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How an urban regeneration programme impact people's health and wellbeing: an evaluation from citizen's perception using concept mapping

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Abstract

Introduction Urban regeneration programmes have an impact on health of residents in the areas where they are implemented. However, it is still unclear which changes inside these programmes drive the impact on health and social determinants of health. In this study, we uncover the main changes inside the PdB driving the impact on health and well-being from the residents' perceptions in a neighbourhood of Barcelona.

Methods We used a mixed methodology, employing concept mapping (CM) method. Our study was performed in the Barcelona neighbourhood of La Verneda i La Pau. To collect and analyse residents' perceptions of changes, we used a three-stage group sessions. We split the population into groups by age and sex and analysed the differences between the groups.

Results In total, 45 people participated and were divided into five age-sex groups. Most changes inside the PdB were perceived as positive for health by all the groups. These included community activities for healthy leisure at local centres, as well as changes to public space. However, some changes related to noise from the implementation of works were perceived as negative for health. Differences between age-sex groups were especially related to mobility and the different uses of public space.

Conclusions The results are consistent with previous quantitative health evaluations and provide deeper insight into the changes inside urban regeneration programmes that drive the impact on health. Finally, it provides guidance for designing new programmes considering age and gender.

Keywords Urban health, Urban regeneration, Concept mapping, Citizen participation, Health policy

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Introduction

Urban regeneration programmes aim to improve health and reduce social inequalities between neighbourhoods by redeveloping urban spaces, promoting sustainable mobility, increasing the amount of green space, and encouraging healthy leisure and occupational activities [1]. Previous evaluative studies have shown an impact of urban regeneration programmes on health [1, 2]. However, results to date have been in many cases controversial with respect to health indicator outcomes due to varying project durations and interventions [3].

Urban determinant frameworks also include axes of inequality, such as age and sex, as intermediate variables that modify the final impact of urban regeneration policies (Barton and Grant, 2006). In this sense, it has been hypothesised that users' perceptions of the design, safety, and quality might limit their use [4–6].

Furthermore, the complexity of urban regeneration programs, and the fact that they are context dependent, make it difficult to understand why health impacts do or do not occur, on whom and how, and to obtain results that are transferable to other contexts [7–9]. This justifies the importance to conduct these kind of studies.

Besides, there is a lack of conclusive evidence in the study area, as the specific changes inside the programmes driving such impact are not clear [10–14].

Pla de Barris (Neighbourhood Plan—hereinafter, PdB) is a council-led wide-ranging urban regeneration programme for the most vulnerable neighbourhoods of Barcelona city. From 2016 and 2020, it was funded with 150 million euros and extended to 16 of the 73 neighbourhoods of Barcelona.

Studies have shown, on one side, that the PdB programme has improved sustainable local partnerships in the process of implementation; and on the other side, that has allowed improvements in specific health indicators (e.g. reducing at 15.5% and 21.7% the percentages of women with poor mental and self-perceived health, respectively). Besides, it has allowed to mobilized community resources [15]. However, these studies have failed to illuminate how and to which population group affected the changes driving by the PdB.

Understanding why health impacts occur, for whom and how is essential to know which parts of integral regeneration programs are most effective and who benefits most from it. Qualitative methodologies have been shown to be particularly useful to it [16–18].

They may strengthen the reliability of quantitative results, but also provide insights into the validity and limitations of quantitative findings [19]. The use of qualitative methods could enhance the understanding of quantitative data by providing a context to the numeric data, and allowing to design more successful territorial

health profiles. Previous studies evaluating PdB do not evaluate the program from this perspective [15, 20].

The main objective of the study is to uncover the main changes inside the PdB driving the impact on health and well-being from the residents' perceptions. Specifically, the study aimed to understand differences between population groups according age and sex.

