012), which implies that smoking is concentrated among people of lower socioeconomic status (SES) and they have poorer health outcomes than people of high SES. Moreover, there is evidence showing an unequal socio-spatial distribution of smoking in local context such as neighborhoods (Barnett, Moon, Pearce, Thompson, & Twigg, 2017; Thompson, Pearce, & Barnett, 2007). Several authors explored the relationship between neighborhood's socio-physical environmental characteristics and smoking (Ellaway & Macintyre, 2009; Frohlich, Potvin, Chabot, & Corin, 2002).

In recent years, there has been increasing attention in the unequal effects of tobacco control measures in population of different SES (Hill, Amos, Clifford, & Platt, 2014; Hiscock, Bauld, Amos, Fidler, & Munafò, 2012). Smoke-free laws can be considered as one of the most effective tobacco control policies because they contributed to reduce mortality for smoking-related illnesses and improve health outcomes by reducing SHS (Frazer et al., 2016). Nevertheless, smoke-free laws contribute to stigmatize low SES smokers (Bell, McCullough, Salmon, & Bell, 2010; Thompson et al., 2007), and sometimes socioeconomically disadvantaged smokers showed resistance to smoking bans (Poland, 2000). Likewise, it has been suggested that a better understanding of the social context by tobacco control measures may reduce inequalities in smoking (Frohlich, Poland, Mykhalovskiy, Alexander, & Maule, 2010; Poland et al., 2006).

We only found one research studying place-based effects on smoking in Spain, which showed differences in the social distribution of smoking (Daponte-Codina, Bolívar-Muñoz, Ocaña-Riola, Toro-Cárdenas, & Mayoral-Cortés, 2009). Otherwise, a research that compared data from several European countries (including Spain) showed that there was education and income-related inequalities in smoking at population level (Huisman, Kunst, & Mackenbach, 2005). Additionally, we found a lack of research exploring the effects of the comprehensive smoke-free law enacted in 2011 considering SES and using either a quantitative or a qualitative approach. Barnett et al. (2017), specifically asked for qualitative research focused on individual perceptions of smoking considering place and environmental factors. Since the implementation of smoke-free legislations there has been a research emphasis on examining smoking distributions across different urban areas (Kaplan et al., 2019; Kaufman, Griffin, Cohen, Perkins, & Ferrence, 2010; Valiente et al., 2019). Therefore, we considered that a qualitative examination of smoke-free laws should consider specific characteristics of the smoking urban environment, and further include an urban health inequalities approach.

The aim of this study was to explore residents' perceptions to understand how people living in distinctive SES neighborhoods are differently affected by comprehensive smoke-free laws.

2. Methods

2.1. Setting

This analysis is part of a qualitative project (Rivera-Navarro et al., 2019), which is an ancillary study of the Heart Healthy Hoods project (Franco, Bilal, & Diez-Roux, 2015) that aims to understand the relationship between cardiovascular health and the physical and social urban environment in the city of Madrid (Spain) (Bilal et al., 2016). The over-arching qualitative project where this research is placed aims to explore the relationship between physical activity, diet, alcohol consumption and smoking behaviors and urban health inequalities. The over-arching qualitative project selected three neighborhoods with different SES among the whole municipality of Madrid: San Diego (low

SES), El Pilar (medium SES) and Nueva España (high SES). The selection process of these three neighborhoods, including selection criteria has been explained in detail elsewhere (Rivera-Navarro et al., 2019).

The low SES neighborhood main characteristics were high population density, large percentage of low-skilled low-income immigrant population, a well-established Romany community, high unemployment rate, and high percentage of part-time workers and low-skilled workers (Madrid City Hall (MCH), 2014).

The medium SES neighborhood reflected the paradigm of many middle-class neighborhoods in Madrid: second-generation residents moving to other neighborhoods, few immigrant population and aging residents (Conde et al., 2018). Furthermore, the heterogeneity of its residents in terms of SES indicators was also one of its main features.

The high SES neighborhood showed one of the highest SES indicators within the city of Madrid. The residents' profile was very homogeneous in terms of income level and high-skilled professionals (MCH, 2014).

