Digital Technologies to Provide Humanization in the Education of the Healthcare Workforce: A Systematic Review

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Abstract: Objectives: The need to incentivize the humanization of healthcare providers coincides with the development of a more technological approach to medicine, which gives rise to depersonalization when treating patients. Currently, there is a culture of humanization that reflects the awareness of health professionals, patients, and policy makers, although it is unknown if there are university curricula incorporating specific skills in humanization, or what these may include. Therefore, the objectives of this study are as follows: (1) to identify what type of education in humanization is provided to university students of Health Sciences using digital technologies; and (2) determine the strengths and weaknesses of this education. The authors propose a curriculum focusing on undergraduate students to strengthen the humanization skills of future health professionals, including digital health strategies. Methods: A systematic review, based on the scientific literature published in EBSCO, Ovid, PubMed, Scopus, and Web of Science, over the last decade (2012–2022), was carried out in November 2022. The keywords used were "humanization of care" and "humanization of healthcare" combined both with and without "students". Results: A total of 475 articles were retrieved, of which 6 met the inclusion criteria and were subsequently analyzed, involving a total of 295 students. Three of them (50%) were qualitative studies, while the other three (50%) involved mixed methods. Only one of the studies (16.7%) included digital health strategies to train humanization. Meanwhile, another study (16.7%) measured the level of humanization after training. Conclusions: There is a clear lack of empirically tested university curricula that combine education in humanization and digital technology for future health professionals. Greater focus on the training of future health professionals is needed, in order to guarantee that they begin their professional careers with the precept of medical humanities as a basis.

Keywords: humanization of care; humanization of healthcare; medical humanities; undergraduate education; digital technology

1. Introduction

Digital health is defined as the use of digital technologies for health [1]. It has gradually become a relevant topic of healthcare practice [2], including tools such as mobile health technology (mHealth), virtual reality (VR), or artificial intelligence (AI). Despite digital health having enormous potential [3], it is still poorly incorporated into healthcare workforce [4]. Therefore, several authors have claimed that digital health training should be included in the curriculum for healthcare professionals [4–6], so that they can reach their

full potential [3,7,8]. One way to do this could be to combine digital health technology and training in humanization for the healthcare workforce, paving the way for future challenges and opportunities.

In this respect, the humanistic training of health professionals has given rise to quite different interpretations, including the understanding of "medical humanities" (MH). These range from positions that present MH as a discipline falling between objective technique and compassionate ethical attitude [9], to interdisciplinary approaches that help to integrate and interpret human experiences of illness [10], understanding the human condition of health and illness [11], and medical practice. Classically, among the tools used, mention is made of creative training processes such as the use of literature, art, creative writing, cinema forums, the narrative of patients and healthcare workers, ethical decision making, anthropology, and history in pursuit of the goals of humanized medical education [12].

The term humanization has an ethical connotation, as it refers to the evaluation of human actions according to values and, specifically, to the treatment of others in different human relationships. In the healthcare setting, a recently published and tested model [13–15] defined humanization as a "set of personal competencies that allow for the development of professional practice within the healthcare environment, respecting and ensuring dignity and respect for human beings. It is, therefore, an activity focused on improving physical, mental, and emotional healthcare, from the perspective of both patients and health professionals themselves". For this reason, supported by the MH disciplines, educational tools are developed to improve personal skills in the humanization of future health professionals, which are aimed at improving the personal dimension of care.

Different studies suggest that this integration of MH in education can help students develop essential qualities such as professionalism, self-awareness, social and communication skills, and reflective practice [16,17]. It also encourages a more holistic approach to patient care [18]. A US multi-institutional survey [19] showed that medical students' exposure to the humanities correlates with positive personal qualities and reduces stress, mitigates burnout, fosters resilience, and promotes well-being [18,20,21]. Finally, it helps them to think like doctors [22].

The inclusion of the humanities in medical education may offer significant potential benefits to individual future physicians and to the medical community. There should be no debate about the definition and precise role of the humanities in medical education, since this training must be present from the beginning of studies in health sciences, providing tools to health workers, which need to be continuously developed and recycled during their years of professional practice [23].

Wald et al. [24]. assert that it is essential for medical students to be taught, from the early stages of their training and throughout their careers, that the practice of medicine can never be black and white, and that—in line with Schon's view [25]—dealing with greyness, uncertainty, and doubt will always be present in professional practice and human complexity. The inclusion of MH could thus support the need for medical education to respond to this complexity and help provide the necessary framework to cultivate competent and compassionate physicians [24].

Quantifying the long-term impact of humanities training is a commendable goal. In Ousager and Johannessen's (2010) systematic review of 245 articles concerning the humanities in medical education [26], only nine papers provided evidence of attempts to document their long-term impact Humanities courses in medical schools should set specific, measurable goals for their curricula and determine methods to evaluate whether those goals are being met [27].

However, all this would be meaningless without a broader vision that leads from the disciplines of MH, through the different educational tools, to the personal competencies that enable "humanized medical care" (HMC). Therefore, several studies have tried to determine what this term (HMC) means concretely, and how best to implement it. In this regard, when analyzing the different actors involved in the delivery of HMC, the

results show a clear gap between the expectations cited by stakeholders and the practices implemented in daily clinical practice [28].

