

Performance evaluation in the Departments of Mental Health: the implementation of a multidimensional di- rectional dashboard in the Department of the Bari Local Health Authority

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Summary

Background. Performance management is a central topic for the health care sector, not just at the corporate level but also for each organizational unit. Clinical directorates, healthcare districts, and clinical units must develop performance management systems and tools based on their peculiar needs of data and information to support middle managers' decisions and orient clinicians' behaviors. Mental Health is a sector characterized by a series of peculiarities that make it unique compared to other medical disciplines. Also, in this sector, there are some literature attempts to build performance management tools able to help overcome specific critical issues and encourage the continuous creation of value. This research aims to implement in the Departments of Mental Health (DMHs) a multidimensional dashboard for performance evaluation.

Methods. We considered a complete recent dashboard, present in the literature since 2016, whose implementation is still not proved. We discussed and analyzed the dashboard implementation within a working group. We implemented the dashboard on the company intranet. We tested it in last quarter of 2019.

Results. In 12 months, the dashboard has been adapted and contextualized to the DMH of Bari in Italy and data collection has been carried out. The implementation of the dashboard was straightforward and the tool was very versatile.

Conclusions. The implementation of the tool in the Italian DMHs could encourage benchmarking techniques that aim to highlight the effectiveness of high-level strategies to encourage the implementation of virtuous procedures for the continuous creation of value.

Key words: performance management, multidimensional dashboard, Department of mental health, performance indicators.

Introduction

The topic of performance measurement today has also become central for healthcare companies. In fact, at a time characterized by a lack of resources in the face of growing needs, it becomes essential to apply management

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Conflict of interest

The Authors declare no conflict of interest.

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tools and principles that allow to increase quality, reduce costs, make fewer mistakes¹ and focus on continuous value creation. In this perspective, the tools of Performance Management (PM) become fundamental. The PM is understood as a continuous process of identification, measurement, and development of the performance of individuals and groups and the alignment of such performance with the strategic objectives of the organization². At the basis of the PM is the concept of measurement, closely interconnected with the concept of knowledge of complex transformation processes, at the basis of the use of the resources themselves. The measurement of what is done allows organizations³ to have a direct perception of what is problematic in their performance, to activate change, and to reduce the tendency to satisficing^{4,5}. Mental Health, like other medical disciplines, has made attempts to apply the tools of the PM, albeit in a leopard's eye, not overcoming some critical issues that characterize its managerial aspect⁶. Mental Health, in fact, compared to all other medical disciplines, represents a series of peculiarities.

1. It was one of the first sectors of the Italian National Health Service (NHS) that had the courage to start a real process of deinstitutionalization. In fact, it has shifted the focus of assistance from acute hospital units to territorial services⁷. This shift has become a symbol of professional prestige for Mental Health.
2. It has been able to build a chain of services with differential specialist intensity, characterized by a varied mix of clinic, rehabilitation, social inclusion. This organization has been able to reconstruct distinct care settings, which represent natural steps of a possible path for patients⁸.
3. It has been able to build a network of relevant relationships for integrated care and rehabilitation paths with other actors of the welfare system⁹.
4. It has adopted a holistic approach to patients, integrating the clinical dimension with the psychological, social, occupational dimension¹⁰. Moreover, in line with what was proposed by WHO¹¹, it is the only medical discipline that has set as a global goal the recovery¹² and the promotion of personal well-being.
5. Finally, Mental Health has always been confronted with the dimension of chronicity and the global and permanent care of the patient¹³. In doing so, it involves a varied skill mix of professionals characterized by doctors, nurses, psychologists, educators, rehabilitators and social workers, trying to build interoperable languages and procedures within the DMH.

These characteristics, which make psychiatry unique, are coupled with several issues:

1. the departmentalization, understood as autonomy from the other parts of the health service, sanctioned by the law 833 establishing the NHS14, has been exasperated as a foundation for the creation of a stronger professional identity;
2. the departmentalization has not gone hand in hand with

the essential need for comparison and integration with other sectors of the NHS (i.e., primary care, services for the disabled, for the elderly);

3. the excessively divisionalized culture has led to simple logistical support between related services such as those for pathological addictions and child neuropsychiatry;
4. finally, the DMH, which was the first to deal with chronicity, integration, and articulation of care settings with variable intensity, developmental trajectories of all current health services¹⁵, is almost absent in the shared evolution of services, in the inter-sectoral integration of pathways, in the mutual professional contamination;
5. moreover, the very DMH that first dealt with a holistic approach and professional integration is perceived by other medical disciplines as an isolated and closed environment;
6. all this is indeed corroborated by the difficulty of developing shared metrics and measuring outcomes, understood as a difficulty in the culture of measurement⁶.