2.2. Sample

The over-arching qualitative project where this research is embedded used purposeful sampling to select participants with pre-determined criteria according to their relationship to the research aim (Green & Thorogood, 2004) of studying health inequalities in urban contexts. Participants were selected considering the following socio-demographic characteristics: sex, age, education level, number of children, labor situation, income, family responsibility related to children or grandchildren, years of living in the neighborhood, immigration, tobacco consumption (smoker, former smoker, former smoker who has participated quitting programs), alcohol consumption (occasional drinker or regular drinker), and participation in fitness programs. A Sociological Research Company with expertise in qualitative studies made the selection of the participants across the neighborhoods. They used their own informal networks, and also hung posters in strategic places such as social services, public services and health centers with contact information and information about the qualitative research project. Then when they contacted with enough participants, we decided which ones fitted best for our selection criteria.

The over-arching qualitative project recruited adults aged between 40 - 85 years old because we wanted participants who would be more likely to be embedded in their neighborhoods and who might be of an age-range more likely to develop cardiovascular disease. The number of participants per neighborhood, their socio-demographic characteristics and their smoking status are detailed in Table 1. Recruiting participants with different smoking status allowed us to gather deep knowledge of the current smoke-free law. All participants signed an informed consent document that warranted the anonymity and the confidentiality of the collected data and information. The study protocol was approved by Alcalá University's bioethics committee.

2.3. Data collection

Thirty-seven semi-structured interviews (SSIs) and 29 focus group discussions (FGDs) were conducted focusing on four urban health dimensions studied in the over-arching projects; food, physical activity, alcohol and tobacco smoking. The distribution of the SSIs and the FGDs conducted per neighborhood is further detailed in Table 2. Data triangulation was used to enhance the validity of the two qualitative data collection techniques (Denzin, 1989). SSIs and FGDs were audio recorded and analyzed in Spanish. They were transcribed by a professional audio-typist and checked by members of our research team. Verbatim translations from Spanish to English were modified to maintain the intended meaning following expert recommendations (Biering-Sørensen et al., 2011). We interviewed two key informants (health center directors and school directors) from each neighborhood because of their broad general knowledge (Taylor & Blake, 2015). SSIs were conducted between 2016 and 2018. SSIs lasted approximately 1 h and focused on

Table 1
Number of participants, socio-demographic characteristics and smoking status per neighborhood.

	High SES neighborhood (Nueva España)	Medium SES neighborhood (El Pilar)	Low SES neighborhood (San Diego)
Participants	38	75	100
Age			
40–49	15.7%	28.0%	27.0%
50–59	36.8%	34.7%	36.0%
60–69	21.1%	21.3%	26.0%
70–79	23.7%	16.0%	9.0%
80+	2.6%	0%	2.0%
Sex			
Male	44.7%	33.3%	43.0%
Female	55.3%	66.7%	57.0%
Education			
Without studies	0%	0%	4.0%
Primary school	5.3%	12.0%	25.0%
Secondary school	10.5%	44.0%	34.0%
College or further education	10.5%	22.7%	20.0%
University education	73.7%	21.3%	17.0%
Employment status			
Employed	65.8%	58.7%	63.0%
Housewife	5.3%	2.7%	4.0%
Unemployed	0%	9.3%	10.0%
Retired	28.9%	29.3%	23.0%
Smoking status			
Non-smoker	47.4%	54.7%	46.0%
Smoker	18.4%	25.3%	33.0%
Former smoker	23.7%	17.3%	19.0%
Former smoker who has participated in tobacco cessation programs	10.5%	2.7%	2.0%

Table 2
Distribution of SSIs and FGDs in each studied neighborhood.

	Low SES neighborhood (San Diego)	Medium SES neighborhood (El Pilar)	High SES neighborhood (Nueva España)
SSIs ^a	12	12	13
FGDs	14	11	4

^a Including two key informants per neighborhood.

the four dimensions of the study. Emergent results from SSIs guided the research team into the next stage of the data collection where FGDs were conducted. During FGDs fieldnotes were gathered by the observer and the facilitator and then were compared to enrich our analysis. FGDs were conducted between 2018 and 2019, lasted approximately 90 min and the number of participants ranged from 5 to 8. We conducted SSIs and FGDs until we reached saturation (the transcriptions started to become repetitive). Furthermore, we might have reached saturation in the high SES neighborhood before than in the other two neighborhoods because of the homogeneity in the residents' profile (mainly high-skilled workers and high-income residents). Although the response rate was very high (92%), we faced problems recruiting participants from the low SES neighborhood because they thought that we would try to take advantage of their socioeconomically disadvantaged situation. Otherwise, in the medium and the high SES neighborhoods, residents were eager to participate in an urban health research project.

