



Social farming as an innovative approach to promote mental health, social inclusion and community engagement

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Abstract

Nature-based contextual factors are being recognized as fundamental for mental health prevention and promotion. Rural areas, indeed, are increasingly recognized as an elective place for the promotion of mental health. In recent years there has been a surge of rurally-based hybrid governance models in which public bodies, local communities and economic actors join forces to create innovative welfare solutions to facilitate the financial (and organizational) challenges faced by the National Health Systems. Using agricultural resources, such as animals and plants, social farming is able to address specific social needs, including rehabilitation, sheltered employment, life-long education and other activities that contribute to social inclusion. At the same time social farming is able to strengthen the economic and social viability of rural communities. We have been studying the factors underlying the potentiality of social farms to provide job placement programs and rehabilitation for people with mental disorders. Using novel methodologies and appropriate tools, we have been collecting data indicating the positive effects of farming activities on individual's social functioning, as well as the impact of farms' networking on system's sustainability.

Key words

- social farming
- rural areas
- mental health
- job placement
- social innovation

INTRODUCTION

In October 1986 the Ottawa Charter for Health Promotion has "put health on the agenda of policy makers in all sectors and at all levels" [1]. The charter defined a number of action strategies used as guide for health promotion and that rely on the following principles: i) build healthy public policy; ii) develop personal skills; iii) create supportive environments; iv) reorient health services; v) strengthen community action and people's ability to manage their own health and collaborate towards such a goal. The Jakarta Declaration on Health Promotion has gone even further in emphasizing the need for intersectoral collaboration, suggesting breaking traditional boundaries within government sectors, between government and nongovernment organizations, and between public and private sectors [2]. There was a specific emphasis on working collaboratively, creating horizontal collaborative action within government departments and organizations and between competen-

cies, such as policy, practice and research.

Following the Ottawa Charter, the WHO's Mental Health Action Plan 2013-2020 [3] has been the first formal action plan focusing on mental health prepared by WHO and, as such, is considered a landmark [4]. The plan has indicated that, at the world level, health systems have not been able to respond effectively to the burden of mental disorders and that there is an important gap to be filled between the need for treatment and its delivery. One of the objectives of the Action Plan is to promote community-based mental health and social support services, which need to encompass a recovery-based approach emphasizing the promotion of human rights, such as employment, housing, educational opportunities and participation in community activities, for individuals with mental disorders and psychosocial disabilities, ultimately supporting them to achieve their own aspirations and goals [3]. This can be achieved by shifting the place where care is provided from mental



hospitals towards non-specialized health setting, using “a network of linked community-based mental health services”, including comprehensive mental health centers and types of housing such as living with family, independent living and supported accommodation. A second main concept that has to be put in action has to do with the provision of “integrated and responsive care” meeting both mental and physical needs, and promoting the right to employment, housing and education. In order to implement these actions, the Plan underlies the importance of establishing interdisciplinary community mental health teams. Advocating with different sectors (housing, education, employment, and social welfare) becomes fundamental for the inclusion of people with psychosocial disabilities in services and programs.

MENTAL HEALTH DETERMINANTS IN THE CONTEXT OF HEALTH PROMOTION

Our understanding of the impact of social, economic and physical environments on mental health has grown over the past decades [5-9]. Environmental factors – such as low educational attainment, material disadvantage, unemployment, inequity and discrimination – are known to contribute largely to shape mental health and many common mental disorders, and to play a major influence on physical health [10-12]. Hence, reflections on the determinants of mental health and mental disorders should include “not only individual attributes such as the ability to manage one’s thoughts, emotions, behaviors and interactions with others, but also social, cultural, economic, political and environmental factors such as national policies, social protection, standards of living, working conditions, and community social supports” [12]. As an example, exposure to adversity at a young age is an established preventable risk factor for mental disorders. Depending on the local context, certain individuals and groups in the society may be placed at a significantly higher risk of experiencing mental health problems. These vulnerable groups may (but not necessarily) include members of households living in poverty, people with chronic health conditions, infants and children exposed to maltreatment and neglect, adolescents first exposed to substance use, minority groups, indigenous populations, older people, people experiencing discrimination and human rights violations, LGBT population, prisoners, and people exposed to conflict, natural disasters or other humanitarian emergencies.

