

A project to identify the best practices and health performance objectives for building construction and renovation

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Abstract

The 2014-2018 National Prevention Plan (NPP), in order to promote a correct relationship between health and the environment, indicated, among the central objectives, the definition of guidelines to promote the building hygiene codes in an eco-compatible way, but also to develop specific skills on the subject of confined environments and residential construction in the operators of the Regional Health Services.

The CCM2015 Project has therefore set itself the goal of taking stock of the best health practices available today in terms of sustainability and eco-compatibility in the buildings' construction and renovation actions. All this in order to define updated health performance targets to be made available to the competent Authorities, to adapt the current legislation at national, regional and local level, and finally to define the contents of a continuing education (training courses) capable to support operators in risk assessment related to the built environment and in the definition of effective preventive measures.

Introduction

The National Prevention Plan (NPP) 2014-2018, now under review and integration, in line with the World Health Organization (WHO) findings and strategies (1), has identified, among the intervention priorities, the need to improve actions aimed at promoting a correct relationship

between Public Health and the environment, with the final goal to reduce mainly the Non-Communicable Diseases (NCDs), but also to develop all the potentialities for an inter-institutional approach to the Health Service (2). The WHO and the NPP have also identified, among the main intervention areas, the reduction of exposure to the main indoor risk factors potentially dangerous for

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Public Health, as well as the prevention of inadequate housing conditions, through the promotion of best practices in the field of sustainability and eco-compatibility of construction sector and building renovation (3). In particular, the quoted NPP has indicated, among the key objectives, the definition of guidelines to orient the buildings' hygiene codes in an eco-compatible way, together with the development of specific skills for the Regional Health Services' operators and Public Health experts, about issues like confined environments, indoor spaces and residential buildings.

This intervention area is also a priority in the light of the living conditions' inequalities that characterize the Italian population, depending on the economic class, geographic area and ethnicity (4). These social disparities and health inequalities, which affect the Public Health status, largely depend on the underway social transformations, emphasized by the economic crisis, which include the growing phenomenon of immigration, the family crisis, the population aging, as well as the climatic changes (5).

In this scenario, our Country still lacks an organic regulatory framework that addresses the hygienic-sanitary, safety and energy needs of buildings in an integrated way, despite the numerous initiatives promoted by the Ministry of Health in this area (State-Regions Agreements, Technical guidelines etc.) (6-8). Nowadays, as already highlighted in the Report on the Health Status of the Country (RSSP) 2012-13, further interventions must be promoted to ensure compliance with the hygiene-sanitary and livability standards - of both private and public buildings - in line with what was signed in the *Parma Declaration* on the occasion of the *5th WHO / Euro Environment and Health Conference* (2010) and reaffirmed at the *6th Ostrava Conference* (2017, Czech Republic). In particular, in this latest Conference, the need to support the efforts of European cities to become healthier,

inclusive, safer, resilient and sustainable, was highlighted through an integrated approach between urban planning and mobility oriented to Public Health promotion. This implies that effective and coherent policies must be implemented at multiple levels of government, clearer responsibilities should be defined, and exchanges of experiences and best practices could be activated, in line with the shared vision established by the *New Urban Agenda* (9).

It means that, as WHO reiterates (10), improving housing conditions can help to save lives, to reduce diseases, to improve the quality of life, to mitigate climate changes and to achieve several *Sustainable Development Goals* (SDGs, UN), including the health related one (SDG-03) and the one referred to sustainable cities (SDG-11). Housing is therefore an important crucial point for intersectoral Public Health and primary prevention programs.

Despite of the considerable progress of techniques, materials and systems in use in the buildings' construction sector, advancements in Public Health has been slower, as much as that the attention to these issues by health professionals and the specific expertise have been reduced over time, remaining the prerogative of a few experts. This has led to a clear disconnect between technical and health profiles, creating a cultural void that must be filled in order to create the optimal conditions to implement effective primary prevention measures.

