

Original Article

Storytelling and creative writing for enhancement of empathy and well-being in health professionals: the “Verba Curant” study, a randomized trial

Narrazione e scrittura creativa per il miglioramento dell’empatia e del benessere nei professionisti sanitari: “Verba Curant”, uno studio randomizzato

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Key words: well-being; storytelling; creative writing; randomized trial; empathy.

ABSTRACT

Background: storytelling and creative writing can improve empathy and well-being. Few randomized controlled trials have been carried out so far in health care settings, generally with small sample sizes.

Materials and Methods: in this study 175 health professionals working in a large general hospital were randomized into two groups: group 1 received theoretical narrative medicine education with 4 hours of distance education, while group 2 received the same theoretical narrative medicine education and a practice course of storytelling and creative writing with 8 hours of distance education in small groups. The empathic ability and psychological well-being were measured immediately before the start and at the end of the education program with the Jefferson scale and Psychological General Well-Being-Short form test (PGWB-S).

Results: participants in group 2 showed a significant improvement of the mean PGWB-S index at variance with group 1. Two-way ANOVA showed a between-groups time per treatment difference with $p=0.039$. Empathy improved in both groups with a statistically significant change. No significant difference was found in between-groups comparison in the degree of improvement ($p=0.25$).

Conclusions: storytelling and creative writing education that combines theory with practice is an effective strategy for improving health professionals’ psychological well-being and empathic ability.

Background: lo storytelling e la scrittura creativa possono migliorare l’empatia e il benessere. Finora sono stati condotti pochi studi randomizzati controllati in contesti sanitari, generalmente con dimensioni del campione ridotte.

Materiali e Metodi: in questo studio 175 professionisti sanitari che lavorano in un grande ospedale generale sono stati randomizzati in due gruppi: il gruppo 1 ha ricevuto formazione teorica in medicina narrativa con 4 ore di formazione a distanza, mentre il gruppo 2 ha ricevuto la stessa formazione teorica in medicina narrativa e un corso pratico di storytelling e scrittura creativa con 8 ore di formazione a distanza in piccoli gruppi. L’abilità empatica e il benessere psicologico sono stati misurati immediatamente prima dell’inizio e alla fine del programma educativo con la scala di Jefferson e il test *Psychological General Well-Being-Short form* (PGWB-S).

Risultati: i partecipanti del gruppo 2 hanno mostrato un miglioramento significativo dell’indice medio PGWB-S, a differenza del gruppo 1. L’ANOVA a due vie ha mostrato una differenza tra i gruppi nel tempo per trattamento con $p=0,039$. L’empatia è migliorata in entrambi i gruppi con un cambiamento statisticamente significativo. Non è stata riscontrata alcuna differenza significativa nel confronto tra i gruppi nel grado di miglioramento ($p=0,25$).

Conclusioni: l’educazione allo storytelling e alla scrittura creativa che combina teoria e pratica è una strategia efficace per migliorare il benessere psicologico e la capacità empatica dei professionisti sanitari.

Introduction

An effective way to influence health professionals’ relationships with their patients and improve the care they provide is resides in increasing empathy.¹ Empathy can be defined as the ability to identify another’s emotional state and feel what the person is feeling. Thus, it includes elements of perspective-taking such as imagining yourself in someone else’s situation, acknowledging their point of

view, seeing things through their eyes, and trying to understand their emotional state and behavior.² Research has shown that a health professional ability to empathize is a trait preferred by some patients³ and that the ability to take the perspective of patients is associated with greater patient satisfaction.⁴ Although higher levels of health professionals’ empathy are related to better outcomes for patients, and patients report empathy as an important aspect of their care, research has indicated that not all physicians and nurses are

able to empathize with their patients.^{5,6} Reflective writing, which seeks to draw out personal experience with illness, has been shown as a useful method of inducing this type of empathic personal reflection.⁷ In addition to the use of reflective writing on personal experience, a number of interventions have been designed to build empathy in health professionals,^{1,8} including the use of creative writing exercises.⁹⁻¹¹ While reflective writing typically asks the writer to reflect on their own personal experiences, the purpose of creative writing and storytelling is to shift the focus from the writer to an external character, often a patient, allowing the writer to develop an empathic affiliation.^{12,13}

