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Gender Studies, Entrepreneurship and Human Capital

5th IPAZIA Workshop on Gender Issues 2019

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Preface

Drafting the Way of Gender Issues, Entrepreneurship and Human Capital

In the current scenario, academic community, practical community, and policy makers are often involved in the discussion of gender issues as well as in the entrepreneurship and human capital issues. A lot of studies are published on gender issues (word "gender"– 621,161 documents ranked Scopus at 26th December 2019 – www.scopus.com) involving many scientific fields among which is business management and accounting (BMA) research (23,342 documents by Scopus). The research trend appears consistent especially in the past few years. Although such evidence is relevant in the international context, we have decided to emphasize in our study the word "entrepreneurship" retrieving 39,908 documents in the Scopus database – the major part of studies is attributable to BMA (22,824 documents). Additionally, "human capital" represents a relevant topic with 27,788 documents in the Scopus database (7956 documents in BMA). Thus, we decided to investigate all together these three significant topics, providing a wide overview to readers on the behalf that in the recent years the intersection of "gender," "entrepreneurship," and "human capital" represents a diffused interest among several communities. Interpretative studies, empirical models, literature advances, model, and principles are required!

Our research perspective derives from the corporate, management, and accounting issues adopting a multidisciplinary approach as in the previous book published in the a few years ago by the Editors (Paoloni and Lombardi 2017, 2018). Thus, drafting the way of gender issues, entrepreneurship, and human capital, we underline one of the main research ideas investigated in the IPAZIA as Scientific Observatory for Gender Studies (http://www.ipaziaobservatory.com/). IPAZIA is currently aiming to defining thrilling frameworks of researches, services, and projects, aligning them to all initiatives related to women and gender relations in the international context. Thus, the Observatory is directed to promote a wide discussion on the gender studies, building several scientific initiatives (e.g., workshops, seminars, conferences, studies).

This book collects the main output of the researches on gender studies issues, entrepreneurship, and human capital presented at the Annual Workshop of IPAZIA 2019 of Rome in Italy. Interestingly, this book is directed to provide a renewed and fruitful analysis of these topics with the purpose of advancing the gender theories in the international context. This book includes a preface by the Editors Paola Paoloni and Rosa Lombardi and 14 chapters contributed by several scholars, addressing specific issues in the field of gender studies as follows.

Particularly, Arena et al. (2020) address the female directors issue in relation to the innovation in public hospitals. Biancuzzi et al. (2020) investigate the post breast cancer coaching path providing an overview on the co-production experience for women. Gennari and Tommaso (2020) present the gender diversity in nomination committee. Sarto and Saggese (2020) explore the influence of female human capital on entrepreneurial orientation adopting a multiple case study approach. Cesaroni et al. (2020) investigate daughter entrepreneurs between birth family and gender stereotypes.

Dal Mas and Paoloni (2020) analyze the female start-ups in Italy using the relational capital perspective. Paoloni et al. (2020) describe the gender and identity of BoD members, presenting the influence on CSR and financial performance. Paoloni et al. (2020) investigate the factors affecting the presence of women in company boards from an institutional/cultural perspective. Pietarinen and Kianto (2020) analyze the social capital in the start-up phase of female-owned micro-enterprises. Salaris et al. (2020) explore the gender quotas topic as well as the gender equality issue.

Paoloni et al. (2020) investigate the female role in the wine sector adopting the business administration perspective. Arduini and Paoloni (2020) propose the IT Strategy in the Luxury Sector under the Case of a Fashion Company. Pastore and Tommaso (2020) present the gender responsive budgeting processes in the Italian Regional and Local Governments. Modaffari et al. (2020) investigate the relational capital and crowdfunding emphasizing the new opportunity for Italian women-led start-ups.

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Contents

Female Directors and Innovation in Public Hospitals

Claudia Arena, Simona Catuogno, Sara Saggese, and Fabrizia Sarto

Abstract The paper aims to examine the influence of gender diversity among hospital directors on the adoption of innovation. To this aim, it empirically analyses a sample of 108 Italian public hospitals, including general, teaching and research hospitals, for the 2015–2016 time frame. Findings from our OLS regression analysis show that female directors enable hospitals to successfully face the innovation challenge. In particular, female directors bring specific skills to executives and enhance their knowledge base. In addition, the results of our analysis suggest that work-abroad experience promote the implementation of innovative solutions as it provides women directors with a global view and open-mindedness that enrich their intercultural skills and therefore their attitude towards innovation.

The results contribute to the existing empirical research on women in governance by providing insights into the healthcare sector that is still underexplored. Moreover, the paper suggests that policymakers should pay attention to combine a stronger participation of female in hospital leadership and call for proper normative actions able to improve the background requirements for the recruitment of directors.

Keywords Female directors · Innovation · Public hospital · Gender studies

1 Introduction and Theoretical Background

Several public reforms have tried to foster the innovation in public hospitals in order to reduce the hospital inefficiencies and improve the quality and the safety of service delivery. Literature has emphasized that hospitals do not often work out in the adoption of innovations. However, the reason why they fail to implement them is still an open issue. Building on the assumption that managerial factors play a pivotal

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role for the innovation in healthcare, this paper analyses the influence of gender diversity among hospital directors on the adoption of innovation.