The CCM 2015 Project - *Identification of best practices and health performance objectives, in terms of sustainability and eco-compatibility in the buildings' construction and renovation actions, aimed to draft the further building hygiene codes* - tries to reach the goal of taking stocks of the health best practices available today in terms of sustainability and eco-compatibility in the buildings' construction and renovation actions, in order to define a list of updated health performance targets available to the competent Authorities.

Later, the research scope will be to improve the current legislation at national, regional and local level, but also to define the contents of a training course that supports Public Health operators and designers in assessing the risks related to the built environment and in defining effective preventive measures.

Project development

The CCM 2015 Project was divided into two phases: the first, aimed at defining best practices in the field of sustainability and eco-compatibility in the buildings' construction and renovation actions, to be used as the baseline for establishing minimum health performance objectives, useful for development of reference technical codes. The second, aimed at developing a training course addressed to the operators of the Health Prevention Departments and to the other stakeholders.

1. First phase

The first phase of the CCM 2015 Project initially developed an in-depth literature review and literature update, aimed to reach the following four objectives:

- to define the already available evidence of Public Health outcomes due to the inadequate housing conditions;
- to review the health performance objectives cited in the main European Countries' building codes, in order to compare them with the contents of the Italian health regulations, to finally arrange an update to these regulations draft;
- to identify the criteria for defining the best practices regarding sustainability and eco-compatibility in the buildings' construction and renovation actions;
- to elaborate proposals for updating the codes in the light of the literature evidence and considering the review of available best practices about the *buildings' codes*.

The **literature review** was developed through the consultation of scientific databases, such as *PubMed*, *Web of Science* and *Scopus* (period 2000-2018), as well as *Google Scholar* and the most important official sites of various international and governmental bodies. The keywords used, in various combinations, were: *housing, health, inequalities, indoor air quality, indoor well-being, radon, thermal health, moisture, dust and pests, safety and security, water, noise, lighting and views, ventilation, climate change, neighborhood, urban health, hygienic and sanitary standards, new building, living spaces*. The scientific evidence coming from the review represent the basis for identifying the main parameters on which focus the attention to develop best practices, to update the codes and the and training modules.

Regarding the **best practices'** specific contents, it's necessary to clarify that the scientific literature, for years now, has made available contributions to define several health best practices (11-14). In summary, in the health sector, the term "*best practice*" means a practice that has proven effective in improving the health of the population, when implemented in a specific real-life environment, and is likely to be replicated in other urban contexts (12-14).

In the construction sector, this appears more complex, since most of the works concerning this topic refer to sectoral projects (for instance, energy retrofit, environmental use of eco-friendly materials, etc.) (15-17), which present shortcomings in terms of scientific evidence of health effectiveness (18-20). Therefore, instead of an *evidence / experience-based approach*, there is a tendency to apply a practical, and less rigorous, but more easily usable and adaptable, approach. In this case, they are science-based principles and practical applications of specific techniques that can help prevent, solve or mitigate dangerous situations and existing or potential problems of disease and injury and are, in general, already established by

various state and local agencies, professional associations and industrial companies (21).

The clear difference between the two approaches depends on the fact that the problems related to construction and the environment are more complex and often cannot be analyzed with the same methods used to produce scientific evidence to support health policy decisions (22). For instance, in the Italian Project titled "Local management for environmental sustainability" (in Italian, GEstione Locale per la SOstenibilità ambientale - GELSO) (17, 23) developed by the Higher Institute for Research and Environmental Protection (in Italian, Istituto Superiore per la Protezione e la Ricerca Ambientale - ISPRA), best practice is considered an action, exportable to other situations, which allows any local administration or community to undertake a path towards sustainability, understood as a development factor capable of responding to the needs of the present, without compromising those of future generations.