Theoretical background

As health conditions not solely link to individual factors, but to social, economic and spatial contexts, spatial planning must adopt a health approach and articulate it with domains, such as environment, housing, transports, education or employment. The adoption of such an integrated approach creates an opportunity to improve complementarities between cross-sectoral policies and services in a territory [21]. In this sense, WHO reports have strengthen the importance of promoting a broader institutional view for health, focusing on a collaborative model of governance for health [22]. Therefore, it is important to include the spatial planning in the development of health policy agenda, while considering how local participants value the territorial dimension of health. Urban regeneration is the process of renewal or redevelopment of the social and built environment through policies, programmes and projects aimed at urban areas, which have experienced multiple disadvantage [23]. Typically, it is undertaken by the government, local community and sometimes private developers. Historically urban regeneration has been known with different names, such as re-development or rehabilitation for action in “depressed” urban areas for improving housing and environmental conditions, and the term “slum clearance” and the symptoms of “urban decay”, with the focus on many urban renewal initiatives, especially in post-war England. However, nowadays most conceptions of urban regeneration hold that all physical, economic, social and health issues are entwined and must be combined for the regeneration to be sustainable [23].

As mentioned, in previous literature, it has been stated that constructed features of the built environment contribute to an individual's and community's health and wellbeing. In this line, citizen civic engagement with urban or environmental design and urban planning would influence social relations. One example of it is the citizen participation and activism concerning the condition of housing, and the provision of play areas and parks, street lighting, and local shops, in facilitating social capital and encourage place making [23].

Therefore, frameworks to develop a health strategy at the local level support the idea of addressing a territorial collective analysis and listening to the voices of the community. The participatory process may include several

tools depending on the context and the participants (focus groups, interviews, nominal group techniques or even questionnaires, for example) [24].

This study has been carried out based on this theoretical framework of analysis.

Methods

Study design

We used a mixed method design, employing concept mapping (CM), which combines different data collection methods. CM is a type of participatory method that helps to organise and represent the perceptions of a group of people on a topic of interest. It combines qualitative and quantitative techniques for data collection and analysis, producing structured visual representations in the form of maps. CM is useful to understand complex phenomena and identify the changes with the greatest effect [25, 26].

Setting of the study

The study was carried out in the neighbourhood of La Verneda i La Pau, in the Sant Martí district of the city of Barcelona. With 28,726 inhabitants, it is one of the most densely populated neighbourhoods in the city and has one of the oldest and ageing populations. A high proportion of people (26.2%) are over 65 years of age, and 22.6% of this age group live alone. The percentage of people with lower than primary educational level is 3.0%, in comparison with an average of 1.5% across the city. The household disposable income index is one of the lowest in the city and the housing stock is on average over 50 years old, with 85% built before 1980 [27].

Between 2016 and 2020, 77 interventions were carried out in La Verneda i La Pau as part of the PdB. Approximately, the executed budget amounted to 12 million euros [28]. A summary of the interventions implemented in the neighbourhood within the PdB is shown in Additional file 1. Even if the aim was to evaluate the program overall, once recruitment finished and considering participants profile, some interventions have taken more relevance in the evaluation. Amongst people older than 65 years old, and considering previous implication in community associations and engagement in social centre activities, the reform of the social centre for older people, as well as improvements of public spaces and urban ecology (especially those orientated to prioritise pedestrians, lighting, widening of pavements for habilitating more walkable streets) were highlighted. In the group of adults, programmes related with babysitting, community-based family support resources and new professional profile support at schools took relevance due to their age and family situation. At the group of young people, as many of them were previous users of the JO+VE space and

activities, were of importance the activities promoted for healthy leisure by the programme, as well as the adaptation of a sports circuit in the street for physical activity and public spaces for meeting. Amongst young women, programmes oriented to promote women empowerment or to prevent and take action against male violence could take relevance.

Participants

Residents of the neighbourhood were invited to participate, and groups were formed according to three age ranges (≥ 65 years-old people, adults < 65 years-old, and young people < 25 years old) and sex. Recruitment was performed through convenience sampling, and nurses working at the community with the collaboration of leaders of the community helped with it. These health professionals have the role to dynamize community resources from a community health perspective, and have a deep knowledge, as well as the trust of people in the community of each neighbourhood. People that are more engaged in community resources were reached to disseminate the information and recruit participants. Dissemination of the information and invitations relied mainly on word-of-mouth, accompanied by posters and information sheets in neighbourhood cultural organisations, youth and old people centres, and community networks. Participants received an incentive (a 10-euro voucher for bookshop supplies) for their participation.