When this concept is applied to the field of healthcare practice, it is noticed that two different expressions are used in the current literature, which, although related, refer to different specific realities: one is "humanization of healthcare"(HH); the other, "humanization of care" (HOC). The former, which is more inclusive, refers to actions aimed at the humanization of both healthcare management and practice, and focuses on all the agents involved in the clinical relationship. On the other hand, publications on the "humanization of care" focus on the role of nursing and specific actions such as the adoption of healthcare environments to make them more friendly.

The term "humanization of healthcare" (HH) originated in the scientific literature [29], yet there is currently no clear consensus on its definition [28,30]. The term HH implies consideration of the stakeholders involved in healthcare, such as patients themselves, patients' caregivers, health professionals and policy makers, as well the interaction between them all [28]. However, future care providers, i.e., current healthcare students, are not included among them.

This absence is noteworthy. As early as the nineteenth century, William Osler coined the phrase "The good physician treats the disease; the great physician treats the patient who has the disease" [31]. Lately Ronnie Mac Keith in his essay "The tyranny of the idea of cure" cautioned that "Patients are not uninterested vehicles of interesting diseases" [27]. Therefore, this concern is at the root of the training of future health professionals, highlighting the importance of embracing uncertainty and restoring the integral balance between the sciences and the humanities.

Other authors [32] considered three illustrative areas related to learning that could serve as teaching tools for the medical humanities. These three areas would aim to improve the understanding of patients' experiences of disease.

The HH has two dimensions that are the object of this humanization: firstly, the "structural", relating to the management of the means for health activity; and, secondly, the "personal", relating to the aptitudes and attitudes of healthcare workers. From the structural point of view, the automation and standardization of medical care, as well as the lack of time, have been highlighted as causes of dehumanizing treatment by health professionals [33]. It has even been suggested that patients are sometimes not treated as individuals, but as a "symptom cluster" [34]. Moreover, excessive bureaucracy, deficiencies in hospital structure, overcrowding, excessive workload, lack of material resources (as experienced during the COVID-19 pandemic), poor coordination between departments, and lack of assessments of dehumanizing behavior have been noted [35].

Regarding the skills and attitudes of healthcare personnel, these are linked to the ethcal codes that regulate the healthcare relationship with patients and their relatives. However, competence in the HOC, in addition to ethical competence, would include psychological competences such as empathic competence (closely linked to ethical competence). The concept of empathy towards the patient, respect for the patient's dignity, and consideration for the patient as an individual have been cited in several studies as fundamental aspects of this "humanized care" [28]. On the other hand, the concept of moral sensitivity, defined as the ability to be aware that one's actions may affect other people, has also been related to the concept of humanization [36].

Therefore, the MH are transformed into the HH when they are grounded in human action and values, both incorporated into specific academic curricula. This will promote the psychological, relational, and ethical attitudes of future health professionals that favor "humanized care" for the patient. Although it has not yet been empirically proven, it is postulated that humanistic training applied to the education of healthcare professionals can have a positive influence on improving the treatment of patients, as well as the management of healthcare environments to make them friendlier or more appropriate for patients and their vulnerabilities.

It is the responsibility of the scientific and teaching community to provide future health professionals with training in humanities for the exercise of their profession. Pursuing this goal and measuring the impact of humanization of healthcare through digital health strategies represents the challenge itself.

Given that there is no international consensus on the concept of humanization of healthcare, nor, therefore, on the best way to teach it, and that its effective implementation has been linked to students' prior training, as have digital health strategies, this research study aims to systematically review the existing scientific literature regarding the explicit training that undergraduate students receive regarding the concept of humanized healthcare, using digital technology. Specifically, the following objectives are sought: (1) to identify what type of education in humanization is provided to university students of health sciences, developed through digital health strategies; and (2) to determine its strengths and weaknesses.

The following sections will further explain the methodology developed for data collection, as well as the main outcomes and conclusions.

2. Methods

To develop the present study, the following methodology was adopted.

2.1. Overview

The current systematic review was performed and reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (see study protocol in Supplementary Material S1) [37–40]. The protocol was registered with the PROSPERO International Prospective Register of Systematic Reviews (CRD42022382146).

2.2. Selection Criteria

Articles were considered potentially relevant if they were published in English or Spanish between the years 2012 and 2022 inclusive and included a training protocol or education in the "humanization of healthcare" for undergraduate students of any of the branches of health sciences, provided as part of their university education. We excluded abstracts or conference papers, study protocols, narrative reviews, and articles that were published in a language other than English or Spanish, as well as those that did not include training or results in "humanization of healthcare" of university students (for example, training in "humanization of healthcare" for active professionals in hospital settings).

2.3. Outcomes

The primary outcomes were the types of humanization training provided to students at university and if digital technologies were used for that purpose; whether the humanized skills were assessed before or after training; and the efficacy of the training provided (in terms of increasing humanization skills in students). The secondary outcomes were the level of satisfaction of the students involved and the strengths and weaknesses of the forms of training examined.

2.4. Search Methodology

A comprehensive search was carried out in EBSCO (Academic Search Complete, CINAHL Plus with Full Text, Communication Source, eBook Collection, E-Journals, ERIC, Fuente Academica Premier, Humanities International Complete, MEDLINE, MLA Directory of Periodicals, MLA International Bibliography, OpenDissertations, PSICODOC, Psychology and Behavioral Sciences Collection, PsycInfo), PubMed, Scopus, Ovid, and WOS (Web of Science Core Collection) from its inception until November 2022. The detailed search strategies used in all the databases are provided in Supplementary Material S1. The original versions of all the research articles were retrieved for examination, and a search library was created using RefWorks©, a bibliography management program.