The SSIs allowed us to explore topics without discourse restrictions (Marbry, 2008). Otherwise, in the FGDs data is generated from the spontaneous interaction between participants, which help us gather collective discourses (Taylor & Blake, 2015). A semi-structured script was designed by experienced qualitative research members to ensure

standardization across both techniques. The scripts of both the SSIs and FGDs can be found in the supplementary files. Participants were paid €25 to thank them for dedicating time to our study.

2.4. Data analyses

Our analyses were guided by the principles of constructivist grounded theory (Charmaz, 2006), aiming for fulfil our objective of conceptually understand differences in the perceived effects of the current smoke-free law depending on neighborhood SES. Transcriptions were coded line-by-line using open coding. Constant comparison (Glaser, 2003) of emerging codes allowed us to consolidate three subcategories and one core category. The analytical process was carried out by experienced qualitative researchers, who worked together considering their different perspectives and backgrounds (social science and public health). Involving more than one investigator and different perspectives in the analytical process challenged a possible biased analysis (Denzin, 1989) and ensured trustworthiness criteria of credibility (Dahlgren, Emmelin, & Winkvist, 2004). We analyzed 37 SSIs and 29 FGDs following the constructivist grounded theory (Charmaz, 2006). We have explored the effect that specific characteristics of the urban environment have on smoking. We also explored individual perceptions of smoking to disentangle how the comprehensive smoke-free law influenced collective smoking behaviors and attitudes toward smoking within neighborhoods' urban contexts. Thus, we interpreted and theorized the perceived effects of the current smoke-free law, rather than merely doing a report of the perceptions (Charmaz, 2006). This process of abstraction allowed us identifying three subcategories: "neighborhood compliance with the current smoke-free law and lack of regulation in outdoor areas"; "changes in hospitality venues after the implementation of the comprehensive smoke-free law"; and "relocation of smokers and its consequences". The core category was constructed based on its close relationship with the subcategories and it was labelled as "Neighborhood inequalities in SHS exposure in outdoor places".

The research members worked reflexively (Finlay & Gough, 2003) during the research process considering their social science and public health experience. Hence, there were few differences between resultant categories and those that did arise were resolved by agreement among the research team. ATLAS.ti-8 software was used to manage the analytical process. We believe that we have contextualized our findings aiming to help the reader to decide if they are transferrable (Dahlgren et al., 2004) to others urban contexts.

2.5. Methodological considerations

This study is reported according to the SRQRreporting guidelines (O'Brien, Harris, Beckman, Reed & Cook, 2014) for reporting qualitative research.

3. Results

3.1. Neighborhood compliance with the current smoke-free law and lack of regulation in outdoor areas

Compliance with the smoke-free law in the three neighborhoods was a key factor to understand the perceived reduction in SHS exposure in indoor settings. Non-compliance with the law in indoor places was inconceivable even though smoking was a very rooted practice in Spanish society. Our qualitative data suggested there had been a denormalization of smoking in indoor settings in all the three neighborhoods. This can be understood as a change in collective smoking behaviors due to the indoor prohibitions established in 2011.

"Fewer and fewer [smokers], I think the ban on smoking in indoor places and other places, I guess people are smoking less". [High SES neighborhood, SSI, female, 50–59 years old]

Nevertheless, the comprehensive smoke-free law only prohibits smoking at certain outdoor places, such as school courtyards, playgrounds and hospital premises, and recommends not smoking in areas adjacent to schools.

Participants reported being exposed to SHS at outdoor bus stops in all three neighborhoods, although individual responses varied depending on neighborhood SES. In the medium and low SES neighborhoods, non-smoker commuters sometimes confronted people smoking at the bus stop because the smoke bothered them. This change in attitudes toward smoking within these neighborhoods might be enhanced by the current smoke-free law.

