



Health Games in Brazil

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Abstract. Although based on a growing market and popular means of leisure and communication, serious games for health in Brazil still depend highly on public funding and mostly on individual initiatives from researchers and developers. This paper proposes the consolidation of Games and Health as a field of work and research, discussing its origins and developments in Brazil, the challenges yet to tackle and the strategies proposed by health games researchers and developers for that end. The development of serious games for health in Brazil has originated in distinct areas, such as Computation, Education and Design and Arts and followed different paths. Exergames, games as therapy and games for health communication and participation are the main directions pursued nowadays. The main challenges are the achievement of funding to develop projects; the lack of records about the games and tests produced; the insufficient testing still shown by the researches published; the lack of common vocabulary among researchers and developers across the country and the medicalization that still informs the production of many games for health, reducing the scope of what could be achieved on the field. As strategies, this work proposes the production of three open and collaborative initiatives: a common vocabulary; a guide with best practices in Health Game Research and Development; an open database of finished and ongoing projects, in order to facilitate partnerships.

Keywords: Health games · Serious games for health · Exergames · Games and health · Public health · Health communication and games

1 Introduction

Despite being one of the biggest markets for digital games, Brazil still lacks a consolidated area of serious games development. This situation also applies to games dealing with health, which, until some years ago, were developed by the isolated efforts of individuals. In the last years, this scenario has been changing, with the creation of more organized initiatives around these themes that, we argue, makes possible to define a field of Games and Health. In this work, we present a discussion about the current situation of health games in Brazil, detailing the challenges that still hinder the field. For this, we will discuss some particular aspects of the Health field in Brazil and the potential place for games in it, present a brief origin of the health games in the country,

and then detail the latest developments. Then we will discuss the challenges to be overcome and, finally, we will point out some initiatives intended to advance the field of Games and Health in the years to come, as they are currently understood by game researchers and health professionals in Brazil.

1.1 Public Health in Brazil

Most of the health investments in Brazil come from the Brazilian government, so, in order to discuss games for health, it is necessary first to present the specific aspects that surround public health in Brazil, since its size, huge variance of regions, habits, and cultures present unique challenges to government health policies. In addition, Brazil's historical development created both an enormous cultural diversity and many inequalities among different social groups and regions. Such variation is a complicating factor in health planning done by the State. Practices appropriate to certain areas do not apply to many others; resources and programs effective in large urban areas often become impractical or have to meet specific needs in cities that are smaller or more distant from the major centers. Such difficulties are addressed by two of the organizational principles governing Brazil's unified health system (SUS – Sistema Único de Saúde—Unified Health System) - “regionalization” and “hierarchy”. According to these principles, services should be organized at increasing levels of complexity according to each geographic area and planned according to epidemiological criteria and with knowledge of the population to be served [1].

The country faces typical problems such as neglected diseases and endemic tropical diseases, for which the majority of research and development investments come from charities or government [2, 3]. This situation highlights the importance of the social determinants of health, defined as “[...] the social, economic, cultural, ethnic/racial, psychological and behavioral influencing the occurrence of health problems and their risk factors in the population” [4]. Public health in Brazil aims at taking into account the broader conditions that surround the individual and society, rather than considering the issue as merely the biological control of specific diseases. In the last fifteen years, there were many efforts to reduce social inequalities, aiming to provide equal access to health and understanding health as a set of factors broader than the physical well-being of the population [4].

The Brazilian unified health system was created to serve the entire population of the country and is one of the largest public health systems in the world. Despite historically limited funding, SUS operates under the principles of universality (which states that health is everyone's right), comprehensiveness (health involves both healing and prevention, individual and collective) and equity (equal opportunities to use the system). Social participation is a guideline that results and at the same time gives meaning to all other guidelines and principles of SUS. It states that society must be active in the planning, implementation, and monitoring of public health policies [5]. Understanding that health is a right for everyone and duty of the state, SUS provides comprehensive medical and health care to all citizens in Brazil. The expanded concept of health that SUS adopts guarantees citizens from outpatient care to organ transplants. It is, therefore, an important responsibility of the Brazilian state to develop health initiatives in support of all sections of the population [6].