This fragmentation has contributed to feeding the stigma and has undermined in the long run the establishment of a trustworthy professional identity. Moreover, it has had consequences on the concept of professional responsibility contributing to the heterogeneity of approaches, including management at the level of individual Italian DMH. In this scenario, the measurement of inputs is essential. But it is more important to measure the transformation processes, traditionally considered as a black box. Investigating the processes that take place within this black box, which are the basis of value creation, can be useful to an open comparison between different systems. Making inter-company and interdepartmental metrics explicit and homogeneous can therefore be a great contribution to the professional community and for the Italian DMHs¹⁶. From this comparison, it will be possible to identify virtuous realities and winning paths¹⁷. This allows management to use data for a better allocation of resources, to evaluate coverage and demand rates and to identify the best management strategies in an era of scarce resources¹⁸. This approach requires a standard (i.e., applicable in all the DMHs) and easy-to-use tool that allows the comparison between the performance of the various DMHs. In 2016 Latorre and collaborators¹⁹ proposed, on the basis of a well-defined methodology²⁰ and literature data, a dashboard of indicators for the evaluation of performance in Italian DMH. The dashboard is multidimensional and is characterized by 33 indicators organized in three areas (Tab. I). The areas are defined as follows: (i) Context Area that defines the external context in which the hypothetical LHA and DMH insist and work, (ii) Core Area that identifies the main activities of the DMH, and (iii) Organizational Capital Area that refers to the organizational resources of the DMH. The tool represents a complete performance evaluation tool, which has been able to transform the gaps into opportunities¹⁹.

Table I. The proposed Dashboard (adapted from Latorre et al., 2016).

	Indicator	Formula	Target
Context			
<i>Population and environment Mental Health profile</i>			
1	Suicide incidence	Number of suicides/year/territorial population	ND
2	Rate of Emergency Service accesses for Psychiatric pathology	Number of Emergency Service accesses for Psychiatric pathology/year/territorial population	ND
3	Incidence to the services	Number of first visits/year/territorial population	ND
4	Prevalence to the services	Number of visits /year	ND
5	Rate of patients in care	Number of patients visited at least once with individual project/year/territorial population	ND
Core			
<i>Hospital Activity/Territorial activity</i>			
1	Psychiatric Complexity Index in hospitalization	Average DRG weight/year	ND
2	Relevancy index of hospitalizations	Number of hospitalizations with medical primary diagnosis/total of hospitalizations	0
3	In-hospital mortality Rate	Number of deaths /total of hospitalizations/year	0
4	Physical restraint Rate	Number of restraints/number of hospitalizations per year	0
5	Index of outpatient clinical activity	Number of outpatient visits per year/ number of patients in care per year	ND
6	Hospital activity index	Total of hospitalizations/year	ND
7	Domiciliary clinical activity index	Number of home visits/number of patients in care/year	ND
<i>Efficiency</i>			
1	Number of hospitalizations longer than 45 days/total hospitalizations	Number of hospitalizations longer than 45 days/total of hospitalizations	0
2	Hospital/Territorial services Integration index	Number of protected hospital discharges (with direct activation of territorial services)/total of hospitalizations	1
3	Number of hospital discharges with booked outpatient visit within two weeks/Total hospital discharges	Number of hospital discharges with booked outpatient visit within two weeks/Total of hospital discharges	1
<i>Efficacy</i>			
1	Involuntary Treatment incidence	Number of Involuntary Treatment/total of hospitalizations/year	0
2	Rehospitalization rate	Number of re-hospitalized patients within 30 days from discharge/total of discharges	0
3	Patient satisfaction index	Verona Service Satisfaction Scale 20	20
<i>Safety</i>			
1	Incidence of accidents at work	Number of accidents/year	0
2	Incidence of emergency calls	Number of emergency calls (or public forces calls)/ number of patients in care/year	0
3	Incidence of patients complaints	Number of legal complaints/number of patients in care/year	0

(continued)

Although this tool has already been present in the literature for some years, no application cases are known to date. Therefore, the real feasibility of its contextualization in a DMH is not known. Our main objective was to plan and implement the application of the dashboard in the DMH of the Bari Local Health Authority.

Materials and methods

The application of the dashboard was carried out in the DMH of the LHA of Bari. Its implementation was endorsed by the general direction of LHA. A preliminary step was the sharing of the need to use the tool with the company's Strategic Management. This determined the inclusion of

Table I (follows). The proposed Dashboard (adapted from Latorre et al., 2016).