Storytelling is an effective pedagogy to promote clinical reasoning, develop an empathetic understanding in health professionals, and teach a sense of salience.¹⁴

Storytelling can also be used as a treatment, intervention, and instrument, as well as a research technique to collect qualitative data on the treatment processes.¹⁵

The narrative becomes not only an educational method, but a useful channel to help professionals listen and correctly interpret what the patient tries to say – through story – about his perception of the illness. This goes beyond the expression of symptoms aimed at objectifying the patient, and allows the expression of the pain and emotions that are derived from suffering. Narrative skills can thus help healthcare professionals develop their clinical skills by grasping the patient's point of view on his suffering by understanding his needs, and reflecting on his emotions and the effects of the care provided. In addition to increasing empathy, creative writing exercises also promote well-being. By increasing self-awareness *i.e.* turning the attention inward towards the self rather than simply disclosing

emotions, creative writing and storytelling can benefit mental health. By turning our attention inward, we can become more aware of our traits, behavior, feelings, beliefs, values and motivations. Creative writing encourages people to choose their words, metaphors and images in a way that really captures what they're trying to convey. This creative decision-making can lead to increased self-awareness and self-esteem as well as improved mental health.

Few randomized controlled trials have been carried out so far generally with small sample sizes, hindering the achievement of statistical significance. We therefore envisaged a randomized controlled trial to assess the capacity of storytelling and creative writing in increasing empathy and well-being in a group of health professionals (physicians, nurses, health workers) working in Alessandria General Hospital.

Materials and Methods

Study design

This was a randomized, non-pharmacological, single-center, interventional study involving the evaluation of a training course in the field of Medical Humanities, aimed at the following healthcare professionals belonging to the Alessandria Hospital: doctors, nurses, Socio-Health Workers (OSS), other healthcare professions. The reference population, 1976 subjects (Figure 1), consisted of the total number of healthcare professionals belonging to the identified profiles, as of 07/05/2020: 74.8% were female. A representative sample of the jobs involved was made and the Oncology Department was identified as the 'pilot department'. The 175 subjects enrolled were

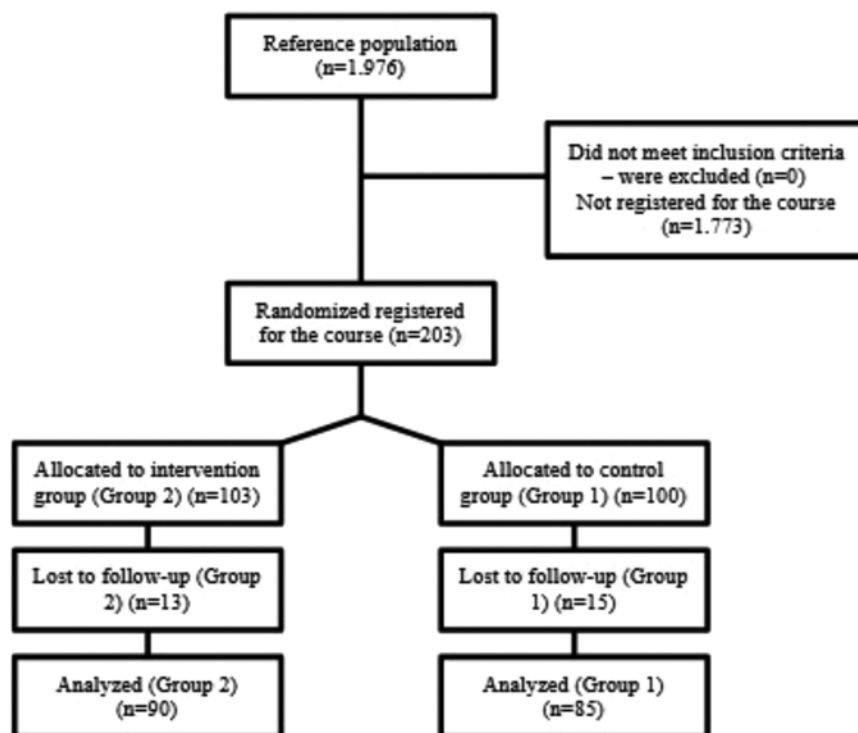


Figure 1. Study participants.