1.2 The Role of Health Communication

Within this panorama, it is understandable the great importance given by Brazilian government communication channels to health communication strategies, trying to provide to various sectors of society accurate information for effective health promotion and maintenance. Such communication efforts occur in many different formats and media, using print, radio and television, and, lately, new media like web pages, blogs and social networks (Facebook, Youtube, Twitter, etc...). The contents include epidemiological information on disease prevention, but also information about epidemics and guidelines for a better quality of life for citizens, like the blog from Brazil's Ministry of Health [7].

Despite the intentions of providing democratic access to health information, communication campaigns on health typically tend to be highly centralized, devoid of cultural references, which makes them less approachable to many groups in a country as diverse as Brazil. The result is that such groups end up not being adequately addressed on health policies and communication practices. Moreover, even when making use of social media, health communication initiatives tend to be highly prescriptive, focusing on norms and behaviors to be adopted by the population [5].

One of the groups often affected by these inadequacies is young people and adolescents, who represent a big part of Brazil's population (over 26% of the population is between 10 and 24 years) and tend to be much affected by problems of health such as sexually transmitted infections, including AIDS. This fact is even worse considering that they tend to be reluctant to look for the assistance of health services and also tend to be resistant to more traditional methods used in health communication [8].

Therefore, it is relevant to the search for new ways to address these gaps in health communication for the population, especially for youth and adolescents, so that the health of Brazilian society can be improved as a whole. We believe that computer games may fulfill a role in health communication, through their inherent characteristics as a medium combining entertainment and participation.

1.3 New Media and Games

New media, in general, have been very successful in Brazil. Despite the country's shortcomings in technological infrastructure, social equality and media literacy, web pages, blogs, social networks, and instant messengers quickly became part of the population's daily life. By the early eighties, digital games culture and consumption grew to be a trend in Brazilian big cities, boosted by pop-culture references, arcades dissemination and 8-bit consoles smuggled from the United States of America. In that time, Brazil had a political regime keen to exclusively local technological production, biased to market reserve, with consequences on prices and popular access [9]. Unable to fulfill the inner demand, piracy of hardware and software became rampant till later 2000s, when easy access and other gaming business models (especially *massively multiplayer online*, *free-to-play* and *pay-what-you-want* games) seem to made illegal acquisition practices too cumbersome for many players. The content value of online games and socialization between gamers has changed the mentality of some studios,

which changed from DRM - Digital Rights Management - practices to investments on marketing, quality, and innovative material to attract low-income consumers [10].

Due to piracy and personal computing promotion, gaming and related technological interests rapidly became rooted in juvenile imagination during the nineties. When the Internet and its promising World Wide Web hooked Brazilians by its novelty, academic fields showed special receptivity to digital game study and production, although a formal industry and market are still taking shape. However, in a similar way as with health communication, the access to digital media is also not equally distributed, which is reflected by the latest reports made by the federal government, which show southeast and south regions concentrating more than 67% of the 375 enterprises related, with 206% growth on formal companies since 2014 [11].

Besides consumption and participation, digital games in Brazil stand as a powerful convergence nexus to communication and experience sharing. The Youtube streaming phenomenon of digital influencers mirrors popular interests on trending massive games like *Fortnite* [12] and *League of Legends* [13], both with great appeal among children, teenagers and young adults. E-sports pose as a new research ground for a plethora of disciplines, from psychology to ergonomics, amid health. It's a common concern, both for researchers and producers, the growing interest in games and related activities not just as forms of expression, but as channels.

The Brazilian government has been using new media, such as social networks, as channels to provide health communication for the population. However, even within the typically less hierarchical structure of the internet, most of the communication efforts took the old formats of a centralized discourse, unidirectional and devoid of cultural references, without a real dialogue with the public [14].

On the other hand, digital games were never used consistently for health communication in Brazil. Other than a few official initiatives, mostly executed by advertising agencies in the government's service, it seems that games were never taken seriously into consideration by health managers. Despite the efforts of many isolated individuals, most of them health researchers and practitioners, and even with a relevant number of gamers in the country, digital games remain an almost untapped channel for public health communication [14].