“At bus stops, I even told a few people, “Uh, excuse me, could you please stop smoking here? They told me ... I think they gave me dirty looks to say, “Why don’t you die?” (laughs). [Low SES neighborhood, FGD, female, 40–49 years old]

Whereas in the high SES neighborhood, smoker commuters smoked away from the bus stops when non-smokers were waiting for the bus. Smokers in this neighborhood seemed to be more aware of the harmful effects of SHS exposure and tried to avoid bothering non-smokers. This change in smoking behaviors might have also been enhanced by the smoke-free law. Due to the denormalization of smoking in these settings, most residents of the three neighborhoods, regardless of SES or smoking status, claimed that bus stops should become smoke-free places.

3.2. Changes in hospitality venues after the implementation of the comprehensive smoke-free law

This subcategory arose from the importance given to hospitality venues going smoke-free by Spain’s current smoke-free law. The previous law (Law 28/2005) allowed the owners of venues smaller than 100 m² to decide whether smoking was allowed in their establishment. In venues of 100 m² or more, smoking was banned but the owners could have “smoking areas” inside the establishment.

The introduction of the comprehensive smoke-free law in 2011 might have changed the built environment in hospitality venues and related attitudes toward smoking. Even smokers from the three neighborhoods agreed that the current smoke-free law had positive effects and felt that hospitality venues were more pleasant after its implementation. Our findings suggested that due to the comprehensive smoke-free legislation there was a denormalization of smoking in places where it has been a deeply rooted practice.

“Very positive, because before [the enactment of the comprehensive smoke-free law] if you walked into a bar ... and I am smoker, but of course, it’s not the same smoking a cigarette when you feel like it, than walking into a place [bar] and breathing that air. Ah, since they’ve banned smoking in bars, when you go out to have some drinks it feels better and I don’t think anyone doubts that.” [High SES neighborhood, FGD, female, 60–69 years old]

Our findings suggested that perceptions of the current smoke-free legislation have changed over time. Participants claimed that when Law 42/2010 was implemented in 2011 it was perceived as a threat to the economic interests of the owners of hospitality venues. However, after its implementation smokers were relocated to outdoor places in hospitality venues, mainly entrances and terraces. Once the law was implemented, the built environment in hospitality venues was modified and shelters, tables and heaters were installed in the outdoor areas. These facilities accommodate smokers and facilitate smoking. This was perceived as an economic opportunity, a way for owners of hospitality venues to maintain smoking customers despite the restrictions imposed by the smoke-free law. In fact, participants sometimes perceived entrances and terraces as new “smoking areas” in hospitality venues, comparing them with those that were enacted with the previous smoke-free law.

We identified several differences in the perception of changes in hospitality venues after the implementation of Law 42/2010 according to neighborhood SES. Participants in the high SES neighborhood often negatively viewed smoking in outdoor terraces of hospitality venues. Moreover, SHS exposure in these settings was perceived as unpleasant. Almost all residents, regardless of their smoking status, preferred a more restrictive smoke-free law that should include the entrances and terraces of hospitality venues. There was a meaningful change in attitudes toward smoking in the high SES neighborhood. Moreover, it highlighted the impact that the current smoke-free law had in denormalization of smoking among residents from this high SES neighborhood.

In the medium SES neighborhood, residents reported that families with children visit hospitality venues more often since 2011 because they feel less exposed to SHS in indoor settings than before its implementation. Residents also perceived changes among the age of clients using hospitality venue terraces: smokers were younger than before. Moreover, they also observed a decrease in the number of older smoker clients, who seemed not to be in favor of the smoke-free legislation, even though considering the facilities (heaters, shelter, tables) installed in these settings. Our results suggested that in this neighborhood, young smokers seemed to adjust better their smoking behavior to the changes introduced by the smoke-free law than older smokers.