Scholars have defined innovation in many ways (Damanpour 1991; Meyer and Goes 1988; Kimberly and Evanisko 1981; Kelly and Kranzberg 1978; Mohr 1969; Schumpeter 1934; Rogers 2003; Borins 2002) ranging from broad generalizations, such as new products, services and processes (Evangelista and Sirilli 1995; Cooper et al. 1994), to specific definitions focused on technical innovations (Sušanj 2000).

By concentrating the attention on the public sector, a useful classification identifies four types of innovation: (i) process innovation related to the improvement of quality of administrative and technological processes, (ii) products/services innovation, (iii) governance innovation that refers to the development of new processes able to address specific institutional problems, and (iv) conceptual innovation related to the introduction of new paradigms that help to reframe the nature or the solution of specific problems (De Vries et al. 2016).

Within the public sector, the dominant focus is more frequently on internal administrative or technological processes, often driven by the New Pubic Management reforms (Edquist et al. 2001; Meeus and Edquist 2006). Literature suggests that this kind of innovation involves a change in the routines and procedures of front and back office staff and is often related to the introduction of new services or the improvement in the quality of existing services to meet the users' needs (Torugsa and Arundel 2016; Hartley 2005; Varkey et al. 2008).

When it comes to the healthcare sector, innovation can be meant as introduction of new services and processes aimed at improving clinical treatment, diagnosis, prevention and research, with the long-term goals of enhancing quality, safety, outcomes and efficiency (Omachonu and Einspruch 2010). In other words, healthcare innovation regards the changes that support healthcare professionals to focus on patient needs while working smarter, faster, better and more cost-effectively (Thakur et al. 2012). In line with this assumption, the intended benefits represent an essential requirement of healthcare innovation. From the user's point of view, they can be related to better patients' safety and satisfaction (Faulkner and Kent 2001), whilst from an organizational standpoint, the desired benefits can often consist of enhanced efficiency of internal operations and improved quality of clinical procedure and outcomes (Omachonu and Einspruch 2010; Catuogno et al. 2017; Länsisalmi et al. 2006). Referring to hospitals, some illustrative examples of process innovations aiming at improving their operational efficiency are total quality management, information technologies and treatment procedures (Savitz et al. 2000).

It is worth noting that, in contrast to innovation-generating firms, hospitals are mainly adopters of externally developed innovations. In particular, innovation adoption is conceived to include two main subprocesses, i.e. initiation and implementation (Damanpour 1991). The initiation phase encompasses activities that pertain to the recognition of the need for change, the awareness of potential innovations and the evaluation of their adequacy. Subsequently, innovation implementation consists of all activities directed at integrating an innovation into the organization until it becomes a routine feature (Damanpour and Wischnevsky 2006). Literature emphasizes that hospitals do not often work out in this phase, and the reason why they fail

to implement innovations is still an open issue (Westphal et al. 1997; De Vries et al. 2016).

In this regard, scholars distinguish four types of factors that can drive the innovation implementation in public hospitals (Bekkers et al. 2013). One of them is related to the external context and includes, for instance, environmental factors such as the regulatory system (Faulkner and Kent 2001), level of competition (Castle 2001) and type and strength of relationship with key external stakeholders (e.g. training consultants) (Becker et al. 2000; Cohen et al. 2004; Evashwick and Ory 2003). Another antecedent of innovation adoption comprises the factors related to the structural and cultural features of organizations (Länsisalmi et al. 2006). For example, slack of resources, organization's openness to innovative ideas and market-oriented and patient-centred business culture are able to facilitate the development of knowledge and the adoption of innovation (Thakur et al. 2012; Slater and Narver 1995). An additional factor driving healthcare innovation refers to the intrinsic attributes of innovation. In this regard, the most often mentioned factors are the innovation's perceived ease-of-use (Carter and Bélanger 2005; Damanpour and Schneider 2008), its relative advantage, trialability and compatibility (Korteland and Bekkers 2008). Most importantly, literature emphasizes the key role played by the individual/employee factors that include the characteristics of internal actors who innovate. For instance, the demographic managerial characteristics such as tenure, level of education and involvement in a professional society are related to the adoption of new technology in nursing homes (Castle 2001). At the same time, strong leadership, shared and clear objectives, task orientation and motivation tend to be positively related to innovation in healthcare organizations (Edmondson et al. 2001; Ericson 2001; Evashwick and Ory 2003; Felton 2003).

2 Hypothesis Development

Building on the assumption that managerial factors play a pivotal role for the innovation adoption in healthcare, literature has pointed out that gender diversity is one of the most debated issues (Thakur et al. 2012; Ross et al. 2016; Arena et al. 2018).

Despite most research on the impact of gender leadership diversity has focused on financial performance, there is evidence that women tend to emphasize nonfinancial performance measures in favour of equity and innovation (Brown et al. 2002). In particular, some studies highlight that female managers tend to privilege long-term over short-term strategies to the benefit of nonfinancial performance outcomes rather than short-term growth (Matsa and Miller 2013). Other studies posit that women are more charitable givers and community engaged suggesting that, compared to men, they tend to be committed towards nonfinancial goals (Williams 2003; van Dijk et al. 2012).

As far as innovation is concerned, female managers are more likely than men to pursue innovation strategies and change the status quo for a number of reasons (Adams and Funk 2012; Eagly and Carli 2003; Dezsö and Ross 2012; Torchia et al.