2 Origins of Serious Games in Brazil

The lack of the Brazilian government's attention to games for health did not impede the emergence of several initiatives in the area. The majority of such efforts were made by researchers and professors, not directly connected to the government structure. These games, in general, tended to be part of bigger projects in different fields, funded through research grants [15].

The dependency on public grants is both a blessing and a misfortune: in spite of the fact that games are seen as fringe media, deserving investigation, researchers and professors often lack experience on digital game production and knowledge about the gamers' interests and interactivity core concepts. As a result, they tend to rely on superficial premises, valuing content more than engagement and disregarding both

sensory and cognitively rewarding feedback. This results in games very distant from market bestsellers, which fail to engage relevant interest from players.

Perceived as promising interactive solutions for a multitude of educational problems and situations, games development must be addressed as an intertwined and complex process, with equal concerns to narrative (their argumentative perspective), aesthetics (their visual appeal) and mechanics (their rules systems modulation), depending on teacher as well as designer responsibilities [16].

This complex structure of games helps to explain health games' first initiatives. Due to their intrinsic interdisciplinary nature, such projects emerged from different areas of knowledge, which three of the main are: Computation, Education and Design.

2.1 Computation

One of the first academic groups to show interest in games were professors and students of Computation courses. Facing game technology as a challenging subject to hone their skills, these groups started to develop games at first as simple investigation projects. Soon, however, they were developing more ambitious projects, trying to create full games. Although most of such projects dealt with entertainment games, eventually people started to create games with other objectives. In this context emerged some games aiming to be more than entertainment, tackling serious themes, like education and health [17]. Despite being made with technical care, often such games lacked the participation of health specialists and, hence, validated information about health. Nonetheless, the Computation field still represents one of the main areas of production of serious games, as can be seen on the works annually presented at SBGames (Brazilian Symposium on Computer Games and Digital Entertainment), Brazil's main game conference [17].

2.2 Education

Another lineage comes from the Education field, where educators, starting from the principles laid out by early masters like Piaget, started to investigate how this new kind of play—the digital games—could be applied in service of better educational outcomes. This group was the main pursuer of the idea of educational games, proposing games both as part of the regular school curriculum and as additional activities. In general, such projects were directed to children and youth, and, since the objective of these educators was to enhance learning, their games tended to focus on the content aspect, sometimes forgetting the specificities of the game media [18]. Education remains a very active field regarding research and development of serious games, as proved by the creation, in 2018, of a track dedicated to Education on the aforementioned SBGames (Brazilian Symposium on Computer Games and Digital Entertainment)¹ which included 33 full papers and 43 short papers.

¹ <https://www.sbgames.org/sbgames2018/educacao>.

2.3 Design and Arts

The third area where games entered academia in Brazil can be roughly described as Design and Arts. These initiatives tended to be similar to the ones in the Computation field, starting with the interest of students, professors, and researchers in creating art for digital games. Different from those developers at the Education field, who tended to reflect more deeply about the medium, designers and artists tended to assume a very pragmatic view, even in their academic production, focusing on how-to articles and similar works. Comparatively, this field produced less serious games than Education [17].

The Communication and Humanities areas, despite coming relatively later, had a great development in the last years, focusing less on developing games, and more on their social aspects, their specific language and meaning-making processes and the people who play them. It is possible to say that these works tend to be closer to the field of Game Studies, as it has been understood in Europe and the United States. Much of such investigative work aims to better understand and use serious games [17].

3 Games and Health

As previously mentioned, research and development of serious games in Brazil emerged independently in several different areas. As such, the current trends in the country reflect these multiple facets.

Nowadays, the field of health games in Brazil is as diverse as the aspects they can tackle, considering an amplified concept of health, which is the basis of SUS. Their public can range from professionals to students and citizens, and among these, go from children to elderly people [19]. The purpose of the games can cover health promotion, diagnosis, treatment or rehabilitation, and areas such as Psychology, Speech Therapy, Odontology, Physiotherapy, and many others [20], following international trends in the field. Together, they suggest that it is already possible to identify a field dealing both with games and health in Brazil.

We propose “Games and Health” as the name of such field, understanding that neither “Health” nor “Games” have precedence over the other (or is merely a tool for the other), but they work in close articulation. This way, we can consider that this field comprehends phenomena that range from the therapeutic use of games to game-based health learning, including health gamification and even the study of health themes in entertainment games. It is both an essentially interdisciplinary and deliberately inclusive field, as both Health and Games tend to be. In the last few years, it is possible to point out some relevant developments in such field.