	Indicator	Formula	Target
Organizational Capital			
<i>Human resources</i>			
1	DMH staff completion index	Number of DMH operators/expected number of operators	1
2	Equipe completion index	Number of complete equipes/Number of active services	1
3	MHHU staff completion index	Number of MHHU operators/expected number of operators	1
<i>Training and innovation</i>			
1	Innovation index	Number of DMH research projects/average number of LHA Departments projects per year	1
2	Staff continuous training index	Medium number of formative credits per employee/ Number of formative credits required by law per year	≥ 1
3	IT index	IT assisted services/total of services	1
<i>Structural resources</i>			
1	Bed availability index	Beds available/expected beds	1
2	Bed need index	Number of extra-LHA emergency hospitalizations/total of hospitalizations	0
3	Safety index of structural resources	Standards compliant service/Number of services	1

the dashboard implementation process among the exercise objectives assigned by the General Manager for the DMH for the year 2019. The implementation process required the support of the Information Systems Analysis Operating Unit of the LHA.

The DMH of the Bari LHA covers a territory that serves the psychiatric care needs of a population of about 1,300,000 inhabitants. The assistance for acute cases is currently provided by the two Mental Health Hospital Units (MH-HUs) available on the territory. The territorial assistance for adults is organized by seven territorial areas. In each territorial area, there are different service units.

We organized a specific working group, including at least one referent person for each territorial area and MHHU. The working group was composed of 15 operators, including the coordinator of the DMH Board. The group was composed of 5 psychiatrists, four nurses, one social worker, two psychologists, three educators/psychiatric rehabilitation technicians.

Three methodological steps were followed to implement the dashboard:

1. discussion and analysis of the dashboard with the working group and identification of data sources;
2. sharing of the dashboard with the Information Systems Analysis Operating Unit and implementation of a platform usable on the company intranet network;
3. data entry for the second half of 2019.

During the first step, every single indicator of the dashboard has been analyzed in order to evaluate its contextualization and consider its possible modification. For each indicator we identified both the competence of the survey service (MHHU, DMH, or DMH management) and the source of the data (i.e., medical records, regional IT

systems - SISM or Edotto). In this step, each operator was also trained to collect the data from the identified source. This phase required the first two months of the year 2019 for a total of 3 meetings of the group. The meetings were all directed by the coordinator of the DMH Board.

The second phase was completed with the support of the Information Systems Analysis Operating Unit that built a data entry form on the company intranet platform. We evaluated as constraints the restricted access to all the project referents and the real-time data entry.

The third step involved each territorial referent who manually filled the data entry form accessing the database on the company intranet.

Results

The discussion of the dashboard with the working group led to considerations regarding: (i) the identification of the services of relevance for the imputation of data for each indicator, (ii) the sources to be used for the data collection, (iii) the contextualization of the indicators (Tab. II).

Because of missing historical data, we consider data extracted by the literature as target values. The targets for next years will be defined using the results of the analysis of the first year, after discussing and evaluating the margins for improvement.

Regarding the data collection intervals, we decided to feed the dashboard every three months. This timing maps the due communication of activity data by the company macrostructures to the Operational Management Control Unit. We also validated this interval considering: (i) the cost of manual data entry by each operator, (ii) the loss of non-structured data, and (iii) the use of the punctual data

Table II. Dashboard discussion results.

	Indicator	Relevant Service	Source
Context			
<i>Population and environment Mental Health profile</i>			
1	Suicide incidence	ALL	ISTAT
2	Rate of Emergency Service accesses for Psychiatric pathology	ALL	Edotto
3	Incidence to the services	Territorial Service	SISM
4	Prevalence to the services	Territorial Service	SISM
5	Rate of patients in care	Territorial Service	SISM
Core			
<i>Hospital Activity/Territorial activity</i>			
1	Psychiatric Complexity Index in hospitalization	MHHU	Edotto
2	Relevancy index of hospitalizations	MHHU	Edotto
3	In-hospital mortality Rate	MHHU	Medical Records /Edotto
4	Physical restraint Rate	MHHU	Medical Records
5	Index of outpatient clinical activity	Territorial Service	SISM
6	Hospital activity index	MHHU	Edotto
7	Domiciliary clinical activity index	Territorial Service	SISM
<i>Efficiency</i>			
1	Number of hospitalizations longer than 45 days/total hospitalizations	MHHU	Edotto
2	Hospital/Territorial services Integration index	MHHU	Medical Records
3	Number of hospital discharges with booked outpatient visit within two weeks/Total hospital discharges	MHHU	Medical Records
<i>Efficacy</i>			
1	Involuntary Treatment incidence	Territorial Service	Data according to DGR Puglia 162 2014
2	Rehospitalization rate	MHHU	Edotto
3	Patient satisfaction index	MHHU/Territorial Service	VSSS-20 scale
<i>Safety</i>			
1	Incidence of accidents at work	MHHU/Territorial Service	Administrative acts
2	Incidence of emergency calls	Territorial Service	Administrative acts
3	Incidence of patients complaints	MHHU/Territorial Service	Administrative acts
Organizational Capital			
<i>Human resources</i>			
1	DMH staff completion index	MHHU/Territorial Service	DMH management acts
2	Equipe completion index	Territorial Service	DMH management acts
3	MHHU staff completion index	MHHU	DMH management acts
<i>Training and innovation</i>			
1	Innovation index	Territorial Service/MHHU	DMH management acts
2	Staff continuous training index	Territorial Service/MHHU	Agenas
3	IT index	Territorial Service/MHHU	PC verified usage
<i>Structural resources</i>			
1	Bed availability index	MHHU	DMH management acts
2	Bed need index	MHHU	Edotto
3	Safety index of structural resources	MHHU/Territorial Service	DMH management acts /DVR