2011). In this regard, research emphasizes that the presence of women in top management positions improves both the human and social capital and supports the development of new ideas, pushing the firm resources towards new research opportunities (Miller and Triana 2009; Konrad et al. 2006). Indeed, women's social experiences and professional trajectories provide them with diverse perspectives, capabilities and knowledge that encourage the development of creativity and innovation (Díaz-García et al. 2013). Moreover, female managers bring informational and relational diversity enriching the company behaviour with new elements and motivate firm employees to innovate (Dezsö and Ross 2012). Women provide the strategic decision-making process with soft management skills, thus improving the managerial creativity (Bagshaw 2004; Polzer et al. 2002). In addition, female managers are known as transformational leaders as they are more intuitive and visionary than men (Singh et al. 2008) and present an interactive management style often associated with successful innovation (Burke and Collins 2001). At the same time, female leaders tend to be less risk averse and conformist (Adams and Funk 2012), devoting more attention to innovative projects (Miller and Triana 2009; Torchia et al. 2011).

Building on these premises, we expect that female directors positively impact innovation in public hospitals. Hence, we formulate the following hypothesis:

H1: *Female directors increase the adoption of innovation*

It is important to note that, among the managerial aspects, particular attention should be devoted to the international experience. Literature suggests that director internationalization is an important factor that may influence firm strategic decision-making and innovation (Finkelstein and Hambrick 1996; Hambrick and Mason 1984). In this regard, prior studies maintain that the international background acquired through previous working experience provides managers with a more global view and open-mindedness (Sambharya 1996; Li 2018), enriching their intercultural skills and therefore their attitude towards innovation. In the meantime, the networks that female managers create, thanks to their work-abroad experience, enable the access to critical information, facilitating the selection and evaluation of innovative solutions (Athanassiou and Nigh 1999; Herrmann and Datta 2005). Additionally, the international experience strengthens female executive propensity towards risk taking when considering innovation activities and decisions (Hutzschenreuter and Horstkotte 2013; Sambharya 1996). Indeed, female managers with international background are more aware of their abilities to manage uncertain situations and correctly estimate the related risks and returns (Cavusgil and Naor 1987). Moreover, international experience helps them to reduce the anxiety associated with risky operations (Sambharya 1996; Tihanyi et al. 2000). In this regard, a greater international experience matches with a lower perception of uncertainty and ambiguity when adopting innovative choices (Carpenter and Fredrickson 2001; Tan and Meyer 2010). According to this line of reasoning, we formulate the following hypothesis:

H2: *Female directors' international background increases the adoption of innovation*

3 Empirical Analysis

We select a sample of 108 Italian public hospitals for the 2015–2016 time frame. We collect information on directors' composition and innovation from multiple data sources (Table 1).

By administering a questionnaire survey to hospital managers, we catch the hospital adoption of e-medical certificate that we use as our proxy for innovation (INNO). In this regard, the diffusion of ICTs and digital data in the healthcare sector is one of the most relevant innovations that hospitals can adopt as it allows the use of up-to-date healthcare digital solutions to meet the need of citizens, patients, healthcare professionals and healthcare providers (Adler-Milstein and Bates 2010; Ferretti et al. 2014).

We use the number of women on board divided by the related size as proxy for the gender diversity (WOM_DIR), while we measure the international experience of female directors by the percentage of women on board with a work-abroad experience (WOM_INT_EXP).

Following prior literature on women in managerial positions, we control for the hospital size (HOSP_SIZE) measured as the total number of hospital beds. Moreover, we include a dummy variable to identify teaching hospital (TEACH_HOSP). At the same time, we control for the hospital financial performance (HOSP_FIN_PERF) appreciated through an efficiency indicator measured as the value of operating expenditures divided by the total number of beds (Succi and Alexander 1999; Sarto et al. 2019).

Finally, we employ a pooled logistic regression estimation technique.

Tables 2 and 3 provide the descriptive statistics and the correlation analysis.

Table 4 reports the regression models testing our hypotheses. More specifically, in Column 1 we observe that the percentage of women on the board (WOM_DIR) is positively and significantly related to our proxy of innovation (H1). Therefore, it seems that female top managers tend to be more innovative in their approach to firm (Adams and Funk 2012; Dezsö and Ross 2012; Torchia et al. 2011).

This result provides clear support to our H1 that gender dimension functions as a driving force for innovation. In particular, women leaders exhibit a more relational and participative leadership style and show superior ability in networking activities, and, thanks to their better awareness of stakeholders needs, they place a greater emphasis on novelty and innovation as interactive processes (Dezsö and Ross 2012). Having women on board promotes innovation and empowerment of all actors

Table 1 Data sources

Data	Source/s
Innovation data	Questionnaire survey
Governance data	CV available on the professional networking websites (i.e. LinkedIn)
Organizational data	NHS database, hospital reports, hospital websites

Table 2 Descriptive data

Variables	Obs	Mean	Std. Dev.	Min	Max
INNO	216	0.65	0.48	0.00	1.00
WOM_DIR	216	0.25	0.23	0.00	1.00
WOM_INT_EXP	216	0.08	0.16	0.00	0.67
HOSP_SIZE	216	762.94	530.61	15.00	4189.00
TEACH_HOSP	216	0.25	0.43	0.00	1.00
HOSP_FIN_PERF	216	0.45	0.46	0.15	5.88