2.5. Data Collection and Analysis

For the sake of completeness, two reviewers (M.G.-M. and E.R.) independently evaluated and reviewed all the titles and abstracts of identified references to determine their eligibility for inclusion in the study. In case of discrepancies, a third author was consulted (C.M.-V.). After that, Cohen's kappa coefficient for inter-observer agreement [41] was calculated in order to determine the degree of agreement between the data of the two investigators (E.R. and M.G.-M.). The interpretation of the data obtained from Cohen's kappa was calculated using SPSS version 27 (IBM Corp., Armonk, NY, USA), based on the categories established by Douglas Altman [42] as 0.00–0.20 (poor), 0.21–0.40 (fair), 0.41–0.60 (moderate), 0.61–0.80 (good), and 0.81–1.00 (very good). One author (M.G.-M.) independently extracted data on outcomes from all the studies. All extracted data were reviewed for completeness by two reviewers (E.R. and C.M.-V.).

A data extraction tool was developed in Microsoft Excel, which was used to retrieve relevant information. Cross-checking was undertaken to identify any inaccuracies or oversights. Discrepancies were resolved amongst the core team with the involvement of the broader research team when necessary.

2.6. Data Extraction and Management

We extracted data on (1) publication year, (2) country, (3) study design, (4) study aim, (5) sample size, (6) mean participant age, (7) university course, (8) type of training provided (using digital technologies—yes/no—), (9) assessment of prior/subsequent level of humanization, (10) outcomes, and (11) student satisfaction, (12) strengths, and (13) weaknesses.

2.7. Quality of Studies Included

The study designs of the articles included varied widely; therefore, the quality of the studies included was appraised using the Mixed Methods Appraisal Tool (MMAT), developed in 2006 [43] and revised in 2018 [44]. Total scores with higher values indicated a lower risk of methodological bias (see Multimedia Supplementary Material S2). The critical evaluation of designing and developing educational interventions was made through a checklist for critically appraising reports of educational interventions [45] (see Supplementary Material S3). One author (C.M.-V.) independently extracted data on outcomes from all the studies. For completeness, all extracted data were reviewed by two reviewers (E.R. and A.P.-M.).

2.8. Statistical Analysis

Data were pooled using SPSS version 27 (IBM Corp., Armonk, NY, USA), allowing for frequency analysis (percentages).

3. Results

The following outcomes were obtained.

3.1. Search Results/Characteristics of Included Studies

The total number of articles retrieved when searching with the chosen keywords "humanization of care" and "humanization of healthcare" was 475. After discarding duplicates (288), 187 studies remained (39.3%) and these were evaluated on the basis of title and abstract. Of these, 174 (93%) were rejected as they clearly did not meet the inclusion criteria. Based on titles and abstracts, 13 (7%) articles were selected for full text screening; 7 (53.8%) out of these 13 [46–52] were discarded for various reasons (see Supplementary Material S4). A total of six publications (46.2%) were included in the end [53–58]. A PRISMA flow diagram is shown in Figure 1 [39]. Cohen's kappa was good ($\kappa = 0.72$) based on the categories developed by Altman [42]. All the chosen studies were deemed to be of sufficient quality to contribute equally to the thematic synthesis.
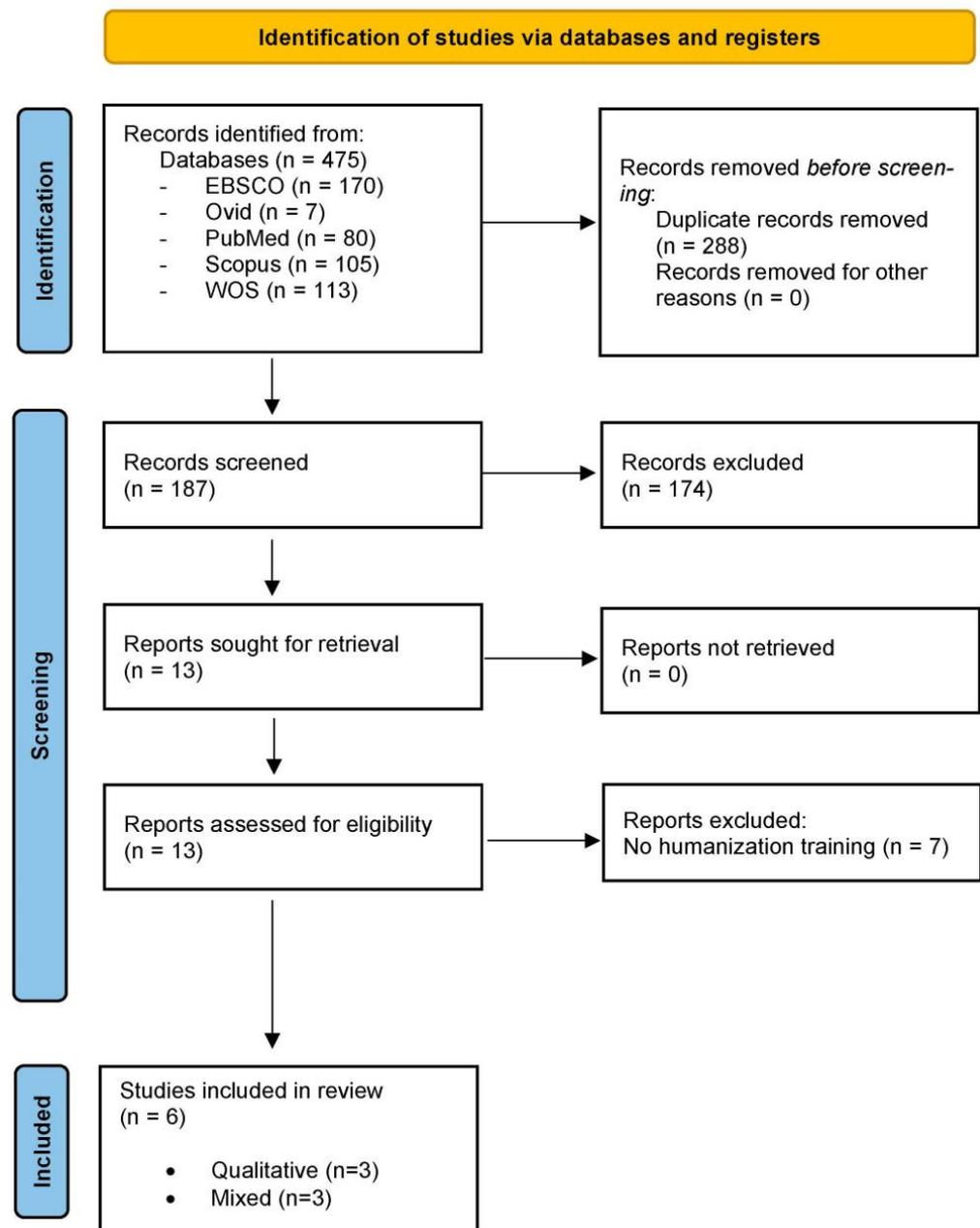
Figure 1. Flowchart of the systematic literature review.