3.1 Exergames

The interest in games interlaced with physical activity is growing in Brazil. Currently, the scientific literature proposes different descriptors to refer to video game consoles that require users to move their bodies to meet the challenges proposed by the games.

Among them, the descriptors exergame, exergaming, active video game and active video gaming prevail [21].

Investigations conducted using this kind of games as an intervention strategy aim, in their majority, to observe outcomes related to rehabilitation and treatment of motor and cognitive pathologies in different age groups, as well as to observe the potential of these games in health promotion. Under the health promotion perspective, the understanding of the behavior of physiological and psychological variables such as intensity of physical activity, energy expenditure, oxygen consumption, heart rate and motivation for adherence and permanence in their practice, have been the predominant interest on the part of researchers [22–24].

The current diversity of descriptors used by the scientific community to refer to such games results in a semantic problem, besides suggesting a lack of consensus about its use, which may result in the inference of mistaken evidence about such outcomes. In the wake of these observations, in Brazil, investigations conducted using exergames have tended to reproduce the international movement, observing the same outcomes and above all, fully copying the international descriptors [25–28].

However, researches focusing on such games still are incipient in Brazil, due to the approaches of researchers of different expertise, particularly education and computation. In order to advance research in Games and Health, there is a growing concern to promote forums and opportunities for dialogue, with the intention of fostering a better semantic organization of descriptors. Such an organization is even more necessary because of the process of translating terms into English. Recently, Braga [29] proposed the use of the descriptor Active Virtual Games (JVA) as a translation and semantic definition of internationally used descriptors. One of the important considerations for this proposition refers to the differentiation between the terms physical activity and physical exercise, already well established in the national and international literature [30, 31].

Despite this advance, the investigations with JVA in Brazil are still incipient. Most of the research carried out in North America, Europe, Asia, and Oceania takes place in community recreation centers and educational institutions, with government investments making this innovative format of games more widely available to the society. This is very far from the political interest and economic capabilities of the Brazilian government.

3.2 Games as Therapy

In another front, there are some promising projects using games in therapy. Health professionals at INTO (National Institute of Traumatology and Orthopedics) have been developing methods for using commercial motion detection consoles, like Nintendo Wii and Microsoft Kinect, as an alternative therapy for patients. In this hospital, most of the patients who suffered amputations had much difficulty in adapting to the use of prosthetics. Through trial and error, the health professionals discovered that sessions of motion detection-based games were beneficial to the patients' training, resulting in a much faster adaptation to the use of their prosthetics. Physiotherapy sessions that incorporate practice with commercial off-the-shelf games proved to be both efficient and enjoyable to the patients, opening new and interesting venues for further

developments in therapy using games. Despite not using health games in the strict sense, this initiative is relevant as a proof of the usefulness of games for health [32]. Initiatives like this one are slowly being adopted in other Brazilian hospitals, both public and private.

Another initiative occurred in the research on pain reduction. Professionals from a public university hospital in Brazil realized that patients subjected to solid organ transplantation and bone marrow transplantation demanded fewer analgesic drugs when they were playing video games [33]. These professionals started researching and developing methods for using digital games and mobile devices for pain control in adult and children patients. Tests comparing patients who played and who didn't play showed digital games as a beneficial practice for pain reduction. This research contributed to making changes on care practices, including the introduction of other ludic activities such as music and movies. Since the access to digital devices can sometimes be a bit difficult and there are patients who refuse to try them, the next research phases will include board games as potential ludic options for pain reduction.

In addition, new immersive VR techniques are an important topic of interest, both to study human cognition and to explore ways to increase the illusion of entering virtual worlds [34]. Recently, a Brazilian vaccine clinic used these techniques to create a virtual reality experience designed to distract children from the pain during vaccination. The VR immerses the child in a fantasy world and her physical sensations (the pain of the injection and the cold alcohol-embedded cotton afterward) are explained as elements of the narrative. This way, rather than simply distracting the child from the needle, the story of the virtual world attaches a new meaning to the sting sensation [35]. Despite not being a game, strictly speaking, this initiative uses virtual reality and digital storytelling, techniques widely used in the digital games field.