Referring to these observations, contextualizing these definitions also to the construction sector, architecture and urban planning, was considered "*best practice*" an intervention capable of satisfying most of the following criteria: (a) has a solid theoretical background; (b) is able to answer to the population needs; (c) has strong evidences in terms of effectiveness; (d) is transferable and scalable in different contexts; (e) is sustainable. An evaluation grid (assessment framework) was finalized, and each best practice - taken from the literature or selected from projects already implemented - was analyzed taking into account the evaluation criteria described above, and finally classified on the basis of compliance with these criteria.

The CCM 2015 Project also included a careful analysis of the national and international legislation about the issue. To achieve this goal, multiple scientific databases were used, using the following keywords:

"*Hygienic and sanitary requirements of dwellings*", "*Building codes*", "*Minimum requirements*", "*Health requirements*", "*Housing*". In particular, the normative sources' research was carried out both on traditional databases (i.e. Google) and on legal ones (DeJure Giuffré), on the "European portal for Buildings' Energy Efficiency" (<http://www.buildup.eu>), as well as checking the individual government websites of the different member states, where the correspondents "*Building Codes*" were found.

The analysis of the standards tried to select the hygienic-sanitary requirements for the civil residential buildings were identified in the different Countries, and how these were declined within the codes. These requirements were compared with what is present in the Italian legislation in order to obtain useful information for its update.

For the comparison, only the codes' features concerning the scale of the building were considered. In particular, the comparison concerned all the requirements provided by the Health Ministerial Decree (MD) of 5th July 1975 and some other parameters not provided in the MD cited before, dealing with in the other regulations and in the recent WHO guidelines, and relevant for the users' indoor well-being of the occupants (10, 24, 25).

2. Second phase

As recently underlined by the WHO (10), the implementation of best practices requires the training of interested experts involved; from one side, the Prevention Departments' operators need evidence-based training and technical assistance programs; from the other side, the construction sector (in particular, social housing) needs specialized training programs and technical assistance to identify housing problems and needs, to build better and healthy housing and to upgrade existing residential spaces. Therefore, as part of

the CCM 2015 Project, the contents of the FAD course (Italian acronym for the training courses remotely delivered) were developed, whose teaching modules were focused on the scientific evidence supporting best practices and on the proposed performance objectives, as well as on the description of the latter, with contents applications and tools for detection, in order to allow a widespread use by all operators in the health sector, the technical offices of the Municipalities and any other *Stakeholder*.

During the training package's drafting phase, a strong attention was mainly focused on the technical skills necessary to detect any critical issues about the topic under consideration, and on the exemplification of several best practices to solve it. In each module, assessment tools are provided, which can support operators in assessing the compliance of living spaces with hygienic-sanitary requirements, also providing supplementary and updated elements of judgment, according to the provisions of the Ministerial Decree of 5th July 1975 "*Amendments to the ministerial instructions of 20 June 1896 regarding the minimum height and the main health and hygiene requirements of the living spaces.*"

The effectiveness of the teaching modules was assessed on a sample of engineering degree students and on some health professionals; to the people involved, it was asked to fill out a form in which to specify the clarity and completeness of the contents and a questionnaire was also administered to assess the level of knowledge acquired following viewing the teaching module itself.

Findings

The literature review highlighted the wealth of scientific works on these issues, especially since the early 2000s. Different types of scientific papers emerged, which can be divided into three main categories:

- observational and experimental studies, designed to demonstrate the cause-effect relationship between exposure to various environmental risk factors and Public Health outcomes;

- experimental studies, designed to demonstrate the effectiveness of the redevelopment and renewal actions and strategies undertaken;

- documents addressing guidelines, which summarize the main evidence.