3.2. General Characteristics of Included Studies

A review of the general features of the six papers evaluated shows (Table 1) that three of the studies (50%) were carried out in Spain [53,54,58], one in Brazil (16.7%) [56] one in Chile (16.7%) [57], and one in Canada (16.7%) [58], and that were published—except for a paper published in 2017 [53] (Feijoo-Cid et al., 2016) almost all (83.3%)—between 2019 and 2022.

Table 1. General characteristics of included studies (n = 6).

Authors	Country	Study Design	Study Aim	Sample Size	Mean Age of Participants	University Course	Type of Training Provided
Feijoo-Cid et al. [53]	Spain	Mixed	Evaluate nursing students' satisfaction with EPIN * as a teaching and learning methodology.	64	N/A	4th-year Degree in Nursing	No DT. Three expert patients (a woman living with HIV, a man caring for his dying parents, and a man living with cancer) shared their illness narratives with the students.
Jiménez-Rodríguez et al. [54]	Spain	Mixed	Evaluate the effects of virtual simulation-based training on developing and cultivating humanization competencies in undergraduate nursing students.	60	23.83	3rd-year Degree in Nursing	DT involved. A virtual platform of online video conferences provided by the university (Blackboard Collaborate LauncherTM) was used to develop six simulated scenarios related to basic healthcare at patients homes.
Létourneau et al. [55]	Canada	Qualitative	Provide a description of nursing students and nurses recommendations aimed at improving the development of humanistic caring.	26	24	1st-, 2nd-, 3rd-year Degree in Nursing	No DT. The selected methodological approach was Benner's (1994) interpretive phenomenology. Aims to understand human experiences in the particular worlds of research participants. In this case, the focus was on nursing students' and nurses' recommendations.
Mega et al. [56]	Brazil	Qualitative	This study aims to understand how literature can influence the humanistic training of medical students, creating a representative model based on the experience.	12	N/A	2nd-year Degree in Nursing	No DT. This research was guided by the methodological framework of Grounded Theory (GT), which aims to understand reality from the perception or meaning that a certain context or object has for the person, generating knowledge, increasing understanding, and providing a significant guide for action.
Moya et al. [57]	Chile	Mixed	The aim of the project consisted of establishing a systematic observation of the subject, taught in the second year of the degree, using the focus group methodology, which aims to foster growth and the realization of human potential.	112	N/A	2nd-year Degree in Nursing	No DT. To establish a systematic observation of second year students using the focus group methodology. About 15 students, seated in a circle together with a facilitator, met once a week (two continuous modules) in order to stimulate self-knowledge and communication with one another.
Sierras-Davó et al. [58]	Spain	Qualitative	To explore the meaning of the experience and knowledge acquired by nursing students from different European countries, trained through previous learning experiences in Healthcare Improvement Science.	21	25.5	Degree in Nursing	No DT. A phenomenological approach based on the Giorgi method was carried out through a group discussion of 21 European students. The analysis was also triangulated with three experienced researchers who broke down the data into eight units of meaning

* EPIN: "Expert Patient Illness Narratives". DT: Digital Technologies used.

The total number of participants in the various trials was 295 students, with the work of Moya et al. [57] in Chile comprising the largest number of participants, concretely 112 students in the second year of their nursing degree (Table 1).