“Now that smoking is not allowed families with children go to have lunch at the bar more often, or to have a tapa, and they bring them [children] with. But it’s not the same as before [the implementation of the comprehensive smoke-free law], when everybody was smoking in bars, or almost everybody.” [Medium SES neighborhood, FGD, female, 50–59 years old]

In the low SES neighborhood, non-smoker residents perceived terraces of hospitality venues as places that facilitate smoking. Often, they referred to these settings as “smoking areas”. SHS exposure in these outdoor places was sometimes perceived as unpleasant by non-smokers. But they also declared that they understand that smokers need to smoke, and they would need some places such as terraces and entrances where smoking would be allowed. We found that in these settings smoking has not been denormalized and non-smokers empathized with smokers. Hospitality venues seemed to be divided in outdoor settings (terraces and entrances) where smokers were usually reported, and indoor settings where non-smokers were often located. Smokers reported that they chose to go to a bar and/or restaurant based on whether it had a terrace where they could smoke. Due to indoor prohibitions and facilities installed in outdoor settings, they strongly felt that terraces were designed to smoke.

“Now I can’t walk into a place where people are smoking, I totally reject it. Yes, they are respecting [indoor smoke-free areas] but they smoke at the entrances and if you want to be in a public space or a terrace in summer you can’t because someone is smoking next to you and you smell the smoke.” [Low SES neighborhood, SSI, male, 70–79 years old]

3.3. Relocation of smokers and its consequences

The current comprehensive smoke-free law relocated smokers to different outdoor settings. This phenomenon has had several unintended consequences, which varied depending on the neighborhood SES. In the high SES neighborhood, where smoking has been more denormalized, it was also perceived as a bad habit. We found that smokers’ perception of smoking was influenced by the collective knowledge that smoking is a risky behavior that worsens not only their health but also the health of non-smokers exposed to SHS. They tried not to smoke in outdoor settings because it might bother non-smokers and they knew the harmful effects of SHS. Since the implementation of the comprehensive smoke-free legislation, in this neighborhood fewer smokers were reported to have been observed at workplace entrances. However, smokers were reported

to have been observed on the street in front of household entrances. It seems that smokers aim to protect their families from SHS exposure in their homes. Because of the perceived reduction of smokers in outdoor settings, those who still smoke in this neighborhood reported feeling isolated or lonely. These feelings and the knowledge that smoking was a risky behavior discouraged smoking. Such feelings were not perceived in the other two neighborhoods.

“Today, you see people smoking in the streets, I mean at entrances to buildings because they always have to go outside to smoke, at work, at home, and they smoke wherever they can, at shop entrances or restaurant entrances. But anyway, I think that it’s decreased [smoking] a lot.” [High SES neighborhood, SSI, male, 70–79 years old]

“But I still smoke [...] my closest friends have quit smoking, years ago at work, for instance, when we went outside, sometimes there would be six, seven, or eight people smoking at the same time and now a lot of times I’m smoking by myself and it makes me sad, I struggle a lot.” [High SES neighborhood, SSI, male, 50–59 years old]

In the medium SES neighborhood, smokers were reported to have been observed at workplace entrances, increasing SHS exposure in those specific settings. Compensatory smoking was perceived in those places, which might be understood as an unintended consequence of indoor prohibition together with relocation. If smokers did not smoke for a while, they tried to compensate by smoking more cigarettes or by smoking them more intensely.

“When we had our work breaks, we would smoke cigarettes [...] but what are you doing man? Are you crazy? and in that hour ... eleven cigarettes.” [Medium SES neighborhood, FGD, male, 50–59 years old]

Smoking was perceived as a necessity by participants from the low and medium SES neighborhoods justified by day-to-day anxiety due to current lifestyles. Thus, smoking areas were accepted even by non-smoking participants. This fact implies that normalization of outdoor smoking areas had already occurred in these neighborhoods. Participants who smoked from these two neighborhoods did not feel lonely or sad in outdoor places like smokers in the high SES neighborhood.

“–M: Do you know what I think? We really need to learn how to slow down our daily pace and try to control anxiety and everything that somehow triggers smoking and make us do everything in a compulsive way. –F: But if we cannot change our lifestyles, I guess that [reduce smoking] it would be impossible.” [Medium SES neighborhood, FGD, male and female, 50–59 years old]

“–M1: Besides there is the norm of having some tables outside [bars]. –F: Yes, and these smoking areas are accepted. Fortunately, they are accepted. –M2: As a little entrance like a smoking area. Yes, as terraces [in bars].” [Low SES neighborhood, FGD, males and female, 60–69 years old].