The findings of the review are described in the following papers published in this Special Issue: "*Housing and health: an overview*" and "*Housing problems in a changing society: regulation and training needs in Italy.*"

A critical aspect concerns the evaluation of best practices in building and urban planning. Baker et al. (2008) (26) have highlighted how, in the literature, the feedback on the evaluation criteria of these practices is poor, and often the evaluations made are aimed at the implementation of the single protocol, calibrated on specific objectives of the responsible body, rather than on the realization of a scientifically shareable and replicable protocol (27). For instance, the already mentioned GELSO Project, developed by ISPRA (17), which responds to the need to have a database about available best practices for local sustainability, does not provide a quantitative evaluation, but simply a series of aspects, divided into eligibility and qualification criteria, none of which is quantitative, but only qualitatively assessable. The chosen criteria are particularly interesting, and some of these have been taken into consideration in this paper. In particular, starting from existing local hygiene regulations and recent evidence reported in the scientific literature about the issue (10, 28), a series of areas were examined and considered crucial for the evaluation of building hygiene aspects, with particular reference to the eco-sustainability of buildings and adaptation to climate change (26, 29, 30). The selected areas and the levels of

judgment on best practices available for each area are listed in Table 1.

For each best practice, the following points were considered:

- *Purpose*, referring to the specific topic and the related sustainability objectives;
- *Definition of the area of interest*, which outlines the main aspects of the issue;
- *Health impacts/outcomes*, specifying the most documented ones;
- *Performance, operational and strategic*

objectives, that represent user needs and should be achieved through the evaluation of different performances;

- *Performance*, which is expressed quantitatively and represents the detailed description of the requirements;
- *Verification tools*, referring to the set of contents to be explained and the documentation to be provided to demonstrate the verification of the of the requirements’ achievement.

Table 1 - Areas identified as best practices, for which have been defined objectives, performance, verification criteria and level of agreement with the defined selection criteria.

| | It has a solid theoretical foundation | It meets the needs of the population | It has evidence of efficacy | It is applicable in other realities | It is sustainable |
|--|---------------------------------------|--------------------------------------|-----------------------------|-------------------------------------|-------------------|
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #333; margin-right: 5px;"></div> very much agree </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #ccc; margin-right: 5px;"></div> Agree </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #fff; border: 1px solid #000; margin-right: 5px;"></div> disagree </div> </div> | | | | | |
| Best practices | | | | | |
| Site and context | | | | | |
| 1- Site analysis | | | | | |
| 2- Relationship between building and context | | | | | |
| 3- Green spaces and microclimate control | | | | | |
| 4- Building and interior orientation, natural lighting and external view | | | | | |
| Pollutants’ reduction | | | | | |
| 5- Reduced exposure to air pollution | | | | | |
| 6- Reduction of exposure to noise pollution - Climate - Impact - Passive acoustic requirements | | | | | |
| 7-Reduced exposure to electromagnetic fields | | | | | |
| 8- Reduction of indoor chemical pollution levels | | | | | |
| Energy and living comfort | | | | | |
| 9-Dimensional requirements of living spaces | | | | | |
| 10- Thermo-hygro-metric comfort | | | | | |
| 11- Natural Ventilation and Controlled Mechanical Ventilation (CMV) systems | | | | | |
| 12- Energy efficiency of the building envelope | | | | | |
| Recovery, Management and Maintenance | | | | | |
| 13- Municipal Solid Waste Management | | | | | |
| 14- Water management and protection | | | | | |
| 15- Integrated building management | | | | | |

The selected *performance objectives*, identify criteria for a design process capable to answer the Public Health needs, thus sustainability and quality of the healthcare assistance. The goal is to provide indications - in terms of performance - that are believed to find space within the *building codes type* (31) at regional or municipal level. The proposed performances are in line with the current legislation, for instance about the Minimum Environmental Criteria (Italian acronym: CAM) for building (32).

The proposed *performances*, which represent health best practices, have been developed according to criteria of environmental compatibility, eco-energy efficiency, living comfort and Public Health status of the citizenship, paying particular attention to save and use rationally the primary resources, to reduce energy consumption and to promote the healthiness and well-being of the indoor environments.