Data collection and analysis

Data collection was completed over three group sessions for each participating age-sex group using qualitative and quantitative data collection techniques. Although everyone was invited to participate in the three sessions, not all of them did so [29]. Some were recruited after the first session by word-of-mouth from recruited participants. Others previously excused for not being able to attend the day of the next sessions for reasons unrelated to the study.

In the first session, participants brainstormed the changes in the neighbourhood that had affected their health. They were guided by the following reflection: *"One change that has occurred in my neighbourhood in the last four to six years that has affected my or my family's health or well-being is..."*. In the second session, participants individually scored the ideas that emerged in the first session according to the criteria of importance (Likert scale from 1 to 5) and the perceived effect on health (positive or negative). They then individually grouped the ideas into common themes according to their own criteria (forming clusters of ideas). We analysed the information from the first and second sessions with the R-CMap software package (<https://haim-bar.uconn.edu/>

software/R-CMap₂, University of Connecticut, USA) [30] for each group. In the third session, the results were validated by group consensus. For this purpose, we created cluster maps before the third session summarising the results.

In addition, participants filled in a short questionnaire with information about their age, sex, socio-economic and educational level, and how long they had been living in the neighbourhood. All sessions were audio-recorded. Written consent for participation and recording was collected from the participants. The study was approved by the Parc de Salut Mar Medical Research Ethics Committee (report number 2022/10743).

In the data analysis, mean scores for importance and effect type were calculated for each idea, as well as mean scores for each cluster. The mean scores for effect type were interpreted as negative (<0.5) or positive (>0.5). Where scores were of 0.5, it was decided by group discussion if it dropped to the negative or positive side.

Cluster maps were created, where the ideas arising from participants are distributed and grouped. The groupings of ideas corresponded to what the participants made in the second session. The closer the points were to each other, the more frequently they had been grouped together by people in the same age-sex group. The final cluster maps were weighted to represent the average importance scores per cluster (the thicker the cluster, the higher the importance). The colours of the clusters indicate the average cluster effect type (green = positive, and red = negative) (see Fig. 1).

Results

In total, 45 people participated. They were distributed in groups according to age and sex. Old and young people were divided in men and women; in the case of adults, only one man participated. Table 1 presents the demographic and socio-economic characteristics of the five groups resulting.

Identification of changes and assessment of ideas

For each group of participants, between twelve and twenty changes affecting their well-being were identified in the neighbourhood. Because of the open nature of the question that guided the brainstorming, not all changes mentioned relate directly to aspects caused by the PdB.

Tables 2 and 3 present the above-mentioned changes together with the average importance score (scale 1–5) and the direction of the perceived effect (positive or negative) for each group of people. We have differentiated those that relate to the PdB programme (see Table 2) from those which do not (see Table 3). Additional file 2 contains verbatim quotes that emerged during sessions.

Changes related to the PdB

The community activities held at civic centres, aimed at promoting social cohesion and offering opportunities for healthy leisure activities (e.g. healthy cooking, healthy walking), stood out with high positive effect. These changes were mentioned across the different age-sex groups, with higher importance given by old people and adults (see Table 2 and Additional File 2). Old men identified physical spaces within the “casal” (civic community centre in the neighbourhood that was renewed within the PdB programme) as important for meeting-up, and they deemed negative that the “casal” had started to close at weekends. Participants also highlighted the opportunity of civic centres for promoting relationship amongst neighbours by organising group activities. The group of adults rated positively the provision of resources and activities for parenting and childcare promoted within the PdB. In concrete, they mentioned the “Concilia” pilot programme, a free local babysitting programme that was started after COVID-19 pandemic exploded to help with work-life balance, mainly for single-mother families with limited incomes, victims of gender violence and with no community support network. The childminding spaces operated seven days a week, with eighteen educators having been contracted to provide service. They mentioned not only the benefit for physical health, but also the social security this programme provide to families. It was also positively rated the incorporation of new professional profiles at schools (professionals with psychosocial expertise), an initiative under de PdB that aimed to offer a support to families in raising their children through group parenting sessions and individual care. It is important to notice that six out of seven participants in this adult group were women. They mentioned the relief that may suppose for families that need this support. Changes related to the renewal of public space, including creating more walking spaces and physical activity areas, and the renovation of sports facilities were perceived as positive specifically by old men and young people. Under the PdB various abandoned public spaces were reconverted into sport circuits and places were to do physical activity and promote people meeting. However, it is to highlight that some of the participants think there are yet underused, and those who mentioned to use them are men. All groups rated the installation of dog parks positively, except for old men, who indicate that dog owners do not always use them. The installation of lifts in some households was perceived positively by the group of old women, as beneficial for supporting mobility and autonomy of people. Most groups perceived other urban street improvements positively (e.g. lighting, installation of benches, and widening of pavements). They mentioned that after improvements in the streets, people start