Table 3 Correlation matrix

N	Variables	1	2	3	4	5	6
1	INNO	1.00					
2	WOM_DIR	0.15**	1.00				
3	WOM_INT_EXP	−0.13*	0.02	1.00			
4	HOSP_SIZE	0.08	0.12*	−0.12*	1.00		
5	TEACH_HOSP	−0.02	−0.16**	0.04	0.18**	1.00	
6	HOSP_FIN_PERF	0.07	0.00	0.04	−0.24***	−0.08	1.00

Table 4 Logistic regressions

Variables	(1)	(2)
WOM_DIR	1.32**	
	(0.67)	
WOM_INT_EXP		−1.56
		(0.89)
HOSP_SIZE	0.00	0.00
	(0.0)	(0.00)
TEACH_HOSP	−0.07	−0.15
	(0.35)	(0.34)
HOSP_FIN_PERF	0.60	0.78
	(0.55)	(0.61)
N. obs	216	216
Lr Chi2	8.07*	7.11
Pseudo R2	0.03	0.03

Standard Errors are reported in the brackets
*** p<0.001, ** p<0.05, * p<0.1

involved in the implementation of innovation, since diversity affects the way knowledge is generated and applied in the innovation process (Østergaard et al. 2011).

Moving the attention to the second hypothesis, in Column 2 we observe that women international experience (WOM_INT_EXP) is positively and significantly related to our proxy of innovation (H2). Therefore, it seems that female directors

with international background have positive implications for innovation. This result is in line with literature claiming that the international background acquired through previous working experience provides managers with a more global view and open-mindedness (Li 2018). In addition, it fosters the access to critical information and the selection of the most innovative solutions (Herrmann and Datta 2005).

4 Conclusion

The paper examines how women directors affect public hospitals' innovation. To this aim, findings show that female directors positively influence the hospital innovation by providing specific skills to the board and enhancing the knowledge base of hospital executives. This is especially true for female directors with a work-abroad experience. Indeed, our findings show that, in this circumstance, female directors have positive implications for hospital innovation as they have superior intercultural skills and therefore greater propensity towards innovation.

Thereby, our paper contributes to both theory and practice. In particular, it fills a gap in the literature by allowing greater insights into the contribution provided by the gender diversity and the background of female directors for the public hospitals' innovation. Moreover, while previous studies have mainly examined the contexts where gender diversity is an issue of particular concern, such as the Northern European settings (Point and Singh 2003), our paper provides evidence on the effects of gender diversity on hospitals' innovation in Italy that is an almost neglected setting.

Shifting the attention to the practical implications of our paper, it suggests that public hospitals should pay strong attention to the board composition and seek to integrate it with female directors. At the same time, it encourages proper normative actions aiming at improving the minimum international background requirements for the recruitment of women directors.

Nevertheless, the paper has some limitations. First of all, it provides empirical evidence into some factors able to affect the public hospitals' innovation. Therefore, future studies could focus on the challenges and constraints faced by female directors in supporting innovation policies in such organizations as well as on the conditions under which women executives can impact their organizations. Moreover, future studies could qualitatively explore the micro-level processes of innovation in the public hospitals to discover how female managers influence the related innovation dynamics. Finally, future research could extend the analyses to other countries and examine the role played by gender policies for hospitals' innovation.

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Post Breast Cancer Coaching Path: A Co-production Experience for Women

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Abstract Breast cancer is one of the most relevant diseases for women all over the world. Statistics claim that one out of eight women experiences breast cancer in her life. The Irccs Cro – National Care Institute Center for Oncological Reference of Aviano, Italy, is one of the leading hospitals in Europe for breast cancer surgery. Physical rehabilitation is essential for social and works reintegration of oncological patients. The National Cancer Institute Center of Aviano declares that the support for physical and psychological recovery is one of its main principles. In 2018, the Center launched a brand-new program for the rehabilitative path for women who underwent breast cancer surgery. The program follows a co-production process, involving the female patients directly in the planning and provision of services that create value for them. The program aims at combining healthcare and fitness, planning physical exercises after the surgery, and monitoring the results through specific apps. Results of the co-production process lead to a significant outcome for female patients, helping them to recover faster from both physical and psychological ways. Moreover, data collected from the experience of the National Cancer Institute Center of Aviano can enhance the knowledge about better recovery after breast cancer surgery for women all around the globe.

Keywords Co-production · Breast cancer · Health · Fitness · Female disease · Value · Outcome

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1 Introduction and Objective of the Study

Co-production is a well-known concept in the scientific literature. It was first introduced by Victor Fuchs back in Fuchs 1968. He highlighted how the new service economy (from banking to education, from healthcare to retail) was much different than the industrial economy (manufacturing, agriculture). In the service economy, the relation between the producer and the end user was more engaging. Indeed, the customer contributed together with the producer to create value. Services differ fundamentally than products; thus, services are always "co-produced."

The public sector was one of the first fields of study for co-production, due to its attitude to produce services. Some first investigated administrative services were police and security, education, and healthcare. According to the literature, citizens contributed to co-produce public good by, for instance, locking doors, installing security cameras and fire alarms, reporting suspicious activities, participating in parent-teacher associations, and so on.