“–F: Yes, but while smoking you also meet people. I went out of some indoor places to smoke and there are people “smoking a cig” and you start talking and meeting people (laugh). –F2: Yes, that’s true. –F: You know how much acquaintances have I met since we started to go out of indoor places to smoke?” [Low SES neighborhood, FGD, females, 40–49 years old]

We found that the relocation of smokers to outdoor settings had two more relevant consequences apart from SHS exposure, which were mainly reported in the low and the medium SES neighborhoods: cigarette butt littering and noise disturbance. Residents believe that cigarette butt litter and noise disturbance has increased after the implementation of the comprehensive smoke-free law, which relocated smokers to outdoor settings. These consequences might also affect the health of residents. Indeed, cigarette butts in outdoor settings were perceived very negatively among participants from the medium and the

low SES neighborhoods. In the low SES neighborhood, it was reported that smokers did not throw away their cigarette butts in the ashtrays installed on the street for this purpose. This behavior may have reinforced the reported increase of cigarette butts littering in outdoor settings.

“–M: But we smoke in the streets and more people smoke there. Cigarette butts are thrown on the ground. That makes the streets dirtier. –F: But almost all the bins have ashtrays ... –M: But people don’t use them.” [Low SES Neighborhood, FGD, male and female, 50–59 years old]

Noise disturbance in the medium and the low SES neighborhoods was also associated with smokers relocated to the outdoor areas of hospitality venues where they socialize, which seemed to be negatively affecting residents living near such settings specially at night. Residents reported that situations of noise disturbance were stressful and difficult to deal with near hospitality venues where shelters, tables and heaters were installed to facilitate smoking.

“Of course [...] because smoking is not allowed indoors, they go out to smoke and they talk but they talk so loud that almost the entire building can hear them.” [Medium SES neighborhood, FGD, female, 60–69 years old]

4. Discussion

Compliance with smoking prohibitions implemented in 2011 is a key factor in the perceived reduction of exposure to SHS in indoor settings. We suggest that neighborhoods’ urban environments have changed since the enactment of the comprehensive smoke-free law. Therefore, smoking has been denormalized and attitudes toward smoking and smoking behaviors have been changing in certain outdoor places such as bus stops and terraces and entrances of hospitality venues. Moreover, the high SES neighborhood seems to have changed the most, and therefore the denormalization of smoking, and the extent of change in attitudes toward smoking and smoking behaviors might be greater than in the other neighborhoods. Due to the comprehensive smoke-free law the built environment in outdoor public places have changed and hospitality venues are perceived as conducive environments which facilitate smoking. Changes in the built environment facilitate the relocation of smokers to these outdoor settings. Furthermore, the comprehensive smoke-free law has unintended consequences such as the relocation of smokers to outdoor places, which has been related with SHS exposure, noise disturbance and cigarette butt littering. These unintended consequences are unequally affecting neighborhood regarding SES. Our findings suggest that neighborhood SES is a key factor to understand differences in the perceived effects of Spain’s smoke-free law. Finally, considering the change in attitudes toward smoking and in smoking behaviors in the three neighborhoods in bus stops, this may indicate that smoking has been denormalized in these settings. Therefore, we suggest that bus stops should be regulated as smoke-free areas if the current legislation is revised. Even though the current comprehensive smoke-free law might have contributed to denormalize smoking in these settings, we consider that further implementations of outdoor smoking bans should be made including an urban inequalities perspective. Moreover, the denormalization of smoking might have unintended effects such as the stigmatization of smokers, which has been showed in the high SES neighborhood.

4.1. Contextualization of the main findings

We consider that our findings regarding differences by neighborhood SES support existing knowledge of the unequal socio-spatial distribution of smoking and the effectiveness that population level interventions have in different SES groups (Barnett et al., 2017; Frohlich et al., 2010; Frohlich, Mykhalovskiy, Poland, Haines-Saah, & Johnson, 2012). Using

a qualitative approach provides a valuable understanding of the influence that comprehensive smoke-free laws had in different neighborhoods. This qualitative approach is also helpful to explain how individual smoking behaviors and attitudes toward smoking, embedded in the broader neighborhood context, have changed and how do they interrelate. Our findings suggest that the comprehensive smoke-free law contributes to the denormalization of smoking and how the urban environment changed after the enactment of the current smoke-free law, as also studied by Poland et al. (2006) and Ritchie, Amos, and Martin (2010a; 2010b).