The best practices capable to reach and develop the above criteria, selected in this CCM 2015 Project, have been described in a dossier available at the following link: http://www.ccm-network.it/imgs/C_27_MAIN_progetto_491_4_file.pdf

The comparative analysis of the existing regulations involved the review of the hygiene and buildings' codes, both Italian and of nine European Countries, in order to be able to compare them with what is present in the Italian national legislation, and to take ideas and suggestions to update and integrate it, where lacking. The comparison concerned all the requirements envisaged by the Health Ministerial Decree of 5th July 1975 and some other parameters not provided by it, dealt with in the other regulations, and relevant for the health and well-being of the occupants (25, 33), taking into account the most recent impacts coming from the evidences in literature.

The contents of this analysis are described in the articles reported in this Special issue,

respectively titled: "*From building regulations and local health rules to the new local building codes: a national survey in Italy on the prescriptive and performance requirements for a new performance approach*" and "*Hygienic and sanitary standards of housing in Europe: a comparative analysis of nine countries.*"

As a final result, a proposal to update the Ministerial Decree of 5 July 1975 titled: "*Towards an update of the Italian Ministerial Decree July 5, 1975*" was drafted.

In addition, referring to the indications by WHO and by the Sustainable Development Goals 2030 (34), a proposal for the neighborhood scale health objectives and services was developed, to be integrated into the *Standard Building Codes*. The contents of the proposal are described in the article of this Special Issue titled: "*A proposal of hygienic and sanitary standards for the new Building Code in Italy.*"

Finally, regarding the training course, it's a product primarily addressed to the Operators of the Local Health Agencies' (Italian acronym: ASL) Prevention Departments (Italian acronym: DP), but it was designed to be used as an updating tool also by designers, staff of the municipalities' technical offices, maintenance technicians, plant engineers, city managers, as well as by all other figures involved in the design, construction and maintenance of residential dwellings.

The rationale behind the training course starts from the concept of "*Healthy Home*" (10, 35), understood as a context capable of promoting the physical, mental and social well-being of its occupants, through planning, construction, maintenance and territorial location capable to support a sustainable environment and a cohesive community. In recent years, various authors have developed indications about this key issue; depending on the type of the proposing Agency (Public Body), these indications focus attention mainly on the inhabitants' health status

(10, 36, 37), in connection with the built environment (38), both indoor and outdoor (39), or, finally, they try to integrate both aspects (35). What clearly emerges from the various indications is that, in order to promote and protect Public Health conditions, nowadays it's crucial to orient the choices towards improving the overall conditions of the environmental system (urban area) and of the buildings (32). In practice, both in renovation actions and for the new buildings' construction initiatives, it's not enough to speak generically of sustainability - reducing the concept to energy efficiency - but it's now crucial to develop an integrated design process, serious certification systems, and lifestyles consistent with these principles. Many of the principles and references used in the development of the training modules are the result of a wide debate on a national and international level (10, 30, 32, 37, 40-43).

The training course was divided into three parts:

– a topic introduction, consisting of three *framework modules* (FM) - in Italian: *moduli*

di inquadramento (MI) - which deal with the evidence of the Public Health outcomes caused by the built environment, as well as the importance of protecting resources and urban greenery for purposes like sustainability and health;

– seven *technical modules* (TM) - in Italian: *moduli tecnici* (MT) - focused on the main health variables concerning the built environment, developed in the update proposal of the Ministerial Decree of 5th July 1975, with best practices' indications (living spaces' quality; thermo-hygrometric well-being; prevention of indoor air pollution and use of eco-friendly materials; acoustic well-being; natural and artificial lighting and visual comfort; protection from ionizing and non-ionizing radiation);

– a final test to verify the acquired knowledge.

Each *technical module* (TM) was structured as follows: brief topic introduction; a motivational video and case study, illustrating the problem; a topic discussion, with clarification of the critical aspects that emerged from the video or case study; end-of-module evaluation test (Table 2).