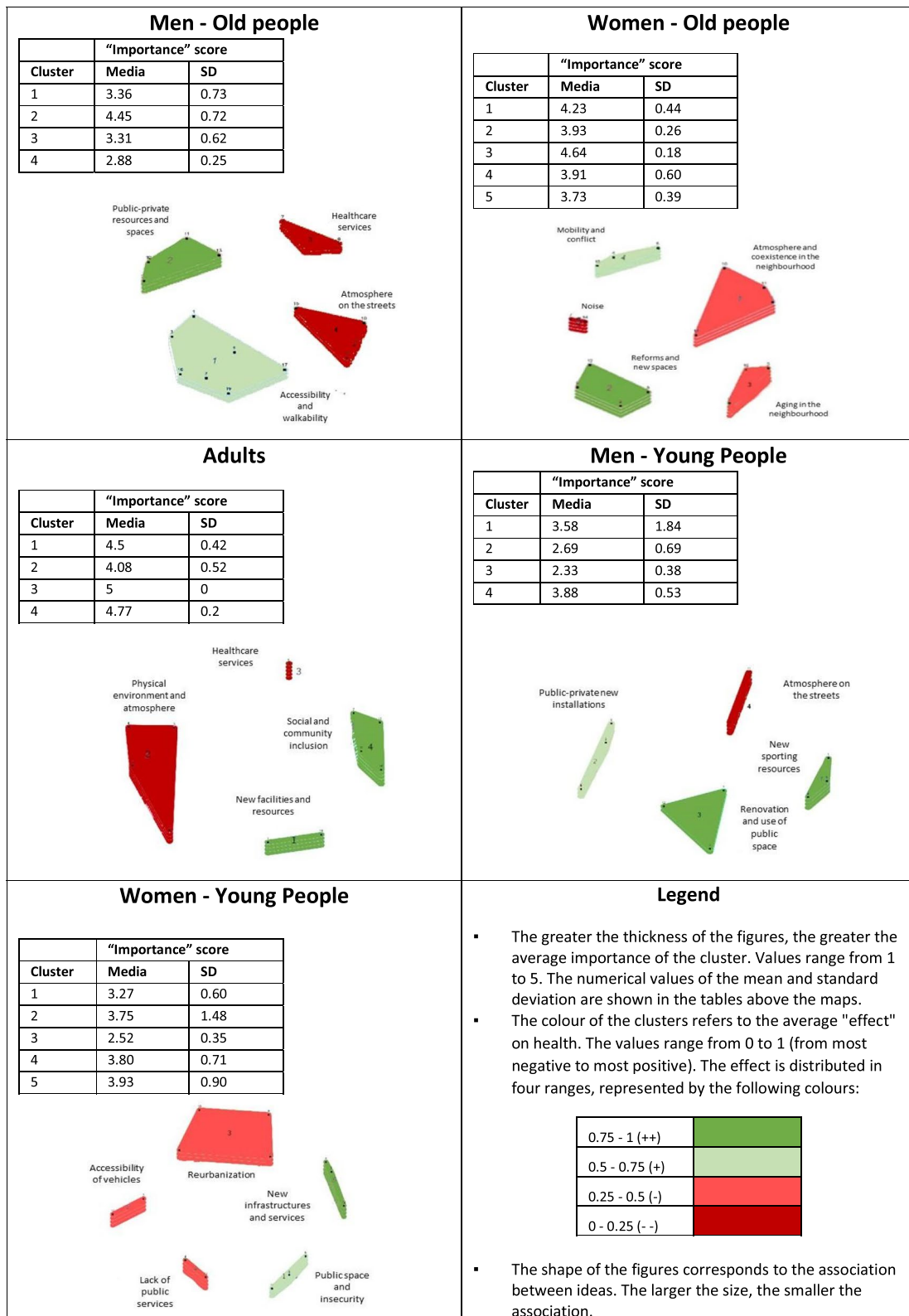


Fig. 1 Cluster maps by group, mean importance scores and health effect of each cluster