randomized into two groups: the first, untreated, consisting of 85 professionals followed the short course: 4 hours of Distance Learning (FAD); the second, treated, formed by 90 professionals followed the full course: 12 hours, 4 in FAD + 8 laboratory (storytelling and creative writing). The randomization list was generated in a stratified manner according to the ‘task’ factor, in order to balance the presence of the four types of operators in the two groups. The STATA software (Statistical software for data science), v.17, was used for the randomization procedure.

Below there is a flow-chart (Figure1) about the study, with insights into the randomization performed.

Storytelling course

The training program of the short course focused the history and theory about storytelling describing what does it mean to write a story, how is it possible to bear witness to what happens between hospital wards and to identify the responsibilities related to the empathic relationship.

The training program used in the full course in addition dealt with several specific topics in three specific sessions dedicated to: i) the importance of context, focusing on what Storytelling is and how stories are created, highlighting the need to identify the core of a story from one’s own experience, the different points of view and the ability to pick up a story and make it one’s own, an element at the basis of empathy; ii) the attention to the recipient, attention to the other, the structure of stories, but also conflict; iii) the importance of using the right words in communicating with patients.

Participants found ways to move from self-expression to storytelling, a form of communication capable of bringing to the other what one feels on a certain topic, thanks to a story, to share interesting meanings for all. In the workshops by combining content and storytelling practices, it was possible to experience the usefulness of storytelling on at least three levels: i) the functioning of stories, the structures and paradigms of meaning, and their resonance in the lives of all and sundry; ii) the importance of considering the stories of patients, uprooted from their everyday life, from the perspective of the story of care, but also to keep alive the narrative structure of an existence; iii) the possibility of giving life in every form of communication, especially in the therapeutic one, where, using Eugenio Borgna’s expression: “the ‘I’ and the ‘you’ live in a new dimension from which one comes out changed, and one is no longer what one was before”.

Study endpoints

The primary outcome measure was the Psychological General Well-Being Index (PGWBI). The secondary endpoint was the empathic capacity. Psychological well-being and empathic capacity of healthcare professionals measured – before (baseline) and after (final) the training intervention – in the two groups, treated and controls by means of validated measurement instruments, Jefferson of Empathy scale and PGWBI.

Measuring instruments

The following validated instruments were self-completion administered to participants: i) PGWB,¹⁶ validated in clinical practice also in the Italian version, it measures the level of subjective psychological well-being - the version of the questionnaire used was the SHORT one¹⁷ with 6 items assessing the quality of life through 6 domains, anxiety, depressed mood, positive well-being, self-con-

trol, vitality, and general health - each item provides a scoring scale from 0 to 5, index range: 0-110; ii) Jefferson Empathy Scale (JES-HP),¹⁸ a validated scale designed to measure empathy in physicians and other health care professionals - it consists of 20 items measured with a score from 1 to 7, scale range 20-140.

In addition to the two aforementioned tools, course participants self-completed a questionnaire on cultural consumption before the start of the training course. It consisted of 16 questions to collect information on the consumption of events, expressed in quantitative terms as number of accesses/year.¹⁹ Respondents were asked to provide answers referring to the year before the pandemic. Some respondents provided qualitative, rather than quantitative answers: in these cases, the answers were traced back to a numerical frequency defined from the mean and Standard Deviation (SD) of the quantitative answers to the individual question, based on the following recoding: i) rarely/rarely/almost never = mean/2; ii) sometimes, sometimes, somewhat = average; iii) very much, many times, often = mean + SD; iv) very much, always, a lot = average + 2SD.