3.3 Games for Health Communication and Participation

If the tendencies above reflect a stricter and more traditional understanding of health, other initiatives are emerging, with a more comprehensive view, including mental health, social determinants of health and public health. There are many inspiring games for health communication, education, and promotion, created or in development in several universities and game studios in Brazil. Until recently, however, the field lacked the official support of a public health institution, which started to change in 2016, as Oswaldo Cruz Foundation, the biggest Public health institution in Brazil, institutionally acknowledged the need to tackle health games as a public policy.

In that year, Oswaldo Cruz Foundation created a Games and Health Center, with the purpose of researching and developing games for public health. In 2017, the same institution conceded a grant to seven selected projects of health games. This initiative was specifically targeted to the foundation's employees, aiming to reveal their interest and skills in working on the subject. The development of these health games should finish in 2019 and their publication paves the way to definitively establishing health games as one of the institution's areas of research and development.

Another milestone was the publication, in 2018, of the book "The Game as a Health Practice" [32], the first about this theme in Brazil and the first book about games published by Editora Fiocruz, the publishing house of Oswaldo Cruz Foundation. This

book does not cover the use of games for health in the physiological sense only, but also considering health in its many dimensions, like mental health, social determinants of health and even as means of political participation, explaining possible uses and describing real cases. It is not directed towards academics but aims to present health games and similar initiatives to health practitioners, thus helping to spread the knowledge about Games and Health among the people who more directly deal with and assist the Brazilian population.

Such initiatives mark, perhaps, the first time a public health institution officially endorses and even fosters the Games and Health field in Brazil. Due to the size and importance of Oswaldo Cruz Foundation to the field of Health in Brazil, its presence in all of the country's states, and its close connection with Brazilian Ministry of Health, it is an encouraging development to the field of Games and Health.

4 Challenges

Despite the thriving tendencies outlined above, there are many challenges for a broader development and adoption of games for health in Brazil. In November of 2018, during the 3rd Workshop of Games and Health (part of the Brazilian Symposium on Games and Digital Entertainment - SBGames, the biggest game conference in Latin America), researchers, professors, and health practitioners gathered to discuss the field of Games and Health, highlighting the most common obstacles.

4.1 Funding

The report on the Mapping of the Brazilian and Global Digital Games Industry, based on the first Census of the Brazilian Digital Games Industry [36] showed that Brazilian game companies have, as main sources of funding, the companies' own resources, their families or other individuals (64.7%), incubators (26.3%) and non-reimbursable funds (18.8%), like governmental edicts and funding from public development foundations. This points to the fact that research projects and universities are very important to the game industry in Brazil, especially when it concerns games for health. There are also associations with specific agendas that sometimes invest in such projects, but the Ministry of Health itself still rarely explores that medium [36].

The lack of reliable funding is one of the major problems pointed out by researchers. As previously described, many projects developed in Games and Health are initiatives of professors and researchers from universities, who mostly depend on public grants [15]. There is great competition with other areas of knowledge, including more established ones, which tend to obtain more funding. In addition, in many cases, funding agencies offer one-instance only grants, making it difficult to create and maintain initiatives for longer periods. It is not uncommon to see the maintenance of successful health games being interrupted due to lack of resources.

Despite that, the field is growing. In the 2013 Census, the industry declared that only 5 of the games developed, 0,4% of the total, were related to health, involving 5 companies - only 3,8% of the respondents [15]; while in 2017, there were 24 games

declared (2,5%), by 20 companies (6,3%), which indicates a growth in this market, even if there were games produced in total, in that year [11].

Meanwhile, resources for Science & Technology in Brazil have been diminishing in the last years, going from R\$ 8,732 billion in 2017 to R\$ 7,823 billion in 2018, of which only R\$ 2,192 billion were ultimately available [37]. In December 2018, the Ministry of Culture, together with Ancine (Brazil's National Agency for Cinema) announced a line of investment of R\$ 45,2 million, which will be disputed by the companies now growing in the area of games in Brazil, and by researchers as well [38]. However, the new government that took office in January of 2019 has not made any specific remarks about serious games so far, prompting researchers to look for alternative ways to fund health game projects.