Table 1 Demographic and socio-economic characteristics of participants

	Old people		Adults		Young People	
	Women	Men	Women	Men	Women	Men
N (% of the total age group)	15 (71)	6 (29)	6 (86)	1 (14)	11 (65)	6 (35)
Age in years (median; range)	75 (66–84)	77 (65–86)	32 (31–40)	60 (-)	18 (16–24)	16 (15–18)
Employment status (%)^a						
Studying	-	-	-	-	9 (82)	5 (83)
Retired	15 (100)	5 (83)	-	-	-	-
Employed	-	-	2 (33)	-	1 (9)	4 (67)
Unemployed	-	-	1 (17)	-	-	1 (17)
Do own household chores	2 (13)	-	1 (17)	-	-	1 (17)
Permanent incapacity	1 (7)	1 (17)	-	-	-	-
Another situation ^b	-	-	3 (50)	1 (100)	1 (9)	-
Education level (%)						
Read and write	6 (40)	3 (50)	-	-	-	-
Primary	6 (40)	3 (50)	-	-	5 (45)	4 (67)
Secondary	3 (20)	-	5 (83)	1 (100)	6 (55)	2 (33)
University studies	-	-	1 (17)	-	-	-
Years living in neighbourhood (median; range)	55 (27–62)	40 (11–55)	4 (1–12)	2 (-)	10 (2–21)	16 (6–18)

^a Answers are not mutually exclusive

^b Only one case specified "Does not work due to health issues"

walking more and more. However, the old men group also pointed out that some pavements remained in a poor condition (with raised and uneven paving stones), making it difficult and unsafe for them to walk. Both groups of young people highlighted the new square in front of the La Pau metro station. However, the group of women felt that this renovation had not had a positive effect, because trees and fountains were lacking.

The re-naturalization to green space was recognised as positive by adults, but not deemed beneficial, as they had not been able to use the space because of the dirt from dog excrement. This change was one of the most negatively rated by the group of adults, underlining the importance it has to their health.

Finally, despite renovations and physical improvements were generally considered positive, old women and young people felt that the noise and dirt generated by the works had a negative effect on their health.

Changes not related to PdB

Participants identified other changes in the neighbourhood that were not related to PdB (see Table 3). In this respect, all groups, except the old men, agreed that the appearance of large supermarkets had a positive influence. The construction of new housing was also positively identified across all groups. In terms of negative changes, mainly women stressed the difficulty to access health services and the closure of neighbourhood healthcare

resources. Similarly, restrictive traffic regulations and less car parking have had a negative effect on most groups.

Cluster grouping and interpretation

Between four and five clusters of ideas were formed in each group, with the participants validating the titles proposed by the researcher for each cluster (see Fig. 1). Details of the ideas included in each cluster are given in Supplementary Material 2.

Some of the clusters are repeated across several groups. There is a common clustering of changes related to the renewal of public space and the development of new physical facilities in the neighbourhood. In the case of the young men's group, there is also a specific cluster for effects related to sports facilities. Clusters related to the perceived social and relational environment in the neighbourhood are repeated across groups. In general, these are changes with a negative effect on people's health (such as dirt, noise, insecurity).

Old people also created clusters ideas related to mobility in the neighbourhood, accessibility, and means of transport, to get in and out of the neighbourhood. These ideas were also repeated in the group of young women.

Discussion

The study has assessed the main changes driving health impact of the PdB in the Barcelona neighbourhood of La Verneda i La Pau from the perspective of the residents.