Prior to the training initiative (T0) all 175 participating subjects completed the PGWBI, the JES-HP, and the questionnaire on cultural consumption. After 4 hours of training (T1), 85 subjects belonging to the control group completed the PGWBI, and the JES-HP. After 12 hours of training (T2), 90 subjects belonging to the treatment group completed the JES-HP, and the PGWBI.

The internal consistency of the JES-HP and PGWB scales, assessed by Cronbach’s alpha at the three time-points of the project, provided good results in terms of reliability:

- JES:
 - $\alpha_{T0}=0.84$ (n=175); $\alpha_{T1}=0.81$ (n=85); $\alpha_{T2}=0.86$ (n=90);
 - $\alpha_{T1}=0.79$ (n=85);
 - $\alpha_{T2}=0.81$ (n=90).
- PGWB:
 - $\alpha_{T0}=0.88$ (n=175); $\alpha_{T1}=0.89$ (n=85); $\alpha_{T2}=0.86$ (n=90);
 - $\alpha_{T1}=0.90$ (n=85);
 - $\alpha_{T2}=0.81$ (n=90).

Sample size

The primary outcome measure was the psychological well-being measured by the PGWBI at the end of intervention. A clinically important difference of this parameter is estimated as a difference of eight points between intervention and control group, equivalent to a medium effect size of 0.4. To detect this difference using a two tailed test, alpha of 0.05 and power at 80% requires 83 participants in each arm, a total of 166 participants. Previous research suggested that the loss of follow up for this population would be in the order of 20%. This inflated the required sample size by a factor of 1.2, a total of 200 participants about 100 in each arm.

Statistical analysis

The data were analyzed in aggregate and anonymized form.

Continuous data were represented as mean \pm SD, while categorical variables as frequencies and percentages. For these data, statistical significance of comparison between two groups was tested with Student’s T-test for independent samples and with T-test for paired data, that of comparison between multiple groups with ANOVA; for categorical data, Chi-Square and Fisher’s exact test were used. The level of significance considered is $p<0.05$, two-tailed. Statistical analyses were conducted with IBM®SPSS® Statistics 25 (IBM Corporation, Armonk, NY, USA).

Variables semantic connectivity map

The analysis was conducted using an artificial neural network known as the Auto Contractive Map (Auto-CM). The Auto-CM is a mapping technique that computes the multidimensional strength of association between each variable and all others in the dataset. This method is particularly useful at identifying recurring patterns, regular correlations, hidden trends, and associations between variables. Its capability lies in creating a semantic connectivity map that preserves nonlinear relationships, captures non-linear connection schemes between clusters, and identifies complex similarities between variables. The architecture of an Auto-CM network is a three-layers one, with an input layer, a hidden layer, and an output layer, all consisting of the same number of neurons (*i.e.*, the input and output sizes are equal). The inputs are directly connected to only one neuron of the hidden layer, different for each input, while all connections are present between the hidden and output layers.

For more in-depth description regarding the architecture and mathematical models of Auto-CM, we recommend referring to the Buscema and Grossi's work.²⁰

During the learning phase, the following four steps are performed: (I) the input signal is transferred to the hidden layer; (II) the weights of the connections between the inputs and the output are modified; (III) the signal is transferred from the hidden to the output layer; and (IV) the connections between the hidden and output layers are then adapted.

In Auto-CM, all connections have positive values, and at the end of the training, all input vectors belonging to the training set will be mapped to the null vector. The effect is that the matrix "w" has learned a way to relate the input variables to each other to "cancel out" the inputs and produce the null output vector. Therefore, the matrix "w" can be used to understand the relations between the different variables. From "w" it is possible to define a new matrix "d" with " $d_{(i,j)} = N - w_{(i,j)}$ " that is interpretable as a weighted graph.