According to Batalden et al. (2016), co-production in healthcare can be defined as the aim to ensure the active and effective participation of patients in their health care. The literature, as well as the practice, have called this effort using several different names, such as patient centeredness, patient engagement, and patient experience. In healthcare, it is particularly relevant to recognize the unique character of one specific service and the possibility of partnering with patients.

Batalden et al. (2016) have designed a conceptual model of healthcare service co-production in which patients and professionals interact within a healthcare system in society. In the model, patients and professional cooperate both inside and outside the healthcare system. Their relationship can also be developed in several ways, in which people may interact with individuals and organizations outside of the healthcare system to affect both health and healthcare service outcomes. The arrows suggest how the community and society are able to influence the primary outcome, which is good health for all, as a consequence of many social forces and sources of caring. Within the space of interaction between patients and professionals, the model recognizes different levels of relationships and thus co-production. The most basic level is a civil discourse, which can be translated into interaction and effective communication among the stakeholders. A more advanced level of cooperation is shared planning. In this scenario, stakeholders share a deeper understanding of one another's expertise and values. When it comes to the highest form of collaboration and co-production, stakeholders can reach co-execution. At this level, deeper trust, shared goals, and more mutuality in responsibility and accountability for performance represent key issues.

The paper aims to analyze a case of co-production concerning a new service for patients who underwent breast cancer surgery, applying the framework of Batalden et al. (2016).

The gender perspective is taken into high consideration, being the case devoted to one of the most common female diseases. Indeed, breast cancer is the most critical neoplasms among women and the second most common female health issue

after heart diseases. According to the statistics, breast cancer affects one of eight women. Although the numbers of patients are increasing, so does the probability of a complete recovery.

2 Research Method

To investigate our research goal, we decided to employ a case study approach (Yin 2009). Case studies are highly preferred by practitioners (Bolton and Stolcis 2003, p. 628; Dal Mas et al. 2019a). To ensure transparency, we tried to be as rigorous as possible in our analysis (Massaro et al. 2019).

The case study is about a new service employed by the IRCCS ("Istituto di Ricovero e cura a Carattere Scientifico") CRO National Cancer Institute of Aviano, Italy. The Institute of Aviano is one of the most famous hospitals and research centers in Europe in the field of cancer surgery and treatments.

The project of co-production was conceived within the Institute's purpose to support the physical and psychological recovery of its patients. Following the literature, the Institute decided to investigate the link between post-surgery fitness activity and healing, to allow its patients to go back to their everyday life as fast as possible. We chose to analyze the case of CRO since its project is an innovative path fully dedicated to women, in a sector, that of healthcare, that is more devoted to co-production.

The project has been carried on together with several stakeholders. Data acquisition has been made involving several actors participating in the path.

3 The Link Between Oncological Rehabilitation and Physical Activity

The scientific literature highlights the presence of new protocols and technologies for cancer research (Cobianchi et al. 2016; Dal Mas et al. 2020; Peloso et al. 2017; Turin et al. 2018); however, it agrees that oncological rehabilitation for patients must be considered as an integral part of the treatment (Irwin et al. 2017; Wu et al. 2017). Several studies have collected data on the topic (F.A.V.O. 2008). In 2011, the "National Rehabilitation Plan" was published (Agreement of the Permanent Conference for Relations between the State, the Regions and the Autonomous Provinces of Trento and Bolzano, dated February 10, 2011). This document highlights the role of the physiatrist in the rehabilitation process, and it focuses on a holistic approach to the patient, not only centered on the pathology. However, specific pathways for cancer patients are not identified at a national level. The Friuli-Venezia Giulia Region, in the north-east of Italy, has approved the last "Regional Rehabilitation Plan" in 2005 (Dgr n ° 606 of March 24, 2005). In this document,

however, there is no trace of a dedicated approach for patients suffering from neoplasms. A turning point occurs thanks to the "Annual lines for the management of the regional health and social-health service – year 2019" (Annex to the Dgr 2514 of December 28, 2018) of the Friuli-Venezia Giulia Region. This new document addresses the integration of the TADP (Therapeutic Assistive Diagnostic Paths) on rehabilitation, with the ones specific to the oncological rehabilitation. The same document plans the setup of a dedicated regional working table, involving all the main stakeholders. Healthcare organizations and companies, universities, as well as the regional IRCCSs (acronym for "Istituti di Ricovero e cura a Carattere Scientifico" – Institutes of Hospitalization and Scientific Care) will be involved in the dialogue.

A large part of scientific literature highlights the link between oncological rehabilitation and physical activity. According to these studies, physical activity reduces the rate of recurrences and complications during and after cancer treatments (Haskell et al. 2007) with measurable effects in terms of survival and quality of life (Irwin et al. 2008; Holick et al. 2008; Lahart et al. 2015). The American Medical Society for Sports Medicine has stressed the importance of the physical activity for former cancer patients. Indeed, they should train with the same methods as the non-cancer population. A recommended training consists of 150 minutes per week of activity moderate-intensity physics (Schmitz et al. 2010).

4 The Case Study

The National Cancer Institute Center of Aviano is one of the most famous hospitals and research centers in Europe in the oncology field.

The Institute includes the support for physical and psychological recovery among its main principles. More in details, the Institute aims at "implementing the assistance and interdisciplinary care of patients also providing periodic check-ups and ensuring adequate support for physical and psychological rehabilitation, as well as appropriate support for family members."