Only in the study by Mega et al. [56] were the participants medical students, while the rest (83.3%) [53–55,57,58] involved students from different nursing courses. One study [53] specifies that the participants in the study were enrolled in the Module in Medical Anthropology. It is important to note that studies were developed in different countries (Table 1).

Finally, regarding the general features of the studies, it should be noted that only three of the six studies (50%) mention the mean age of the participants, which was 23 years old [53], 24 years old [55], and 25 years old [58]. The papers can be organized into several subgroups according to the number of participants and the type of study conducted. On the one hand, the studies involving a semi-structured interview, which is 50% of them [55,56,58], worked with groups of 12-26 participants, while those that worked with a training methodology (33%)—"Expert Patient Illness Narratives"(EPIN) [53] or virtual simulation-based training [54] —using surveys and quasi-experimental studies, evaluated between 60 and 64 participants. The work of [57], whose objective was to develop learning experience through guided group encounters and the use of surveys, involved 112 students. Only one study [54] included digital health strategies to improve humanization (Table 1).

3.3. Assessment of Methodological Quality of Included Studies

Of the six studies analyzed using the Mixed Methods Appraisal Tool (MMTA) [44], three of them (50%) are qualitative studies, while the other three (50%) correspond to mixed methods (see Supplementary Material S2). A detailed analysis of the six studies yields results that are consistent with the question posed and the tools chosen to answer it. The analysis of the results obtained from the corrected data and their interpretation shows consistency among the different studies.

3.4. Outcomes

With regard to the analysis of the results (Table 2), only one of the studies (16.7%) [54] evaluated the level of humanization before/after training, using digital technologies to develop it. Meanwhile, another study (16.7%) [53] evaluated the level of humanization after training.

In one study [53], after training, a self-administered written questionnaire was distributed, which had been developed by the authors specifically for this study, taking into account the learning objectives, skills, and abilities to be acquired by the students. Meanwhile, in another study [54], a validated questionnaire—the Healthcare Professional Humanization Scale (HUMAS)—was used to evaluate the acquisition of humanization competencies by comparing the levels obtained in these competencies at baseline (pre-test) and after the virtual simulation experience (post-test).

The results of the study by Feijoo-Cid et al. [53] show that students valued the use of EPIN in their nursing training, both in terms of expanding their current knowledge and acquiring new nursing skills. The nursing students were satisfied with EPIN as a learning and teaching methodology. On the one hand, they reported an improvement in various aspects of their training, as well as the integration of new knowledge, meaning, applicability of theory and critical reflection. On the other hand, EPIN also offered a new humanized perspective of care.

In this paper, however, it was emphasized that women more frequently found the new learning methodology helpful for expanding their competency "to rationalize the presence of the Health–Illness–Care triad in all groups, societies and historical moments"; therefore, it was established as a learning outcome. Men, however, found that this methodology facilitated the development of critical thinking, as well as the ability to identify situations of normalized or deviant care.

Table 2. Main outcomes of included studies (n = 6).

Authors	Assessment of Prior/Subsequent Level of Humanization	Outcomes	Student Satisfaction	Strengths	Weaknesses
Feijoo-Cid et al. [53]	After training, a self-administered written questionnaire developed by the authors specifically for this study was distributed, taking into account the learning objectives, skills, and abilities to be acquired by the students.	Students valued the use of EPIN in their nursing training, both in terms of expanding their current knowledge and acquiring new nursing skills. Women more frequently found the new learning methodology helpful for expanding their competency.	The results of this study show that nursing students found EPIN satisfactory as a learning and teaching methodology. They reported an improvement to various aspects of their training, as well as the integration of new knowledge, meaning, applicability of theory and critical reflection. On the other hand, EPIN also offered a new humanized perspective of care.	EPIN is presented as a practical, real, truthful, and complete way of applying theoretical concepts learned in the classroom, facilitating the acquisition of a certain level of narrative competence.	This study has some limitations that should be taken into account: - Little evidence of patients being included in the teaching process. - Results must be treated with caution as the questionnaire used was not validated. - The research conducted was based on a local experience, with data from an elective course, which may have had a positive impact on the results due to a high level of student motivation. - The greater proportion of female students (78.1%) may have obscured the perspective of male nurses.
Jiménez-Rodríguez et al. [54]	A validated questionnaire—the Healthcare Professional Humanization Scale (HUMAS)—was used to evaluate the acquisition of humanization competencies by comparing the levels obtained in these competencies at baseline (pre-test) and after the virtual simulation experience (post-test).	Following the virtual simulation sessions, students total scores for levels of humanization improved, as did their competencies in emotional understanding and self-efficacy.	N/A	The use of validated scales included self-efficacy or empathy as humanization competencies.	The main limitation of this study lies in the specific disadvantage of both simulated and real-life nursing video consultations, namely, technical issues. Ensuring adequate network access and the correct functioning of virtual platforms could mitigate these potential problems.
Létourneau et al. [55]	N/A	The phenomenological analysis of participants' recommendations revealed five key themes: (1) pedagogical strategies, (2) educators' approach, (3) considerations in teaching humanistic caring, (4) work overload, and (5) volunteerism and externship.	N/A	A key strength highlighted was the effect of clinical externships on humanistic caring, empathy and compassion.	Participants voiced a wide diversity of recommendations.
Mega et al. [56]	N/A	The model incorporates the idea that literature enhances the humanization of care and is capable of breaking away from the biomedical model.	N/A	Humanization of care was enhanced due to the representative model based on the categories created, of the experience that relays the students' satisfaction with literature in medical education.	There is a need for uniformity in the curriculum, with the aim of organizing the activity and learning opportunities for other students.