The current global financial crisis provides a powerful example of a macroeconomic factor leading to cuts in funding despite a concomitant need for more mental health and social services because of higher rates of mental disorders and suicide, as well as the emergence of new vulnerable groups, such as the young unemployed. The need for collaborative practice in mental health promotion is firmly established by the socio-political and economic determinants of health. That is, influencing the determinants of health, such as enhancing social connectedness, ensuring freedom from discrimination and violence, and workplace and physical environmental change, will not be achieved by the

health sector alone, but rather through an intersectoral approach, as emphasized by the WHO [3]. Reducing socioeconomic inequalities is one of the first steps towards building equity in public health [13].

Natural environments as protective factors for mental health

In the prevention of mental disorders and the promotion of mental health, priority should be given to the environmental determinants of health, including the physical environments in which people live. Indeed, assessing the impact of a rapidly changing society and environment on (mental) health is essential to ensure benefits to the health of the public. As an example, city life has a well-established influence on mental health. Psychiatric disorders are highly frequent in urban areas, which provide an environment that can affect processes of attentional selection, including the orienting of mental processing [14], and challenge the capacity of vulnerable individuals to cope with complex psychosocial stressors, such as disintegration of family networks and discrimination [15-18]. This is of particular relevance considering that more than half of the world’s population currently live in an urban environment [19]. Although the majority of the research in this field has typically focused on the identification of adversity-related factors, more recently the role of protective factors, that may promote resilience and adaptation to stress and negative events, has been highlighted [18, 20-23]. Among these, access to the natural environment and outdoor spaces has begun to be considered vitally important for mental health. Exposure to natural landscapes or their composite features, such as plants and animals, have indeed been found to have beneficial effects on stress, anxiety and depression and to promote physical activity [24-33], with cascading effects on immune functioning and general physical health [34-40]. Natural environments – including urban green spaces – also provide opportunity for social engagement and are indeed increasingly recognized for their role in contrasting isolation and loneliness and promoting social integration [24, 33, 37, 38, 41-43], all factors playing a beneficial role in the maintenance of physical and mental health [44-47]. This is of particular importance since the social environment is identified as one of the most important risk/protective factors for all-cause mortality which exceeds many well-known risk factors, such as obesity or physical inactivity [44, 46-48].

Since people and their environment are profoundly interrelated, the overall guiding principle for nations, regions and communities should be to encourage “reciprocal maintenance”, that is, taking care of each other, our communities and our natural environment [1]. The conservation of natural resources should thus be set as a top-priority responsibility, together with commitments to public health, which include actions to counteract the pressures towards harmful products, resource depletion, unhealthy living conditions and environments. Addressing the link between people and their environment and the overall ecological issue of our ways of living constitute the bases for a socioecological approach to health and for creating supportive environments [1].

PROMOTING MENTAL HEALTH THROUGH SOCIAL AND EMPLOYMENT OPPORTUNITIES: THE CASE OF SOCIAL FARMING

Stigma and social exclusion both limit the extent to which people affected by mental illness are able to get a job or to engage in lifelong learning. As a vicious cycle, being unemployed, a low educational attainment and social exclusion have all a detrimental effect on mental health and increase the risk for mental disorders [49-51]. Moreover, people with mental health problems are more likely to experience physical health problems [52, 53], which can further compromise their social participation. Hence, measures and interventions based on education and employment, community engagement and salutary activities, can trigger a virtuous circle in which improvements in mental health and resilience further impact on social inclusion.

Increased awareness and understanding of mental health should coincide with increased allocations of financial and human resources towards tackling mental disorders, not only by providing an equal access to care and treatment, but also through actions aimed at contrasting stigma and social exclusion and reducing inequalities, particularly related to unemployment. Considering the financial and organizational challenges faced by the national health and social systems, the creation of hybrid governance models in which public bodies, local communities and economic actors work together to co-produce health and social services appears crucial to offer innovative solutions while increasing economic sustainability.

In this context, *social farming* (SF) is playing a growing role in creating an independent local network of social support that, as a consequence, may sustain health-care institutions through practices embedded in local social communities [54-57]. The term SF is based on the concepts of multifunctional agriculture and community-based social and health care. It describes any use of agricultural activities – such as horticulture, food processing, selling of products, animal care, and management of the farm-restaurant – to address specific social needs, including rehabilitation, sheltered employment, life-long education and other endeavors that contribute to social inclusion [54, 58]. The aim of SF initiatives is to increase social and/or professional skills of people with physical or mental disabilities, long-term unemployed, or, more in general, people experiencing social exclusion, while promoting their integration into society and the labour market. SF programs have also been successful in engaging older patients and in motivating them to go outside and participate to farming activities such as gardening or taking care of animals, with beneficial effects on perceived stress, mood disorders, behavioural problems and social interactions [59-61].