Until the beginning of 2018, the Institute did not provide its patients with any physical rehabilitation programs. Patients should refer to the local health agencies for follow-up.

The Institute, which has patients from all over the national territory, soon decided to take the lead. The decision was taken to answer better the principle of supporting the patients for physical and psychological recovery, as part of the Institute's purpose. The follow-up of patients, who reside in different regions, was heterogeneous. Different areas employ different rehabilitative approaches, sometimes with long queues. Time is critical when it comes to encouraging the social reintegration of patients after cancer treatment.

The planning and organization of the activities had several critical points. The first aspect was the absence of a physiatrist and a physiotherapist on duty in the Institute. One more significant point was the fact that half of the treated patients

come from far away. Moreover, there were other administrative issues connected to Italian regulations. Again, a critical point was the need to involve two international certification bodies such as OECI (Organisation of European Cancer Institutes) and EUSOMA (European Society of Breast Cancer Specialists) for the assessment of the program.

4.1 The SWOT Analysis

Before establishing the program, the Institute decided to undergo a SWOT (strengths, weaknesses, opportunities, threats) analysis, to understand the main features of the initiatives better (Biancuzzi et al. 2019; Miceli et al. 2019).

Strengths

- The Institute, through the inclusion of the rehabilitation program, has the possibility of providing users with comprehensive care, which has been offered only by a few oncological organizations in Italy.
- Patients are motivated to continue the treatment and the follow-up at the Institute, not leaving immediately after the conclusion of the oncological treatment, increasing their loyalty.
- The necessary OECI and EUSOMA certifications can guarantee the quality of the care offered.

Weaknesses

- The geographical position of the Institute, decentralized concerning the main communication routes, may be an issue for the periodic assessments. These follow-ups lead to a low return in terms of revenues.
- Patients who reside in other regions may be unwilling to have regular follow-ups by the Institute if those assessments are not strictly related to cancer care.
- The figures of the physiatrist and physiotherapist have never been present before in the Institute. This leads to a lack of know-how concerning oncological rehabilitation.

Opportunities

- The Institute is recognized as a scientific entity. It is then possible to combine the clinical assistance with that of research on the subject of oncological rehabilitation. This research field appears to be particularly innovative in the literature.
- The dissemination activities may be carried on by those employees of the Institute who regularly lecture at universities and other healthcare organizations. The Institute itself may become a teaching and training center at both national and international levels.
- The presence of the Institute's Camp, which is currently not overused, can encourage the planning of educational events on the subject devoted to various stakeholders.

- The topic of the early social and work reintegration after surgery or treatment thanks to the rehabilitation activity can become a further reason for patients to choose the Institute.
- The presence of several nonprofit associations can support the Institute not only in economic terms but also considering co-production. This topic has always been relevant for the Institute as a social cohesion strategy with the territory and stakeholders' engagement.

Threats

- Implementing a new service which leads to new investments and costs
- The presence in the area of other public as well as private organizations entirely devoted to rehabilitation, which may lead to potential duplication of care activities

The following figure summarizes the results of the SWOT analysis (Fig. 1).

4.2 The Area of Intervention

In planning the service, the Institute chose to identify the mammary surgical pathology as the priority. The first reason for this is related to numbers. Indeed, breast cancer is the surgical pathology most treated by the Institute. Moreover, it turns out to be the pathology on which there is more significant scientific evidence of the need for oncological rehabilitation. Breast cancer affects women of a relatively young

Fig. 1 SWOT analysis

age group. Thus, patients could be particularly motivated to a path that rehabilitates them earlier and allows them to go back to their everyday life in a more efficient way. Finally, given the average age of the women involved, the patients could be more receptive to the use of modern technologies at a distance, such as telemedicine.

A model of "learning by doing" type was chosen, creating an ad hoc path, placing a precise deadline for the kick-off of clinical activities, January 1, 2019.

The project began with the deliberation, by the Strategic Board, of a multiprofessional and multidisciplinary program line called "Oncology in Motion," entrusted to the Head of the Departmental Operational Structure.

A scientific board was appointed also involving the University of Udine. Two agreements were signed following the analysis of the possible initial needs. One physiatrist and one physiotherapist joined the team, borrowed from the Health Agency number 2 of the Region. Their aim is to provide patients with the initial postsurgical classification. A freelance physiatrist with expertise in the treatment of lymphedema was also involved. Moreover, the program required the involvement of a professional with a degree in physical education, with specific know-how on physical exercise devoted to people with disabilities. This professional has a coaching function for patients, but he/she is also active on the research side, by collecting and analyzing data from the fitness and sports side.

The recruited professionals have been enabled to access the public information system to guarantee the complete traceability of the path. The Department of Pain Medicine was also involved, offering rooms for visits and its own cost center for the purchase of the necessary equipment. Psychological, nutritional, or analgesic therapy assessment can be further requested by the physiatrist.

The first patient was involved in the program on December 6, 2018, about 3 weeks ahead of the planned kick-off date.

The first months of the program were dedicated to the creation of two informative leaflets to be distributed to the patients. The first one, delivered to all women, is dedicated to aerobic physical activity, strength, and endurance, to be performed during and after cancer treatments. This brochure was created with the help of a professional with a bachelor's degree in sports and fitness. The second leaflet concerns the precautions to be taken and the rehabilitation exercises to be performed, if necessary, after the breast surgery. The content was created from the joint effort of the physiatrist and the physiotherapist. This communication and dissemination strategies involve several professionals and stakeholders to ensure better coproduction. These stakeholders include all medical and fitness professionals operating in the rehabilitation sector in the whole Region, the patients' associations, the scientific library of the Institute, and the former and actual patients of the Institute.