Table 2 Perceived changes in the neighbourhood associated with the PoB. Assessment of the importance and effect of the impact on health, according to age and sex

	Old people		Adults		Young People	
	Women (n = 15)	Men (n = 6)	(n = 7)	Women (n = 11)	Men (n = 6)	
Community activities: integration, healthy leisure, family welfare and local employment	Leisure activities and community cohesion	+ 4.45*	+ 5.00	Leisure activities and community cohesion	+ 4.80	Leisure activities and community cohesion
			-	Social support resource in schools	+ 5.00	
				Community activities and resources for families	+ 4.80	
				Community-based childcare services	+ 4.80	
Physical facilities in the neighbourhood	Dog park installation	+ 3.64	- 2.75	Training and employment integration courses for adults	+ 4.80	Dog park installation
	Installation of lifts in dwellings	+ 4.27	+ 4.5			Park and spaces for physical activity
	Urban improvements in streets	+ 3.64	+ 4.5	Urban improvements in streets	+ 4.20	Renovation of sports facilities
Renewal of public space	Works (more noise, more dirt)	- 3.45	+ 3.25	Poorly maintained and dirty green areas	- 4.80	New paddle court
			- 3.00	Poorer condition of pavements		Urban improvements in streets
						Renovation of La Pau metro station square
						Works (more noise, more dirt)
						Renovation of La Pau metro station square
						Works (more noise, more dirt)

* Numbers correspond to the average importance score (1–5) given by participants to the ideas

Table 3 (continued)

	Old people		Adults		Young People	
	Women (n = 15)	Men (n = 6)	(n = 7)	Women (n = 15)	Men (n = 6)	
Social life and living in the neighbourhood						
More dirt in the streets	- 4.45	More dirt in the streets	2.50	4.40	3.90	4.25
More noise in the streets	- 4.00	More noise in the streets	2.50	3.80	-	-
More insecurity in the neighbourhood	- 4.64	More insecurity in the neighbourhood	3.00	-	-	-
Ageing in the neighbourhood	+ 4.64	Occupation of premises and dwellings	3.00	-	-	-
Good living among neighbours	+ 4.18	Street drug use	3.00	-	-	-
Difficulties in coexisting pedestrians with bicycles and scooters	- 3.82					
Sanitary services						
Increased waiting lists	- 4.82	Closure of the paediatric service at the PC centre	3.00	5.00	4.30	-
		Difficulties in requesting and accessing medical appointments	3.00	-	-	-
		Closure of the PC centres at weekends	3.00	-	-	-

* Numbers correspond to the average importance score (1–5) given by participants to the ideas

Overall, most of the changes were perceived as positive for health and wellbeing, especially community and leisure activities at civic centres, family well-being, physical space at the civic centres, and improvements to public spaces. However, changes perceived negatively also existed, namely the noise and discomfort due to construction works, and the dirt in new public spaces, which was identified by several age-gender groups, mainly older ones.

Considering the wide range of activities and changes designated from the PdB, it was notable in the results the absence of programmes to promote popular culture and intergenerational relations, and programmes to support the local industry (see Additional file 1). While others took relevance due to participants profile, as previously mentioned.

As in previous studies, community activities for social gathering or training programmes to access the labour market were positively evaluated [17]. In line with other studies, we have demonstrated the perceived positive effect of local facilities and renovated public spaces on social interaction and community cohesion; which have also been link with well-being; healthy lifestyles; and emotional, perceived, and mental health [31–33]. Up to date, living in close proximity to social infrastructure have been shown to afford greater opportunities for individuals to encounter other residents and it is through these social contacts that social cohesion and belonging develop [34]. Studies report that sense of belonging to the local community is associated with better general health [35], psychological health and overall subjective wellbeing [36], while it can indirectly incur physical health benefits by reducing psychological stressors and encouraging outdoor activity such as walking [37]. Moreover, our results are consistent with other studies, where the installation of lifts in homes and the improvement of pavements were positively valued [17]. Indeed, the design and urban planning of transport and roads that facilitate mobility and walkability have been shown to enhance people's well-being [38, 39]. It has been hypothesized that the walkability of urban environments may affect health outcomes via several pathways: either by resulting in more physical activity (by improving active transport or by encouraging recreational activities including deliberate exercising), or by promoting social relationships [40].