By providing de-institutionalized care, SF is increasingly recognized as an innovative way to respond to the cultural shift from institutional psychiatry to community-based mental health care, in line with the recommendations of the WHO's Mental Health Action Plan [3]. Considering the recent surge of interest in the potential of natural environments and nature-based interventions

in contributing to the prevention and mitigation of mental disorders or states, SF is also viewed as an “open-air” laboratory to further explore evidence of an association between contact with nature and mental health [34, 42, 62, 63]. Moreover, the promotion and strengthening of bottom-up approaches able to create social and economic networks of local communities have been pointed out as an essential element to contrast vulnerability and fighting poverty in rural areas [64]. Rural areas are indeed highly vulnerable to poverty resulting from inequality in the access of groups, households and individuals to resources such as income, land, health services, and education. In particular, rural exodus and youth drain, geographical isolation, low educational attainments, scarcity of public resources, workforce shortages and lack of appropriate models of health care, all represent considerable challenges to deliver appropriate health and social services for rural residents and to foster entrepreneurship in traditional rural domains [65-70]. Being able to promote and generate social services to local communities [55, 71], SF has the potential to foster the farming sector [72, 73] and, more in general, to strengthen the economic and social viability of rural communities [54]. Moreover, SF provides new sources of income for the farming households, by allowing farmers to broaden and diversify their scope of activities [74] and helping them to become more integrated into local communities [58, 72, 73, 75].

Although SF has the potential to address the current and future societal challenges in terms of provision of primary products and public goods, environmental sustainability and improved social well-being for people with (or at risk of developing) mental disorders, research providing a quantitative assessment of the benefits of SF is still in its infancy. There is currently a lack of agreement on the indicators that could be used to measure outcomes of SF (e.g. its impact on users in terms of independence, participation, health, inclusion), as well as on the most effective protocols to be implemented (e.g. in terms of staff employed, type of activities and hours of service delivered). Moreover, there is still very little knowledge on the network of alliances to be built with local actors in order to promote SF and on the appropriate measures needed to strengthen relations and networks at the local level. This is of particular importance since partnerships among public bodies, economic actors and local communities are crucial to sustain SF initiatives. Last, very little is still known on the benefits of SF for rural development, on the comparative cost of social farming and on the social return on investment.

MEASURING SF OUTCOMES: THE FRIULI VENEZIA GIULIA CASE STUDY

The Friuli-Venezia Giulia region, in North East Italy, is increasingly viewed as an interesting case study to observe how bottom-up SF initiatives rooted in local contexts are able to produce a process of change affecting policies at regional and national level. This region – which is mostly rural (with agricultural areas covering almost one third of its territory) – includes many farms dealing with social inclusion and may represent

a model of promotion of self-organized SF initiatives through the support of specific regional policies and institutional framework.

In 2010, a public-private collaboration between the Healthcare Authority AAS 5 “Friuli Occidentale” (who sponsored the project), the Italian National Institute of Health (“Istituto Superiore di Sanità”, the leading technical and scientific public body of the Italian National Health Service) and the local Consortium of Social Cooperatives “Leonardo” was established. In the context of the collaborative project, different actions were taken, with the final aim of strengthening local SF initiatives and providing a methodological framework to explore the benefits of SF relatively to its impact on participants with mental disorders and, more in general, on the farming sector. In the following two sections, preliminary results collected in the context of the project are briefly described.

Benefits of SF for participants: ameliorating social and professional skills of people with mental disorders

Notwithstanding the potential of SF, there is still very little evidence on its effects in tackling behavioral problems and social skills, and in promoting social and work inclusion. Evidence for the benefits of SF has so far been predominantly qualitative (e.g., [76, 77]). Common challenges in proving the effectiveness of SF to the healthcare sector through quantitative methods are the difficulties in designing interventions with a comparative method (that is, using a control group) and with blind participants [55, 57], as well as the high heterogeneity of participants (e.g. in terms of diagnosis, age and severity of symptoms) and of the activities proposed. Although subjective perceptions are key to understanding modifications in health and well-being, more quantitative methods should be adopted to reach a consensus

on which activities more effectively engage participants and produce benefits in a wide range of domains (e.g. physical, mental, social, educational and vocational). To this purpose, collaborations among professionals involved in SF, healthcare institutions and researchers in disciplines such as health care, psychology and occupational therapy can play an important role in developing replicable protocols and explore SF outcomes.