A mathematical filter called Minimum Spanning Tree (MST) is applied to the weight's matrix developed at the end of the training phase when the weights are converted into physical distances: variables with stronger connection weights are brought closer to each other, while those with weaker connections remain more distant. The distances reflect the significance of the many-to-many relationships

across all variables. MST represents a connected, undirected graph that serves as the shortest possible path connecting all vertices, minimizing the total weighting of its edges. This concept was initially described by the Czech scientist Otakar Boruvka in 1926, with the aim of optimizing electricity connections between cities. Later, Kruskal's deterministic algorithm provided an efficient algorithm for computing the MST.²¹ MST provides an optimal way to connect variables in a tree, offering the shortest possible total length of all the edges while preserving the connectivity of the graph.

The key advantage of the MST algorithm is its ability to provide a concise overview of the ensemble of variables when the weight of the edges represents some form of relation between the variables and lower weights denotes closer relations. This facilitates a clear understanding of clustering through links that connect closely related variables. Under this formulation, the importance of variables in the graph is determined by the number of their connections, so, for example, hubs – nodes with the maximum number of connections – represent important variables and the degree of separation between two variables can be directly linked to their clustering distance.

Computing the minimum spanning tree results in a representation known as a «semantic connectivity map».²² This semantic connectivity map provides a compact and easy to understand view of the variables' ensemble and makes it reasonably easy to understand how the variables are clustered by observing the links connecting variables that are very close to each other. This approach enables to understand in a visual way the connection patterns between variables. In the map the importance of the associations among variables are established through the separation degree among graph nodes (variables).

Results

Baseline homogeneity between two study groups are showed in Table 1. A good homogeneity was present for all the variables with the exception of Overall Cultural index, higher in group 2.

Results observed in two groups as consequence of different interventions are showed in Table 2.

In group 1 a statistically significant improvement of empathy

Table 1. Patients' demographic and clinical characteristics at baseline.

Characteristics	Group 1 (n=85)	Group 2 (n=90)	p-value
Female	92.90%	86.70%	0.17
Age [mean (SD)]	44.8 (11.22)	46.6 (10.91)	0.278
Physician	11.80%	10.00%	0.83
Healthcare worker	10.60%	13.30%	
Nurse	69.4%	65.6%	
Other employment	8.20%	11.10%	
Net cultural index [mean (SD)]	26.79 (33.27)	27.81 (23.19)	0.814
Sport index [mean (SD)]	74.94 (72.01)	109.29 (103.74)	0.012
Social index [mean (SD)]	9.99 (16.52)	13.21 (24.85)	0.318
Overall cultural index [mean (SD)]	111.73 (82.68)	150.31 (118.02)	0.01
PGWBI [mean (SD)]	69.58 (19.26)	64.41 (18.97)	0.076
JES-HP [mean (SD)]	108.8 (13.82)	106.5 (16.10)	0.318

SD, Standard Deviation; Psychological General Well-Being Index, JES-HP, Jefferson Empathy Scale.

Table 2. Longitudinal change in empathic ability and in psychological well-being for participants in the two groups.

	Baseline	Group 1 Post-intervention	Baseline	Group 2 Post-intervention	Comparison between groups
JES-HP [mean (SD)]	108.8 (13.8)	111.9 (12.3)	106.5 (16.1)	112.2 (14.1)	p=0.25
Comparison within group		p=0.023		p=0.003	
Effect size		0.23		0.38	
PGWBI [mean (SD)]	69.6 (19.3)	72.8 (18.8)	64.4 (18.97)	73.9 (15.9)	p=0.039
Comparison within group		p=0.10		p=0.00007	
Effect size		0.16		0.54	

SD, Standard Deviation; Psychological General Well-Being Index, JES-HP, Jefferson Empathy Scale.

was observed, with an effect size of 0.23. The improvement recorded in psychological well-being was rather modest and didn't reach a significance level. In parallel the effect size recorded was quite small. In group 2 a statistically significant improvement of empathy was observed, with a higher effect size and better p value in comparison with group 1. The increase in psychological well-being was striking with a very low p value and important effect size.