Our results agree with those of Fernández et al. (2017), which showed that overall self-reported SHS exposure decreased from 71% in 2006 to 45.2% in 2011 in Spain after the implementation of the comprehensive smoke-free law. Additionally, we found that establishing smoke-free areas might have a positive impact on changing smoking behaviors, which is supported by Sureda et al. (2015) and Kaufman et al. (2010).

As suggested by Frohlich et al. (2002) and Poland et al. (2006; 2000), the differential effect of the comprehensive smoke-free law considering neighborhood SES might be explained by agency and power relations. Smokers from the low and the medium SES neighborhoods might be constrained by social structural conditions that are beyond their control and therefore influencing their smoking behaviors. Otherwise, smokers from the high SES neighborhood, due to their advantaged socio-economical position might change and adapt better their smoking behaviors.

SHS exposure was reported at outdoor bus stops, which are not regulated by the current comprehensive smoke-free law. Our results are supported by other research (Valiente et al., 2019) conducted in the city of Madrid showing how bus stops are among the places where smokers have highest visibility in urban settings (visibility of smokers was observed in 10% of bus stops). Moreover, our results concerning changes in smoker behaviors and non-smoker reactions are supported by some authors that show how comprehensive smoke-free laws might have contributed to denormalize smoking (Bell, 2013) and to change smoking behaviors in public places in different cities (Kauffman et al., 2010; Poland, 1998, 2000; Ritchie et al., 2010a). Our results suggest that due to current denormalization of smoking in bus stops they should be regulated as smoke-free areas, which agree with (Sureda et al., 2015) showing that 56% of the population supported that measure. Nevertheless, this should be made with caution because socioeconomically disadvantaged smokers might be stigmatized as showed by Bell et al. (2010). Moreover, smokers from the high SES neighborhood might take advantage of their socioeconomically advantaged position and adjust better their smoking behaviors to avoid public confrontation with non-smokers (Poland, 2000).

The stepwise smoke-free legislation implemented in Spain was carried out in two phases: 2006 (Law 28/2005) and 2011 (Law 42/2010). Some authors (Fernández et al., 2009) have highlighted how SHS exposure in hospitality venues was not reduced after the first phase of regulation. Our results regarding perceived exposure to SHS are consistent with a study (Fernández et al., 2017) showing how self-reported SHS exposure decreased in several settings (including hospitality venues), after the implementation of the current smoke-free laws. Furthermore, the complete ban on smoking inside hospitality venues has caused smokers to relocate to outdoor areas (terraces and entrances). We found that people reported SHS exposure in outdoor areas of hospitality venues in the three neighborhoods studied. Systematic social observation conducted in the city of Madrid (Sureda et al., 2018) showed signs of tobacco consumption in 95% of outdoor terraces and in 78% of entrances in hospitality venues. The built environment changed after the implementation of the current smoke-free law, which agree on Ritchie, Amos, and Martin (2010b) that showed how facilities provided to smokers in certain places might enhance smoking. Otherwise, there was resentment by non-smokers losing public space (Poland, 2000) due to relocation of smokers to outdoor settings in hospitality

venues (Sureda et al., 2015).

Our findings suggest that smoking in the high SES neighborhood was denormalized the most and participants from this neighborhood were more in favor of banning smoking in outdoor areas of hospitality venues. Therefore, as Poland (2000) argued, smoking has been perceived by socioeconomically advantaged population as an undesirable or unhealthy behavior and has been perceived as a socioeconomically disadvantaged population behavior (Bell et al., 2010). Other studies (Frohlich et al., 2010) have shown that smoke-free legislation has been embraced to a higher degree among high SES groups.