In the context of the collaborative project carried out by the Healthcare Authority AAS5 and the Italian National Institute of Health, a questionnaire was developed to assess the effects of SF activities on participants' different area of functioning, including social competences (e.g., social rules) and professional skills (e.g., tools and equipment use, knowledge of plants). The questionnaire was used to assess the effect of SF in a sample of adults with a diagnosis of psychosis in charge of the mental health services of the province of Pordenone. Main aim of this pilot study was to explore whether the engagement in SF activities is able to ameliorate behavioural competence and professional skills (e.g., autonomy, motivation/engagement). To this aim, a sample of 25 individuals with a diagnosis of psychosis were selected by the Healthcare Authority ASS5 and were involved in SF activities such as horticulture, food processing, selling of products, and domestic animal care. Six farms were selected among those already involved in SF in the province of Pordenone. The Healthcare Authority ASS5 was responsible for patients' recruitment and monitored their engagement in the farming activities. A territorial facilitator was in charge of connecting social/health services with the farms. Preliminary data were collected at the beginning, after a training period, and at the end of the project.

Results indicate improvements in different areas, including social competence, autonomy, and motivation/engagement, as indicated by scores computed by means

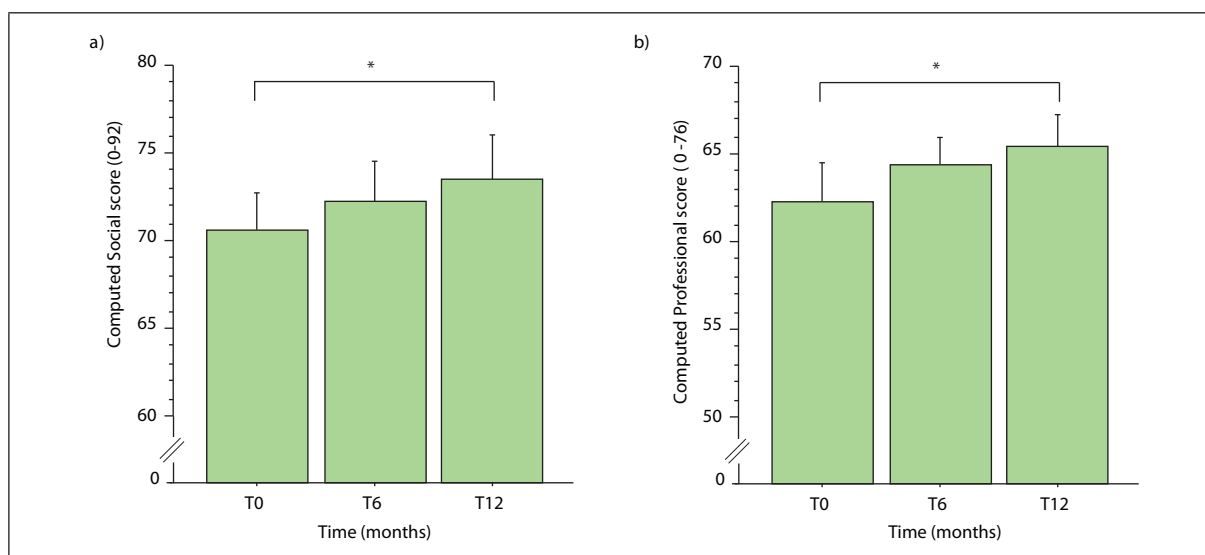


Figure 1

Changes in social skills (a) and professional skills (b) in a sample of 25 individuals with a diagnosis of psychosis involved in social farming (SF) activities. The graphs represent the mean (and standard error of mean) of scores computed by means of the questionnaire at baseline (T0), after 6 months (T6) and after 12 months (T12). *Wilcoxon test, $p < 0.05$.

of the questionnaire. More in detail, an improvement in social skills (Friedman test, $\chi^2 = 6.791$, $p = 0.033$; Figure 1a) and professional skills ($\chi^2 = 11.256$, $p = 0.004$; Figure 1b) was observed after one year of involvement in SF activities.

Although SF has the potential to address specific needs of mentally ill persons, including fighting the stigma, rehabilitation, sheltered employment, life-long education, all contributing to social inclusion, data are not yet conclusive on the outcomes of SF for people with mental health issues. Preliminary data indicate that SF is able to ameliorate social and professional skills in people with psychosis, although further research is needed to develop protocols and to pilot the design and tools for studies to understand the impacts of SF.