The comparison between the two groups in time per treatment perspective showed no statistically significant difference for empathy but a significant difference for psychological well-being.

Figure 2 shows the semantic connectivity map of the variables on study. Being responder to PGWB scale (improvement in baseline PGWB score of at least 10 points) and being responder to Jefferson scale (improvement in baseline PGWB score of at least 5 points) is associated to male gender (one degree of separation- strong association) and to physician, age decade 4, cultural index higher than 120 and healthcare worker (two degrees of separation – discrete association). Vice versa being non responder to PGWB and Jefferson scale is strongly associated to female gender (one degree of separation-

strong association), and to nurse and cultural index lower than 120 (two and three degrees of separation respectively – discrete, slight association respectively).

Discussion

In the realm of healthcare, the significance of technical expertise is universally acknowledged. However, an often-underappreciated aspect that plays a crucial role in patient care is empathy. The ability of health workers to empathize with their patients can markedly enhance the quality of care.

Empathy in healthcare is defined as the ability of healthcare providers to understand and share the feelings of their patients. It is a crucial component of patient-centered care, contributing to improved patient satisfaction, adherence to treatment, and overall health outcomes. Research has shown that empathy not only benefits patients but also reduces burnout and improves job satisfaction among health workers.

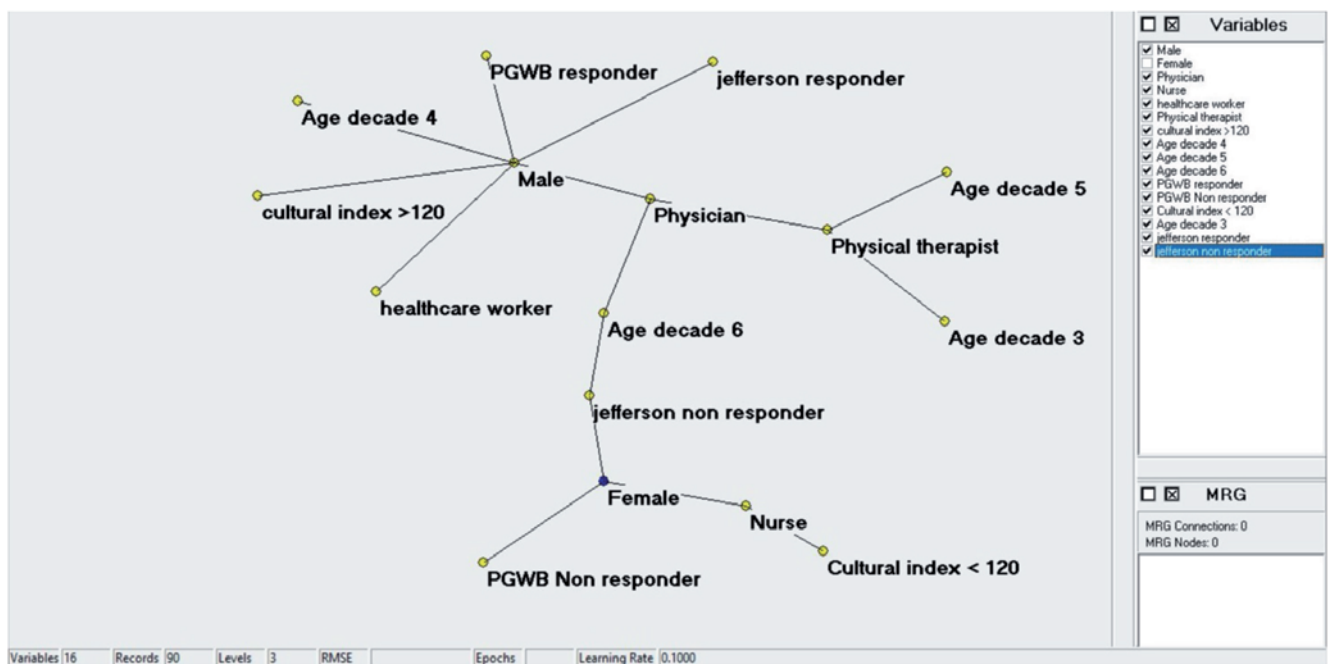


Figure 2. Characteristics of respondents.