A digital version of the informative leaflet will be available, usable via the web or app.

The information provided is relevant to patients. Indeed, women who underwent breast cancer surgery had, until now, to independently manage their return home. Patients had to deal with all practical issues, seeking answers from different healthcare structures. Moreover, a relevant gender issue arose. Indeed, the literature shows

that women seem to face more obstacles in their working life, especially if they run their own business than men (Halkias et al. 2011; Jamali 2009; Dal Mas et al. 2019b). Balancing work and family is more difficult for those who are married with children (Winn 2005). Women play an essential role in both sides; working in their workplace and at home (Alam et al. 2011). That is why ensuring the full recovery as fast as possible is a plus for women.

A biomechanics laboratory is being set up for the physiatrist, physiotherapist, and sports and fitness professionals. The laboratory includes several scientific as well as technical pieces of equipment such as a balance, a cycle ergometer, an impedance meter, a plicometer, and a metabolite. This laboratory has the clinical purpose of planning and measuring the degree of physical activity to be advised on individual patients. Moreover, the equipment is used to conduct research activities.

Finally, wireless heart rate monitors were acquired. These technological tools will become the "standard of care" to monitor patients' physical activity remotely.

A specific observational study on compliance with physical exercise monitored wirelessly was proposed to the Regional Ethics Committee of Friuli-Venezia Giulia.

In a nutshell, women undergoing major breast surgery enjoy a joint physiatry-physiotherapeutic evaluation during their stay in the Institute or post-hospitalization phase. The patients are consulted by the professional in physical education. All patients are given a physical exercise plan and a wireless heart rate monitor, after estimating the personal optimal aerobic activity threshold. Only patients who need specific rehabilitation are given a rehabilitation plan. For the following 12 months, periodic checkups are organized, usually every 6–8 weeks. During the follow-ups, progresses are recorded both from the rehabilitation and physical activity. Data from the patient's heart rate monitor are downloaded. Various options are available, like the Ambra Health® platform, a website which is certified from a medical perspective for eventual interchange of sensitive information at a distance with the patients. Periodic nutritional, psychological, or pain therapy visits are also scheduled. Patients with lymphedema have access, by binding, to specialist outpatient visit, to a second physiatrist, with specific know-how on the treatment of complication. The administrative management of meetings and front-office with the patients is managed by the Institute's breast nurse unit, in charge of the ambulatory nursing platform.

In the following months, the program will continue to evolve by creating synergies between the health perspective and the fitness perspective. The desired outcome is the complete rehabilitation of women as fast and successful as possible.

The average number of women who undergo breast surgery in the Institute is 500 per year. Of these, about 300 do not require a preventive postoperative physiatrist approach, given the low number of complications that can be expected. This means that the remaining 200 patients per year will be given the physiatry and physiotherapy assessment at least at the beginning and end of treatment. Four hundred visits are planned.

4.3 Timing and Schedule

The period September 2018–February 2019 was dedicated to the creation of the framework of the "support care" program. Activities included signing the agreements with the various professionals, setting up the spaces, creating the credentials to access data, and involving the workgroup for the processing of the two informative leaflets to be distributed to the patients. The second semester is dedicated to the implementation of the path of physical and fitness activity as a therapeutic exercise. Activities include the clinical study related to the compliance of patients with this type of activity, the optimization of the biomechanics laboratory, and the gym area of the Institute. The third semester will see to extension this program, with any corrective measures that may have been necessary.

4.4 Expected Results and Practical Implications

The program aims at several outcomes. Results include a better adherence to oncological care for patients, a lower onset and entity of side effects, and an improvement in the overall outcome with regard to both mortality and morbidity. This project aims at creating an interdisciplinary and multi-professional model that gravitates around the patient undergoing cancer care at the Institute. One challenge will be to keep the women involved connected to the Institute using the remote monitoring tools.

The project traces an innovative way of thinking about the rehabilitation after cancer treatment, a relatively new topic from both clinical and organizational points of view. A multidisciplinary approach was employed. A protocol was also created to offer virtual coaching even remotely, with the known positive effects on motivation and quality of care. These aspects are mentioned in the literature, but still little implemented in clinical practice. The Institute aims at becoming one of the main actors at both regional and national levels on the management of the post-operative period. The vision can be summarized in the three words "Oncology in Motion." The clinical knowledge merges with fitness and physical education and activities.

Once the protocol gets verified, other national as well as international oncological centers and clinics will be able to request documentations (such as the leaflets devoted to the patients), specific organizational consultancies, and access to the telemonitoring route for the physical activity for their patients. The Institute of Aviano will become the national leader in promoting the "standard of care" for breast-operated patients.

5 Discussion

The "Oncology in Motion" of the National Cancer Institute Center of Aviano can be seen as a case of co-production in the healthcare sector, in which end users contribute to the creation of the service by increasing its value for themselves and the whole society.

More in details, we may analyze the case by using Batalden's conceptual model of healthcare service co-production.