A great variability in the severity of symptoms is commonly observed in people included in SF programs. Moreover, farms differ in terms of the type of activities proposed (e.g., horticulture, animal care, woodwork) and skills/interventions provided (e.g., health promotion, counselling and skills qualifications). An easy tool that could be administered by non-clinicians and able to capture this heterogeneity, as well as improvements in diverse areas of functioning, is needed. Our questionnaire is currently undergoing a validation procedure using representative samples of adults with psychosis and with autism spectrum disorder. Open questions still remain as to the training of professionals involved in these activities and long-term sustainability of the system.

A research effort in this field is warranted since SF provides a great opportunity to be in – and to interact with – nature, for social interaction, skills building and purposeful work, all elements contributing to improve physical and mental health, ultimately promoting well-being and quality of life of those vulnerable and disadvantaged. Attempting to unpick the mechanisms underlying observed changes is also challenging and requires further studies [78].

Mapping social and economic ties of social farms through social network analysis

One of the main objectives of the project was to map and describe the social and economic relationships of a sample of farms involved in SF and operating in the province of Pordenone. To this aim, the nature of the networks among farms – and between farms and both public and private actors – were analysed using Social Network Analysis. The impact of dissemination and promotion actions on farms' networks was also explored by collecting quantitative network variations over a period of 10 months.

Results of the study show an entrepreneurial/business vocation (e.g., production and direct sale or marketing of products and/or services) of the selected farms [79]. The aim of rural production appears to be well conjugated with the pursuit of social ends, at least in the case of social cooperatives. However, results also show a number of weaknesses characterizing the relational system in which participating farms are embedded. Indeed, differently to what expected, interactions among farms involved in social activities appear extremely weak. As pointed out by Bassi *et al.* [80] consolidated links be-

tween social farms could contrast entrepreneurial vulnerability. Relational variables (i.e., social, economic and other relationships) affect the ability of the farms to implement social activities, including the engagement of disadvantaged people, and are directly and positively related to their ability to cope with market problems. By creating networking opportunities and providing access to new resources, relations with other farms might thus support the smallest (and more vulnerable) social farms and help them to improve their performance [43].

Moreover, most of the participating farms reported a very low proportion of partners active in the education sector, as well as a low proportion of links represented by educational activities [79]. This can be viewed as a limit considering that promoting (or generating) education services represent an important step towards the inclusion of people with “low contractual capacity” as those with mental and physical disabilities. SF programs have the potential to represent a driver for the provision of suitable local training for disadvantaged people, as well as for professionals potentially involved in SF (e.g., health care professionals, psychologists and occupational therapists). Strengthening relationships between farms and educational institutions can indeed result in the growth of the SF context, increasing its ability to develop more structured programs and methodological protocols, allowing the evaluation of the outcomes, at the same time contrasting low educational attainments and youth exodus characterizing rural areas. The latter appears of particular relevance in a region like Friuli Venezia Giulia, in which rural areas, especially close to the mountains, are affected by population decline and increased population age, as well as by an increasing need for basic services and social services.

Interestingly, the exploration of quantitative network variations over a period of 10 months, has indicated that, in order to sustain SF initiatives, more emphasis should be given to the critical role played by network facilitation in diversifying actors, promoting heterogeneous relationships, and, in turn, system complexity. In the context of the abovementioned project different actions were taken, namely the engagement of both private and public institutions (health, civil authorities, and socio-economic actors) in SF programs, as well as dissemination and community engagement strategies. These actions resulted in an enlargement and diversification of social farms' networks and were able to create a greater number of shared contacts among the farms and much more complex territorial inter-relationships. Changes were observed both in the networks' structure and in the flow within the networks and appear to be in the direction of a greater balance between economic and social activities [79].

This information contributes to our understanding of how and to which extent social farms become embedded in the local network of actors and may help policy makers and practitioners to promote SF initiatives. Considering that the relational system in which farms are embedded is crucial to enhance social farms' performance and, thus, to the functioning of the system itself [80-82], agricultural innovation policies should foster the emergence and functioning of connections

among different actors involved in SF, in order to build appropriate linkages and facilitate multi-stakeholder interactions [83, 84]. Network of alliances built with local actors have the potential to promote entrepreneurial dynamism and represent an advantage from the point of view of strategic autonomy and sustainability [85].