for steering decisions to reach the targets.

The second step regarded the implementation of a data entry form, on the company intranet site, for the 33 indicators of the dashboard. Each operator was provided with the access link to the intranet platform page, to be accessed through personal credentials. Each operator is enabled to enter data only for the territorial area to which s/he belongs. Several queries can be accessed in real-time by the referent of DMH Board (e.g., overall data of the Department, data of a critical territorial area) (Fig. 1). The implementation of the system was completed by the end of 2019.

The data collection revealed a series of critical issues limited to a few indicators, which are reported in Table III.

We were able to test the working dashboard for the last quarter of 2019.

Discussion

In this study, we have shown the steps of the implementation of a multidimensional dashboard of performance indicators for Italian DMHs. The methodology for the implementation of the dashboard at the DMH of LHA Bari included 3 steps. A preliminary step was to include the dashboard implementation process among the operational objectives for the year 2019 for the entire DMH. We found this preliminary step necessary to obtain the support of the Strategic Company Management. Thus, the Department's management and its structures were motivated and responsive to achieve the goal. The establishment of a working group, including different professional figures representing all the units, allowed: (i) to discuss and promote the tool at all professional levels, (ii) and to share the responsibility on training and data collection.

SISTEMA AZIENDALE DI RILEVAZIONE DEGLI INDICATORI RILEVAZIONE DELLA PERFORMANCE NELL'AMBITO DELLA SALUTE MENTALE

LATORRE*VALERIA | [Disconnessione](#)

Home Page	Rilevazioni	Parametri	Indicatori	Abilitazioni	Informazioni su ...
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PARAMETRI DI RIFERIMENTO	
Anno	2018 ▼

Tab. 3 - Cruscotto Finale Indicatori area CONTESTO Profilo di Salute psichico della popolazione e caratteristiche del contesto		
Indicatore	Parametro	Valore
Incidenza di suicidi (ISTAT)	Numero dei suicidi nel Periodo	<input type="text" value="0"/>
Tasso di ricorsi al P.S. per patologia psichiatrica	Numero di ricorsi al P.S. per patologie psichiatriche nel Periodo	<input type="text" value="0"/>
Incidenza al servizio	Numero prime visite nel Periodo	<input type="text" value="0"/>
Prevalenza al servizio	Numero di Visite effettuate nel Periodo	<input type="text" value="0"/>
Tasso di utenza incarico	Numero Utenti visitati almeno 1 volta con progetto nel Periodo	<input type="text" value="0"/>

Tab. 4 - Cruscotto Finale Indicatori area CORE Attività Clinica Ospedaliera/Territoriale		
Indicatore	Parametro	Valore
Indice complessità psichiatrica ricovero	Peso medi DRG medio nel Periodo	<input type="text" value="0"/>
Indice appropriatezza utilizzo SPDC	Numero di ricoveri con diagnosi principale medica in SPDC nel Periodo	<input type="text" value="0"/>
Tasso di mortalità intraospedaliera	Numero di morti nel Periodo	<input type="text" value="0"/>
Tasso di contenzione	Numero di contenzioni nel Periodo	<input type="text" value="0"/>
Indice attività clinica ambulatoriale	Numero di visite nel Periodo	<input type="text" value="0"/>
Indice attività clinica ospedaliera	Numero di ricoveri totali nel Periodo	<input type="text" value="0"/>
Tasso di attività clinica domiciliare	Numero interventi domiciliari Numero utenti in carico nel Periodo	<input type="text" value="0"/>
Efficienza		
Indicatore	Parametro	Valore
N. di ricoveri con degenza superiore ai 45 aa/N. totale di ricoveri	Numero di ricoveri con degenza superiore ai 45 aa nel Periodo	<input type="text" value="0"/>

Figure 1.
Data Entry Form.