Table 2. *Cont.*

Authors	Assessment of Prior/Subsequent Level of Humanization	Outcomes	Student Satisfaction	Strengths	Weaknesses
Moya et al. [57]	N/A	A high proportion viewed the content and experiences in a positive light, claiming that the subject adds value to their life projects, and further reinforces the vocational dimension.	N/A	N/A	Lack of systematization of scientific quality for the evaluation of internal experience processes.
Sierras-Davó et al. [58]	N/A	Nursing empowerment and horizontal health organizations were two of the most recurrent units of meaning, together with professional values such as teamwork and humanization of care.	N/A	The theoretical-practical approach of the sessions and cultural diversity.	Due to the timing of the intervention, there is a lack of long-term results.

Turning to the work of Jiménez-Rodríguez et al. [54], their results show that following the virtual simulation sessions, students' total scores for levels of humanization improved, as did their competencies in emotional understanding and self-efficacy, with large effect sizes in all of them (rB = 0.508, rB = 0.713, and rB = 0.505, respectively). In other words, there was a significant improvement in the acquisition of humanization competencies according to the "Healthcare Professional Humanization Scale" model (HUMAS) [15].

As for the rest of the studies (66.7%) [55–58], none of them included assessments of pre- or post-training knowledge by means of any objective tools. In one study [55], the phenomenological analysis of participants' recommendations revealed five key themes: (1) pedagogical strategies, (2) educators' approach, (3) considerations in teaching human­istic caring, (4) work overload, and (5) volunteerism and externship. In other study [56], the researchers' assessment of the students accounts led them to conclude that the model incorporates the idea that literature enhances the humanization of care and is capable of departing from the biomedical model (Table 2).

In turn, a high percentage of the students who had participated in the research with groups guided [57], viewed the content and experiences in a positive light, claiming that the subject adds value to their life projects, and further reinforces the vocational dimension.

Finally, the training based on learning experiences in "Healthcare Improvement Sci­ence" [58] was valued positively, with empowerment and horizontal health organizations being two of the most recurrent units of meaning, together with professional values such as teamwork and humanization of care (Table 2).

3.5. Strengths and Weaknesses

With regard to the strengths and weaknesses (Table 2), one of the main strengths of the work of Feijoo-Cid et al. [53] refers that the training involved is shown to be a practical, real, truthful, and complete way of applying theoretical concepts learned in the classroom, and therefore facilitates the acquisition of a certain level of narrative competence. Furthermore, Sierras-Davó et al. [58] highlight the theoretical–practical approach of the sessions, in addition to the cultural diversity, as strengths.

Jiménez-Rodríguez et al. [54] see strength in using validated scales for measuring competence in humanization, while using digital technologies for student training. Other study [55] showed a key strength by highlighting the effect of clinical externships on humanistic caring, empathy, and compassion, which has rarely been reported.

The work of Mega et al. [56] addressed humanization of care as being enhanced due to a representative model of the experience—based on their created categories—that relays the students' satisfaction with literature in medical education.

Regarding the weaknesses, one study [53] indicate certain drawbacks that need to be considered: there was little evidence of patients being included in the teaching process; results must be treated with caution as the questionnaire used was not validated; the research conducted was based on a local experience, with data from an elective course, which may have had a positive impact on the results due to a high level of student mo­tivation; and the greater proportion of female students (78.1%) may have obscured the perspective of male nurses. Other limitations would include technical aspects, as in the work of Jiménez-Rodríguez et al. [54], who underline the specific disadvantage of the lack of adequate network access and correct functioning of virtual platforms as the main limitation of their study.

Finally, the qualitative studies [55,57,58] speak of limitations associated with the qualitative study design itself, ranging from the diversity of recommendations given by the participants [55], to the need for uniformity in the curriculum [57], or the timing of the intervention [57]. In this regard, Mega et al. [56] show another limitation to be the lack of systematization in the evaluation of internal experience processes.

4. Discussion

Although previous systematic reviews have discussed the assessment of medical humanities in undergraduate students [59,60], to the best of our knowledge, this is the first systematic review that addresses how education in humanization is delivered to undergraduate health science students using digital technologies.

The main objectives were to determine the educational characteristics of the humanization programs studied, as well as to identify their advantages and limitations, in order to propose a university training model in "the humanization of healthcare" for future health professionals.

In recent decades, the intensified use of technology has improved the prevention, diagnosis, and treatment of diseases, which has generally enhanced medical care, increasing the quality, efficiency, and safety of patient treatment [61].

However, this technification in clinical practice implies, in many cases, a fragmentation in medical specialization, which results in great experts treating illness in a complex and specific manner, under highly specific conditions. Although this should favor and give greater security to the patient, in many cases, the patient feels as though they are seen as a set of symptoms, rather than as an individual with particular needs [33,62].

Automation and standardization of care, together with the fragmentation of work often-limited time and personnel, can lead to depersonalized and, for some patients and their families, dehumanized healthcare [61].