Empathy in healthcare extends beyond mere understanding of a patient's condition; it involves a deeper connection with the patient's experiences, emotions, and perspectives. Storytelling can act as a bridge between health workers and patients, facilitating a more comprehensive understanding of the patient's narrative, thus enhancing the quality of care delivered.

Some studies indicate that health care professionals lack empathy and understanding toward older adults.²³⁻²⁵ Furthermore, there is evidence that health care without empathy results in a wide range of negative physiological outcomes.²⁶ Moreover, empathy improves the quality of care and patient health outcomes.²⁷

Storytelling, a fundamental human activity, is deeply ingrained in our social fabric and has been a part of medicine since its inception. Traditionally, stories have been used to pass down medical knowledge and practices. In contemporary healthcare, the narrative approach is gaining recognition for its potential to foster empathy, enhance patient care, and support the professional development of health workers.

A growing body of literature supports the role of storytelling in enhancing empathy among healthcare professionals.²⁸⁻³² These recent studies underscore the transformative power of storytelling in shaping empathetic healthcare practices.

The primary benefit of storytelling in healthcare is the enhancement of patient care. Empathetic communication, fostered through storytelling, leads to a better understanding of patients' needs and concerns. This understanding can result in more accurate diagnoses, improved treatment adherence, and greater patient satisfaction. A study by Levinson *et al.*³³ found that effective communication, including the sharing of personal narratives, significantly improved patient outcomes.

Storytelling also contributes to the professional development of health workers. It provides a means for reflection, helping healthcare professionals understand their own experiences and emotions in the healthcare setting. This reflective practice is essential for the continuous personal and professional growth of healthcare providers, enabling them to become more effective and empathetic practitioners.

While the existing research establishes a connection between storytelling and empathy, there remains a need for more empirical studies to explore this relationship in depth. This article seeks to fill this gap by investigating through a rigorous randomized clinical trial how storytelling can be systematically integrated into healthcare to foster empathy and consequently well-being.

Our study has clearly showed that storytelling and creative writing education that combines theory with practice can enhance the empathic ability and well-being of health professionals working in a general hospital. The results obtained in well-being are particularly remarkable either because the absolute change in baseline score observed in the intervention group is large with an effect size higher than the threshold commonly considered for high effectiveness and because the group baseline score was rather poor, meaning a presence of severe distress.

It is noteworthy to note that due to the COVID pandemic the course of storytelling has been held online, somehow reducing the power of the intervention compared to face-to-face courses. Despite this the results have been quite satisfactory.

The analysis of the data with the semantic connectivity map has enabled a deeper understanding of the variables interconnections playing a role in this context. The map shows that gender and cultural participation attitude play an important role in predicting a suc-

cessful response either in empathy or in well-being. Being male, healthcare worker and with good cultural index predispose to a good response, while being female, nurse, and having a lower cultural index brings to an unsatisfactory response.

Conclusions

Further research is needed to highlight the intersection of narrative medicine and empathic care, and how the art of storytelling can be integrated into medical practice to improve patient outcomes and enrich the professional lives of healthcare providers.

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Key words: well-being; storytelling; creative writing; randomized trial; empathy.

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Ethics approval and consent to participate: study approval was granted by the Ethics Committee of Azienda Ospedaliera Nazionale SS. Antonio e Biagio e Cesare Arrigo of Alessandria (protocol number ASO.IRFI.21.02 18/02/2021). The investigation has been conducted according to the principles expressed in the Declaration of Helsinki and its later revisions. This trial was registered on ClinicalTrials.gov (code: NCT06410560) since May 10th, 2024.

Informed consent: the collection of an informed consent specific to the study was foreseen with a specific form to be submitted to all participants.

Availability of data and materials: the dataset used and analysed during the current study is available from the corresponding author on reasonable request.

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