Table 2 - Introductory modules and technical modules, and related contents, included in the training course.

| Module | Title | Main contents |
|--------|---|---|
| FM 1 | Relationship between built environment and health | In addition to framing the main impacts of the built environment on health, the module also examines the aspects related to the context in which the building is located, with particular reference to the morphological, typological and environmental characteristics, and how much this interacts with people's health. Furthermore, the issue of functional compatibility is addressed by identifying the effects of the simultaneous presence - within the same building - of real estate units with different residential use, with particular attention to noise and emissions into the atmosphere, but also to the protection of security and privacy (30, 37, 44). The design strategies identified should aim at enhancing the context or, in the event of degradation, at improving the condition of the places (32), at favoring the choice and localization of complementary and compatible activities in terms of the effects on the health and well-being of occupants that each of them can generate. |
| FM 2 | Resources protection | The module identifies the strategies aimed at promoting the protection and management of water, energy efficiency and the use of renewable energy (photovoltaic, biomass, wind, geothermal, solar, etc.) in buildings, integrating them with those aimed at promoting a sustainable use of resources, considering a wide range of environmental impacts throughout the life cycle of the buildings themselves. |

| | | |
|------|---|---|
| FM 3 | Green spaces | The module describes the main areas on which evidence is now available regarding the relationship between green spaces and health and the related design strategies. They include the benefits for the environment and for the community associated with the presence of green areas such as air quality, social cohesion, mental health, with particular reference to stress and physical activity, and the potential risks for health (especially on the most vulnerable subjects) connected above all to exposure to allergens of plant origin and the emission of volatile organic components (VOC) to be kept under control through adequate maintenance and a careful choice of plant essences, especially in the proximity of sensitive buildings. |
| TM 1 | Quality of the housing units and of the building as a whole | The module dealt with health problems connected to the size of the premises, with particular reference to the usability and accessibility of the spaces; solutions were indicated to ensure the safety of the paths in common and private spaces, and the theme of internal flexibility was mentioned, which allows adaptability to variations in the distribution and use of the accommodation spaces in the long term and for the population of different age groups and autonomy (30). |
| TM 2 | Thermo-hygrometric comfort, ventilation and efficiency of the building envelope | On the basis of the literature evidence, the module describes all the variables that affect thermal comfort; the optimal ranges for comfort and the problems associated with heat stress conditions from heat and cold are also described. Suitable design strategies have been identified to ensure individual well-being, while reducing energy consumption, for example through the use of passive systems in the building (32, 45). |
| TM 3 | Acoustic comfort | The module explored the topic of indoor noise pollution, describing, in particular, the different sources of noise that can derive from external and internal causes of the building, also linked to the presence of people or the synergy of different functional activities in the same building system and the strategies to be implemented to mitigate them. |
| TM 4 | Visual comfort (natural light) | The module examines the health impacts of natural lighting and sunshine which are of great importance for health and hygiene purposes (32, 45), and suitable design strategies have also been identified (eg: orientation of buildings, orientation of openings, coloring of internal surfaces, etc.) |
| TM 5 | Prevention of indoor air pollution | The module describes the sources and types of substances potentially harmful to health, found in indoor environments. In addition, strategies have been described to prevent and reduce indoor pollution which concern both the work of the designer and the habits of the consumer-inhabitant. |
| TM 6 | Protection from non-ionizing radiations | The module describes, on the basis of literature evidence, the risks associated with exposure to low and high frequency electromagnetic (non-ionizing) radiation and the determinants (time and level of exposure) to define and reduce exposure. The attention, as regards the identification of design strategies, was focused on places with a prolonged stay (over 4 hours / day), in order to minimize the exposure level (32, 36). |
| TM 7 | Protection from ionizing radiations | The module focuses attention on the Radon gas, classified by IARC as a certain carcinogen for humans (Group 1). Various design strategies have been examined, the choice of which must be made on the preventive evaluation of the possible methods and routes of access for gas (32, 36, 37). |

Conclusions

Nowadays, a lot of evidences about how the quality of the built environment can help to tackle many of contemporary

Public Health issues, especially in the most degraded and disadvantaged - from a socio-economic point of view - urban contexts, has been published (46). In addition, the real estate asset is largely inadequate,

degraded, obsolete and often unable to meet the needs of sustainability and safety (47-49). Inequalities conditions occur mainly in the suburbs, where the phenomenon of illegal activity proliferates and where the number of inhabitants that live in precarious and unhealthy housing increases. This scenario represents a critical aspect, if we consider what was recently highlighted by the WHO (10), and it means that structurally deficient housing increases, among other things, the probability of falls and the risk of injury.