Some studies suggest that the general perception of patients, i.e., their satisfaction with their care, seems to be linked not only to the technical skills of the professionals treating them, the conditions of care in terms of waiting time, the total time in which they receive care, and the amount of information received, but also to a certain "humanistic" attitude exhibited by healthcare personnel [61].

In view of this demand, it is worth asking whether this "certain humanistic attitude" [61] can be taught and, if so, how it could be included in the curriculum of health sciences degrees, using digital health strategies. In other words, how should be taught the treatment of patients as people, in an increasingly digitalized healthcare environment?

Subjects in "humanization of healthcare"—defined as a mental, emotional, and moral attitude that forces the professional to continually rethink they own mental framework, and to reshape intervention habits so that they are oriented towards the good of the patient (a vulnerable person in need of care) [52]—allow for the identification of parameters such as the protection of patient values (autonomy, confidentiality, dignity), personalized treatment, and active listening, to be the focus of students' training.

The studies discussed, which all fall under the umbrella concept of "humanization of healthcare", involved different training strategies. However, they share common ground in focusing on an experience that aims to change the student's mental and emotional patterns so that their practice is oriented towards the patient's values as a result of their own personal and professional development due to these experiences.

The development of critical thinking about what the areas of professional practice are, the concepts on which it pivots (e.g., what is health, what is disease), the social implications of clinical–medical proceedings, and the mutual interdependence between social normativity and medical practice all imply the deliberate shaping of the student's thinking about how they will be as a health professional and, on a deeper level, what kind of health professional they want to be.

In the studies included, there is discussion of narrative training strategies [53] and phenomenological training strategies [55,58] as tools for cognitive learning of the humanistic competence of caregiving. Virtual simulation may be seen in a similar light [54]. The objective of these studies is to evaluate the effects of this kind of training on the development and honing of humanization competencies. In other cases [56,57], the research evaluates the competencies acquired in subjects specific to the degrees taken by students who have already developed their own curricular strategies, either through literature [56] or through

guided encounter groups, as a method of enabling them to recognize themselves and others in their health–illness process [57].

This evidences the strong link between the idea of "humanization of healthcare" and the idea of care, namely, the vulnerability of the patient. This is reinforced by the health professional's own attitude towards training in this context. As an example, nursing students, i.e., those closest to care-based services who used the Expert Patient Illness Narratives (EPIN) methodology [53], were proactive in terms of improving different aspects of their training and integrating new knowledge, meaning, and applicability of theory, as well as in terms of strong critical reflection.

From the perspective of medical students accustomed to intrinsically practical competencies, humanities do not provide useful skills for clinical practice; they may understand and value the content but do not recognize its significance for professionalization [63]. As opposed to scientific, empirical evidence, which is built on medical–epidemiological knowledge, and which becomes a legitimizing factor for intervention on patients [64], the concept of "medical humanities" refers to a conscious habit of thought, a more humane and at the same time less tangible type of knowledge that is directly undervalued as "evidence" [65].

The belief that some professors of humanistic disciplines do not understand the reali-ty of medical practice, and that reflection on values is intrusive, unnecessary, and has little real effect on their empathy as professionals, has been raised [66]. In this regard, the differences according to gender as revealed by the answers to the training questionnaires from the methodology "Expert Patient Illness Narratives"(EPIN) are considered to be of particular importance [53].

Thus, women, who comprised the majority in the trial (88%), more frequently found that the new learning methodology helps them to "develop the competence to rationalize the presence of the Health–Illness–Care triad in all groups, societies and historical moments", thus being solidified as a learning outcome; while the men who participated in the study—only 22%—stated that the methodology helped them to "develop critical thinking and reasoning"; therefore, the ability to "identify normalized or deviant care situations" was established as a learning outcome. Very few students considered the methodology to be helpful in "incorporating therapeutics as a unit of analysis in health–illness–care processes". This remains a representation of the more rational and technological position of males (in a similar way to medical students), coherent with the positions presented by Shapiro [66].

The impact of all these strategies is evidenced by the level of satisfaction shown by the participants in the training sessions. Létourneau et al. [55] highlight the importance that nursing students placed on enhancing the development of humanistic caring as a core competency in education programs. Mega et al. [56] conclude that literature enhances the humanization of care and is able to establish a break from the biomedical model. In turn, a high percentage of the students who participated in the research with groups guided by facilitators valued the content and experiences positively [57], claiming that the subject that formed part of the study contributed to their life projects, and also reinforced the vocational dimension.

Training based on learning experiences in "Healthcare Improvement Science" was positively valued by the students in their training in humanization, with nursing empowerment and horizontal healthcare organizations being two of the most recurrent units of meaning, together with professional values such as teamwork and humanization in care [58].

The results of the questionnaire evaluations are even more significant. The study by Feijoo-Cid et al. [53] shows that nursing students found the Expert Patient Illness Narratives (EPIN) methodology satisfactory as a teaching and learning method. On the one hand, they described improvements in different areas of their training and the integration of new knowledge, meaning, applicability of theory, and critical reflection; on the other hand, EPIN also provided them with a new humanized perspective on care.