First of all, despite being born within a public healthcare entity, the "Oncology in Motion" may be seen as an example of high stakeholders' engagement. Indeed, several different actors belonging to the society are involved in the projects: from all the citizens to no-profit entities working with the patients, from the family members to private companies in sectors such as pharma and fitness, and from IT providers and partners to universities and scientists. Relationships among these stakeholders with the key actors of the program can be of various kinds. One particular aspect is devoted to dissemination and communication activities, which are considered relevant at different levels. One is the end user level, which is dedicated to letting people know about the benefits of the program and how it should be carried on. The other is the scientific level, which sees the Institute take the scientific lead by involving other research centers, scientists, health agencies, and hospitals to disseminate the knowledge and methodology through conferences, seminars, and other educational activities.

The central part of the model sees the connection between the patients, the women who are being treated from breast cancer, and the professionals involved. The relationship between them can be defined as co-planning and co-execution. The input and protocol are designed merging the experience of the different professionals: doctors, physiatrists, physiotherapists, and sports and fitness trainers with specific know-how on people with disabilities. However, the knowledge can be built and transferred only with the full cooperation of the patients, who should undertake the program giving data and feedback on the results, the benefits, and the issues encountered. Data coming from the patients can help the professionals to enhance the results of the program. A control and monitoring system is central to measure the efficacy and effectiveness of the methodology, especially considering the variables of the patient involved (such as the age, the seriousness of the initial pathology, the attitude to sports and fitness, etc.). The co-production activities of all actors involved are expected to generate an important outcome, first to the patients and then to the whole society. The patients are expected to heal and recover from one of the most challenging experiences, such as cancer, in a faster way. The fitness program should allow women to go back to their everyday life before cancer (family and work above all) quickly and efficiently. The well-being of former patients is the long-term desired outcome. The whole society will then enjoy the new knowledge created from the program, which is then expected to be used in other diseases.

Another aspect of being highlighted is the use of technological tools and telemedicine. Previous studies have demonstrated the importance of technologies in healthcare in increasing the value for the various stakeholders involved (Dal Mas et al. 2019b).

The following figure shows the application of Batalden's conceptual model (Fig. 2).

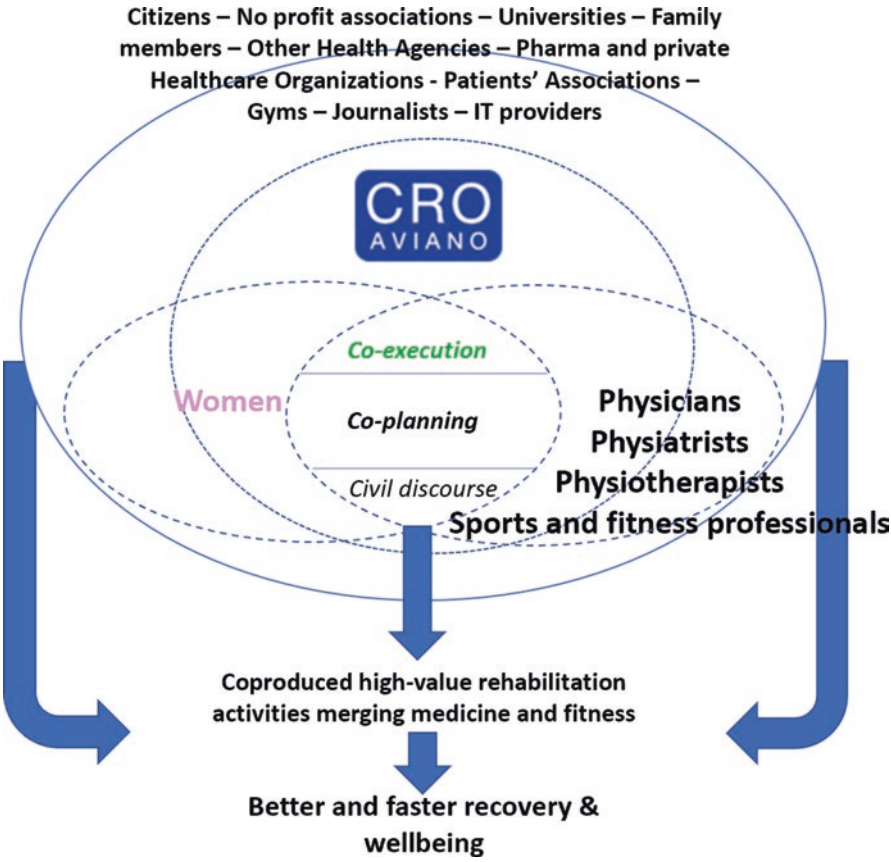

Fig. 2 Batalden's conceptual model of healthcare service co-production applied to the "Oncology in Motion"

6 Conclusions

Co-production in healthcare services is considered as a fundamental strategy for all actors involved. Co-production allows the end users to increase the value of the services they need by cooperating with the providers. The case of the National Care Institute Center for Oncological Reference Center of Aviano allowed us to investigate the topic by understanding the relationships among all stakeholders involved in the project. All in all, the project aims to enable patients, women who underwent breast cancer surgery, reaching their well-being, by healing in a faster way. The alliances among the various actors (society/patients/professional/leading healthcare organization) and the knowledge sharing flow among them are the keys to the success of the initiative. The benefits of the global effort in terms of knowledge represent a heritage for all the society.

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