Table III. Indicators with data collection issues.

	Indicator	Issues
Context		
<i>Population and environment Mental Health profile</i>		
1	Suicide incidence	Out of date data
2	Rate of Emergency Service appeals for Psychiatric pathology	Available only in the following semester
Performance		
<i>Efficacy</i>		
2	Re-hospitalization rate	It will be obtained by the Region
3	Patient satisfaction index	Reduced Sample
<i>Structural resources</i>		
2	Bed need index	Available in the following semester after the end of the current year

The planning of the actions, the contextualization of all the indicators, and the identification of the sources were essential to induce a change in all operators towards the culture of measurement. The members of the working group have naturally become promoters of this tool with their own colleagues.

The step that required more attention from the technological point of view was to bring the dashboard on a mask that could be shared on the network by the contacts of all areas, both for the input of data and for the comparison of their data with those entered by other territorial areas.

The participation and support of the Information Systems Analysis Operating Unit were fundamental for the implementation to grant the use to a shared database on the company intranet and to guarantee a restricted access to protected official data. This official integration allows the unit operator to perceive this tool as part of standard practice.

The persistence of data on the company intranet will allow us to perform comparative analysis over time. The input of data into the dashboard has been followed punctually. The emerging problems were mainly related to the data concerning the first area of the dashboard: the context area. In fact, ISTAT data on the number of suicides are related to past years. Since the publication of the National Mental Health Report 2018 is currently underway, this indicator could be modified in relation to the number of patients with schizophrenia in the region in the last published report. In fact, it is among the diseases that, according to the latest reports, absorbs most of the resources of public services. A further criticality was related to the data of hospital emergency rooms because available on a different IT system. This leads to an objective barrier in obtaining quarterly data because some data are available only six months after the end of the year of interest. The implementation of the dashboard at the regional level and the synchronization of the data directly from the Edotto system and SISM could be not only the most desirable solution but also the solution that most could exploit the usefulness of the tool.

The goal of this paper is to present the process of implementation of the dashboard, not yet the performance results, which are not reported as limited to last quarter of 2019.

Although using data retrieved in only one quarter, the dashboard results led the working group to several considerations for improvements in: (i) how to collect the data, (ii) how to enter it into the database, (iii) best practice to be enforced.

We mention just one observation regarding the restraint index in the two MHHUs. This index, obtained from the ratio between the number of restraint events and the number of total hospitalizations in a given period, generated two very different results in the two cases. In fact, one MHHU obtained an index of 0.49 (34 restraint events out of 69 hospitalizations in the last quarter of 2019), the other one obtained an index of 3.39 (271 restraint events out of 80 hospitalizations in the same time frame). This discrepancy led to a comparison with the restraint procedures in the two hospital services. A focus group, led by an operator, found that the MHHU with a lower number of restraints implemented updated forms, thus more careful monitoring of the number of restraints, with the aim of reducing the events²¹. Therefore, the working group proposed to DMH Management, in compliance with the recommendations on the prevention of restraint²², to work on a common, virtuous procedure for the management and monitoring of restraint events. The target for the year 2020 will be to reduce the index by 50% compared to 2019.

Conclusions

We can conclude that the implementation of the dashboard is fairly easy. However, it requires the essential support of the company's Strategic Management, the direct involvement of all DMH structures, and the technological support of the IT units. The dashboard is easy to contextualize. In most cases data can be obtained from the Mental Health Information System, present in every Italian region.

In other cases, data can be obtained from the administrative records of each service or from monitoring sheets that respond to national recommendations.

Considering all the peculiarities of Mental Health and the heterogeneity of approaches, including the management of Italian DMHs, we advise a wide implementation of the tool to increase the culture of measurement, allowing comparisons not only at an intra-departmental level, but especially at an inter-departmental level. At an intra-departmental level, historical data could be used to improve performance and strengthen internal cohesion. On the other hand, inter-departmental comparison and discussion could highlight the effectiveness of benchmarking techniques and high-level strategies, in order to encourage the implementation of virtuous procedures for continuous value creation. We believe that peer comparison, exploration and measurement of work processes, that characterize what was once perceived as a black box, can in the long run diminish the fragmentation that characterizes Mental Health even compared to other medical disciplines. This can also strengthen professional identity, contribute to the heterogeneity of approaches with important consequences also on professional liability.

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