DISCUSSION AND FUTURE PERSPECTIVES

There is an increasing need for actions aimed at the promotion of mental health and the prevention of mental disorders: “*A historic opportunity exists to reframe the global mental health agenda in the context of the broad conceptualisation of mental health and disorder envisioned in the Sustainable Development Goals (SDGs)*” [85]. Indeed, the WHO’s Mental Health Action Plan, the ratification of international conventions protecting the rights of people with disabilities (such as the UN Convention), as well as research advances on the determinants of mental health problems, all support the central SDG principle to leave no one behind and its notions of human capabilities and human capital.

Ensuring that people with mental health problems have equal access to care and treatment and basic human rights (such as employment, education and social activities) is of vital importance, but should also go hand in hand with the awareness of the diversity and complexity of mental health and welfare needs of the general population, particularly those at risk of poor mental health, such as disadvantaged and discriminated groups. Rights-based approaches to protect the welfare of people with (or at risk of) mental disorders should be grounded on efforts to enable social and physical environments that promote mental health for all [85].

A number of components of SF may help to explain its potential to improve mental (and physical) health of vulnerable members of the society benefiting from these initiatives. These include the promotion of physical activity, exposure to the natural world (e.g. Biophilia hypothesis), the opportunity to undertake tasks as part of daily and seasonal cycles, to be engaged in meaningful activities for the development of new personal and/or work skills, as well as positive social relationships and interaction with animals [86, 87]. Moreover, the small scale of many social farms allows participants working alongside the farmer and other members of the farm, thus representing a model of “socially embedded care” in which people are integrated in communities and avoid the stigma of care services [19, 55].

Representing a hybrid governance model in which public bodies, local communities and economic actors work together to meet social needs, SF may also offer innovative solutions to buffer the financial (and organizational) challenges faced by the National Health Systems, at the same time helping in diversifying the rural economy with new job creation and income generation opportunities, ultimately increasing economic sustainability. EU policies in the context of the rural development programmes (RDP) have recognized the importance of SF and multifunctional agriculture, also offering different options for funding SF projects.

Support for training for SF actors and for the estab-

lishment of SF networks and support centers appears of particular relevance to strengthen SF initiatives. In order to promote bottom-up approach and locally-led SF initiatives, the development and application of appropriate regulations also appears critical. In 2015, the first Italian National law on SF was approved by the Italian parliament (Law n. 141, 8 August 2015; www.gazzettaufficiale.it/eli/id/2015/09/8/15G00155/sg), providing a framework to support cooperation among health services, farmers, social cooperatives and voluntary associations, with the aim of promoting shared planning for the provision of services such as rehabilitation, education, training, employment, therapy and social inclusion.

In Italy, SF has strong links with social enterprises and has been traditionally associated with social cooperatives, including Type A (i.e., those producing goods of social utility) and Type B (i.e., those providing economic activities for the integration of disadvantaged people into employment) [85]. The Friuli-Venezia Giulia case study represents a model in which the health sector has approached social cooperatives or private farmers, locally active, to provide activities for their service users, at the same time facilitating collaborations of the private sector with health, education and other public institutions. This Italian Region has developed a regional framework to support SF through local legislation. Moreover, the Health Authority of the province of Pordenone has promoted welfare measures to support Sf initiative, including the personal budget, a form of contribution that can be directed to different activities, including re-habilitation and sheltered employment, according to the need of the end-user [87]. This program has been overseen for quality and effectiveness by the Health Authority, in collaboration with research institutions such as the Istituto Superiore di Sanità.

Contributions to the current special issue [88-91] all emphasize the importance of taking a person-centred approach in service provision for people with disability, with a strong emphasis on supporting their life-long planning and community participation and improving their quality of life. Opportunities to engage in meaningful activities and occupational status are important determinants of mental health and key elements to strengthen skills and confidence that may be part of the recovery process in the majority of mental disorders. Provide vocational rehabilitation interventions and cost-effective supported employment initiatives, train employment service staff to better understand the needs of jobseekers with mental health needs, as well as support employers in recruiting people with mental health issues, represent essential actions towards the integration of vulnerable populations into society and the labour market. Incentives that encourage innovation and create a more competitive market for services and that can help supporting SF initiatives, such as personal budgets [87], should also be encouraged. The final aim is to innovate the disability sector by adding community-based services to the existing range of supports and by facilitating service users to exercise choice and control over their health and their life planning.

**Conflict of interest statement**

The Authors declare that they have no conflict of interest.

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