Finally, Jiménez-Rodríguez et al. [54] reported an increase in total humanization scores in post-testing after the sessions, quantified as statistically significant differences in the dimensions of emotional understanding and self-efficacy, as well as in the total score for the humanization scale (self-efficacy, sociability, affection, emotional understanding, and optimism). Surprisingly, it was the only study that used digital technologies to develop humanization training. In this study, there was a significant improvement in the acquisition of humanization competencies according to the model of the "Healthcare Professional Humanization Scale" (HUMAS) [13,15].

This outcome reveals the potential of the different strategies used, and on this basis, it allowed the authors to offer a training program in humanization for healthcare students. Given that much of medical education is currently framed in terms of competencies [67], it is argued that the humanization curriculum should be designed as an overarching competency, i.e., to be taught through the acquisition of other types of skills. As such, competency in humanization may be measured in a similar way to other outcomes in the medical and health sciences curriculum.

This program, which uses the HUMAS model [13,15] as its backbone, is innovative because it has been adapted to the university environment, especially considering that HUMAS was initially conceived as a humanization protocol for health professionals, instead of university students. Furthermore, through its scale, it becomes a tool that will allow for the evaluation of the competencies acquired by university students.

Thus, according to the dimensions contemplated by HUMAS [13,15], this training proposal would be aimed at the acquisition of the following skills, all of which are considered to be powerful recontextualization tools.

Optimistic disposition: This would be trained through "Expert Patient Illness Narratives" [53], by looking at accounts from patients who have witnessed positive aspects in the course of their illness, as well as accounts given by health professionals who have struggled in adverse situations, such as those that occurred during COVID-19.

Sociability: This would be trained through mindfulness techniques, self-reflection, and social skills, since they have proven useful for health professionals to recognize, regulate and demonstrate empathy [68,69].

Emotional understanding: Students would be trained through reading literary texts, which is an idea taken from one of the studies discussed [56] wherein literary texts were used to train humanization. Thus, Knight's text [70] would be used because she analyzes the model of the humanization of healthcare previously proposed by another author [71]. Furthermore, real patients would be included, who would observe the students' performance in various real cases in order to evaluate them in terms of their competency in "emotional understanding". As such, "involving patients in teaching and assessment" has previously been identified as important for improving person-centeredness [72].

Self-efficacy: Training would be provided through workshops that foster emotional intelligence, understood as the capacity for successful achievement and well-being.

Affection: This would be trained through problem-solving therapy [73], as well as through teaching different effective coping techniques and self-management of negative emotions through digital health technologies such as virtual or mixed reality.

The scarcity of standardized protocols which involve digital health strategies to train humanization in healthcare professionals highlights that it could be an innovative and promising research topic. Digital health strategies could be useful to widely disseminate humanization training to expert groups worldwide. Perhaps this kind of training, developed through digital health tools, could represent a fast way of disseminating successful humanization protocols that could become a productive and efficient practice to include in the undergraduate healthcare students' curriculum, enhancing their digital health literacy at the same time.

Limitations

There were even fewer studies that combine humanization and digital health strategies. Because only six studies were finally included in this systematic review, and they were developed in different countries, the conclusions must therefore be interpreted with caution.

Similar to previous studies [28], the number of participants in the included studies varied widely, ranging from 12 [56] to 112 [57]. There is a lack of studies involving students as future healthcare agents, who will have to provide care, based on the humanization of healthcare. This is one of the most important limitations found, and it is further exacerbated by the lack of studies conducted with non-nursing students.

In the present analysis, except for the case of Mega et al. [56], which involved medical students, all the studies involved nursing students [53–55,57,58].

5. Conclusions

There is a clear lack of university curricula that incorporate education in humanization for future health professionals involving digital technology, at least that are subject to empirical validation and therefore published in a journal paper. Greater focus on the training of future health professionals is needed in order to guarantee that they start their professional careers based on the precept of medical humanities.

As a second conclusion, this scarcity of university curricula incorporating humanization education is sustained by methodological and substantive problems.

From a methodological point of view, it is necessary to design curricula that include tools that allow for the development of skills culminating in the acquisition of competencies by university students that can be evaluated by the system. For this purpose, a training program has been provided as a training strategy to improve skills and competencies, based on HUMAS [13,15].

Finally, there is a need for more studies on medical graduates, and also studies involving more balanced groups of female and male participants, in order to analyze and gain a deeper understanding of the reason for this perception of "soft skills" as a prior step to the development of strategies for the revaluation of "health humanities". In this regard, it is important to highlight the need to develop awareness programs for undergraduate students so that they understand the influence of "soft skills" in their future professional practice.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/technologies11040088/s1, Supplementary Material S1: Study protocol; Supplementary Material S2: Quality assessment of included studies; Supplementary Material S3: Appraisal of included educational interventions; Supplementary Material S4: Reasons for studies' exclusion.

Author Contributions: Conceptualization, M.G.-M. and E.R.; methodology, E.R.; formal analysis, M.G.-M.; investigation, M.G.-M.; resources, M.G.-M.; data curation, M.G.-M. and E.R.; writing—original draft preparation, E.R. and M.G.-M.; writing—review and editing, M.G.-M., C.M.-V., A.P.-M. and E.R.; visualization, M.G.-M., C.M.-V., A.P.-M. and E.R.; supervision, E.R.; project administration, E.R.; funding acquisition, A.P.-M. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the grant "MPFI20AP" from the Universidad San Pablo CEU, CEU Universities (Madrid, Spain).

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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