As already evidenced, the study has also perceived that the Covid-19 pandemic and its consequences had brought the already precarious work–family balance into direct conflict for many working parents, with a greater impact on mothers. Once again, it has been demonstrated the importance of strengthening educational and care services to deal with the consequences of the pandemic [41].

Finally, the discomfort that people perceived in relation to the noise generated by the improvement works also agrees with a previous quantitative study that highlights the negative effect of the perceived intense noise in the PdB neighbourhoods [33].

The main strength of this study is the identification of the changes through which urban regeneration impacts health. The design, accessibility, and desirability of the physical and social environment affect people's use of and exposure to them, and ultimately, the potential benefit to their well-being [6, 38, 42, 43]. For example, changes that a priori were identified as beneficial to health may, in fact, have negative downsides if these factors are not considered. This is the case of some green play areas intended for children that are not used because of the dirt generated by other activities. New sport resources and renovated public spaces for physical exercise should also be promoted to maximize their potential benefits amongst different population groups. Differences between groups of different sex also show that the same change may have opposite effect because of a different perception of utility and accessibility of them (e.g. as in the case of the renovation of La Pau metro station square). Identified changes also differ from age-sex groups.

These differences helps to explain the findings of urban determinant frameworks that include age and sex as an intermediate variable and has been seen to modify the final impact of urban regeneration policies [6, 38].

Our study also has certain limitations. First, although the recruitment strategy made it possible to reach people of different age and sex, most of them were already users of community resources and activities in the neighbourhood; therefore, their perceptions could have been biased by their prior knowledge of the programmes in which they participated. Similarly, some changes and programmes of which they were not direct recipients may have been omitted from their responses. Second, other sample stratification axes were not considered in the recruitment process, such as level of education or country of birth, because of the difficulties in accessing people from lower socioeconomic levels or countries of birth outside Spain. Third, the limited number of cases within some age-sex strata generates volatile mean quantitative results. Future studies could focus on specific age profiles, thereby strengthening quantitative analyses and complement these results. However, the application of mixed methods counters this limitation, offering a detailed understanding of the phenomena, and engaging residents in the evaluation process ensures that the findings reflect the community's actual experiences and perceptions. This study add evidence not only applicable for policy improvement in the La Verneda i La Pau neighbourhood, but could be also extensible to other

neighbourhood in the city of Barcelona and similar contexts. However, it should be taken into consideration the specific population profile targeted in this study. Studies of this type are relevant to continue generating evidence on what, and particularly, how does it affect people's wellbeing.

Conclusions

This study elucidates the changes inside an urban regeneration programme that influence people's well-being in the physical and social context of a neighbourhood. Unlike other studies, this one combines methods to delve deeper into how urban regeneration programs impact people's well-being. Although there are many changes perceived to have a positive impact on resident's wellbeing, negative consequences also derived from the PdB. Future policies should consider incorporating resident's perception into the planning of urban spaces and revitalization of neighbourhoods in order to better adapt to people's needs and priorities.

Considering the different age and gender of the residents when introducing urban regeneration changes is crucial to create programs and design places able to counteract social inequalities through interventions with an equity perspective.

Our work can guide the design of future regeneration programmes and provide a framework for their analysis, as well as guide the methodology of future studies that could complement this evidence.

Abbreviations

PdB Pla de Barris
CM Concept mapping

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-025-21827-z>.

Additional file 1: Projects implemented under the Pla de Barris 2016–2020 in La Verneda i La Pau.

Additional file 2: Ideas in each cluster and quotes from participants in the 5 groups.

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Author's contributions

M.U-L, AM.N and K.P participated in the conception and design of the study; M.U-L, AM.N and S.M participated in the acquisition of data, analysis and interpretation of data; M.U-L, AM. N and K.P participated drafting the article and revising it critically for important intellectual content. All authors contributed to the final approval of the submitted version.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This research was conducted in accordance with the Declaration of Helsinki. This study has been approved by the Parc de Salut Mar Clinical Research Ethics Committee (Document Number 2022/10743).

Written consent for participation and recording was collected from the participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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