It should also be underlined that, out of a total of over fourteen million buildings on the national Italian territory (50), about 60% have been built more than forty years ago (50). These buildings are often interested by a considerable energy dispersion: they consume on average three times more than the new efficient buildings, both for the type of materials used and for design inadequacies. This is a situation that contributes to make worse the living conditions and the quality of the indoor environment, especially during the extreme seasons, considering that a significant part of the population is unable to bear the costs of heating and cooling (51, 52), with serious Public Health impacts (excesses of morbidity and mortality), both in winter time (53) and in the summer season (54).

It's estimated that the World urban population will double by 2050 (55) and, at the same time, also the population over 60 years will double (56), increasing the need for residential dwellings and housing solutions to respond to changing needs. In this context, the climate change underlines the need for housing capable of offering adequate protection from cold, heat and other extreme weather events, in order to promote resilient communities; it will be equally important to pay particular attention to the elimination of indoor and outdoor architectural barriers that often affect living spaces, to avoid confining the disabled to their homes.

To this situation, we must add the social and Public Health problems arising from the lockdown caused by the COVID-19 pandemic, which have brought out new needs for space and services both inside the home and in the surrounding living spaces, especially for the most vulnerable sections of the population (57, 58).

The CCM 2015 Project tried to take stock of the many critical issues concerning this topic, which is absolutely central in terms of Public Health and social justice. The document on best practices represents an important starting point; in fact, having been developed around the concept of sustainability, its contents were found to be consistent with the needs of well-being and health, strongly highlighted by the recent COVID-19 pandemic. The review and updating proposals of both the Ministerial Decree of 1975 and of the Standard Building Regulations (the latter to be integrated with health contents), tried to provide a starting point for ensuring minimum standards for the entire population, reducing the gap between housing requirements and the quality of neighborhoods into the same city and between cities in different geographical areas. Finally, the drafted training package was designed to improve the level of awareness of the impact of built environment on health, and to offer, to different stakeholders, assessment tools and case studies to guide choices towards sustainability and health promotion.

With the awareness that this is just a starting point, the authors believe that it's essential to broaden the interdisciplinary dialogue, in order to reach housing solutions that are closer to the population well-being needs. In this context, having health-related best practices, and updated training tools, can also contribute to reduce the global burden of disease and related healthcare costs.

Riassunto

Un progetto per identificare le buone pratiche e gli obiettivi prestazionali sanitari per la costruzione e la ristrutturazione di edifici.

Il Piano Nazionale della Prevenzione (PNP) 2014-2018, al fine di promuovere un corretto rapporto tra salute e ambiente, ha indicato, tra gli obiettivi centrali, la definizione di linee guida per orientare i regolamenti d'igiene edilizia in chiave eco-compatibile, ma anche per sviluppare specifiche competenze sul tema degli ambienti confinati e dell'edilizia residenziale negli operatori dei Servizi Sanitari Regionali.

Il presente progetto si è pertanto posto l'obiettivo di fare il punto sulle buone pratiche sanitarie oggi disponibili in materia di sostenibilità ed eco-compatibilità nella costruzione e/o ristrutturazione di edifici e ciò al fine di definire obiettivi prestazionali sanitari aggiornati da mettere a disposizione delle Autorità competenti, per adeguare la normativa vigente a livello nazionale, regionale e locale, ma anche di definire i contenuti di un corso di aggiornamento che supporti gli operatori nella valutazione dei rischi correlati all'ambiente costruito e nella definizione di misure preventive efficaci.

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