There are countries such as Ireland (Public Health Tobacco Amendment Act, 2004), Northern Ireland (The Smoking Northern Ireland Order, 2006) and Scotland (The Prohibition of Smoking in Certain Premises Regulations, 2006), which banned smoking from outdoor places such as hospitals grounds. Nevertheless, some criticisms (Bell et al., 2010; Chapman, 2000; 2008) of outdoor smoking prohibitions focus on freedom and autonomy of individuals, which agree on our findings regarding the right of smokers from the low SES to have places designated to smoke. Despite these critical voices, from a health perspective it has been shown the positive effects that comprehensive smoke-free laws have on health outcomes (Frazer et al., 2016). Our findings support that smokers from the high SES neighborhood feel stigmatization might be because of the denormalization of smoking (Chapman & Freeman, 2008). Otherwise, several authors showed how denormalization of smoking contributed to further marginalize smokers from socioeconomically deprived groups (Bell et al., 2010; Frohlich et al., 2012). However, we only found stigma in smokers from the high SES neighborhood as Stuber, Galea, and Link (2008a) and Stuber, Meyer, and Link (2008b).

Several studies, also conducted in larger cities (Sureda et al., 2015; Kaufman et al., 2010; Valiente et al., 2019) have highlighted that comprehensive smoke-free laws relocate smokers to outdoor settings. Several authors also support our results on the relocation of smokers to workplace entrances and the compensatory smoking after indoor prohibition (Chapman, Haddad, & Sindhusake, 1997; Parry, Platt, & Thomson, 2000).

Other authors (Kaufman et al., 2010; Patel, Thomson, & Wilson, 2013) support our results regarding the perception of cigarette butt litter in outdoor places where smokers have been relocated. Valiente et al. (2020) conducted a systematic social observation in the city of Madrid and showed that there were cigarette butts in 76% of hospitality venues and in 65% of bus stops observed. Moreover, cigarette butts are mostly non-biodegradable, contain toxic substances, and contribute to environmental pollution (Moerman & Potts, 2011; Novotny, Lum, Smith, Wang, & Barnes, 2009; Valiente et al., 2020), which might affect the health of the residents. Although noise disturbance has been studied less, it has been only associated with women living in low SES neighborhoods (Moore, Annechino, & Lee, 2009). Otherwise, several studies (Lock et al., 2010; Williamson et al., 2011) assessing the effects of smoke-free laws in hospitality venues did not find noise disturbance to be related to the relocation of smokers to outdoor areas. The noise disturbance that takes place in outdoor areas of hospitality venues might be explained in part because of the socialization of smokers in these areas (Tan, 2013), but more evidence is needed to assess noise disturbance and its relationship with the relocation of smokers in hospitality venues outdoor areas.

4.2. Limitations and strengths

Several limitations are included in this analysis: if we had conducted a study before the implementation of the current smoke-free law we would have been able to make a longitudinal study such as Hargreaves et al. (2010) did in England, and Ritchie et al. (2010b) did in Scotland. Moreover, due to the qualitative approach used in this study we cannot assume the differential impact of the Spanish comprehensive smoke-free law considering neighborhood SES. This qualitative examination might

help evaluating the effectiveness of national-level interventions in local contexts.

Strengths in our study include a large sample compared to other qualitative studies. We believe that analyzing three neighborhoods with different SES, as well as recruiting participants with different smoking status is a strength of our research, because it allowed us to capture broad and in-depth knowledge about the subject of study. We aimed to enhance the trustworthiness of this research. Therefore, the credibility of our findings increased by using two different qualitative methods (SSIs and FGDs) in data collection and involving different investigators in the analytical processes. We have provided a detailed description of the neighborhoods under study to allow the reader to decide on the transferability of our findings.

4.3. Conclusions

In conclusion, comprehensive smoke-free laws have changed attitudes toward smoking and smoking behaviors in outdoor settings. Smoking has been denormalized in several outdoor settings. This qualitative study showed inequalities in SHS exposure in outdoor settings where smokers have been relocated. We suggest that due to the denormalization of smoking in outdoor bus stops, they should be regulated as outdoor smoke-free areas. Extending smoking bans to outdoor areas like bus stops and hospitality venues is warranted and should include a public health inequalities perspective.

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Author contributions

Ignacio de Loyola González-Salgado: conceptualization, software, formal analysis, investigation, data curation, writing-original draft, funding acquisition. Jesús Rivera-Navarro: methodology, investigation, formal analysis, resources, data curation, supervision, visualization, writing-review & editing, project administration, funding acquisition. Francisca Sureda Llull: validation, writing-review & editing. Manuel Franco Tejero: supervision, writing-review & editing, project administration, funding acquisition.

Declaration of competing interest

None.

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Appendix A. Supplementary data

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