4.2 Lack of Records

Another problem that harms the progress of health games in Brazil is the lack of reliable records. In general, it is very difficult to notice a new health game, unless it becomes the subject of a journal article or conference paper.

A study from 2012 in two Brazilian academic events on the area of Informatics and Health found that the production about health games from 2002 to 2011 was still incipient - from a total of 1848, only 12 discussed serious games for health [20]. Another research, conducted in three different academic databases, with the descriptors "videogame", "game", "serious game" and "educational game", Deguirmendjian et al. [19] found, among 2225 papers in Portuguese, only 23 that discussed serious games for health.

There are still few events in Brazil dedicated specifically to the area of serious games for health. One of them is the Health in Game seminars, promoted by the Oswaldo Cruz Foundation (in 2011, 2012, 2016). There is also the Games and Health Workshop, within the scope of SBGames. Many times, research about health games are published in other academic events that include serious games, especially in the areas of Computation, Informatics, Distance Education, Educational Technology, Educational Games or Communication [36]. This limits the dialogue spaces between researchers and developers, as their researches become scattered across events and areas.

Moreover, many projects are not published at all as academic research, therefore failing to provide feedback and data that could help many other projects and the field itself. Even when there is a publication, often the game in question is not detailed enough in the paper, which hinders the evolution of knowledge in the field. A recent study analyzed the health games mentioned in the conference papers of the aforementioned SBGames, revealing that many papers published about health games lack descriptions of the game mechanics and rules of the games, focusing mostly in the written and visual content [39].

4.3 Insufficient Testing

In many cases, the resources obtained for the projects barely allow the development of the games, making it difficult to conduct a proper evaluation of the final product, which

is published without adequate tests for its contents and sometimes even for its basic workings. However, in other cases, the lack of testing cannot be blamed on lack of funds. Some health game developers seem to disregard adequate testing. Indeed, many published articles detailing games for health fail to provide testing data, focusing more on the developing stages of the games or even limiting themselves to presenting its content.

In the research of Duarte et al. [20], only one of the papers analyzed presented the validation of the use of a serious game, while 11 of them discussed only processes of development, therefore were descriptive papers, with a tendency for observation and experimental studies.

The integrative review conducted by Deguirmendjian et al. [19] found a slightly different scenario: 86,9% of the 23 papers mentioned some type of evaluation, whether structural, functional or of pedagogical or motivational suitability to the public, or even physical evaluations of players before and after playing. Those that did not present a validation process mentioned the need for future validation of quality and impact. Even though this research studied papers from more diverse sources, most of the papers were found in more recent years, especially in 2011, 2012, 2013 and 2015 [19], which points to a slight tendency towards the expansion of validation practices within the field. Nevertheless, the research identified space for theoretical deepening in the papers analyzed.

This situation creates more difficulties in the establishment of best practices in the field. Moreover, in the particular case of health games, the lack of or insufficient testing is even more damaging, since, in the field of Health, it is necessary to conduct careful trials for assessing the benefits of the interventions, an important requirement for health games gaining legitimacy before health practitioners and managers in Brazil, as it has happened abroad [40].

4.4 Lack of Common Vocabulary

This problem leads to research that sometimes falls back on the re-definition of terms that were already defined and being used by other researchers, as well as the misuse of terms and concepts, returning to questions that already have been resolved and misleading other researchers and developers instead of being used for advancing and deepening the research and development of health games [39].

The very definition of health games presented in the 2017 Census of the Industry as “a game whose main objective is the prevention and/or treatment of physical conditions” [11] shows a lack of understanding the complexity of the Health field. It implies health as something limited to the physical body, disregarding the mental, economic and social factors that surround the concept [4].

In addition, since health game researchers come from different academic roots, each one brings her own way to name and refer to the same phenomena, making more difficult to share insights, establish cooperation and build a common knowledge base [39].

4.5 Medicalization

A problem that is not unique to health games, but can be aggravated by them, is its use for the interests of the pharmaceutical industry or health services, not exactly for the benefit of human health. It is a distortion of values of Medicine, health, and well-being, which can be called “medicalization” and “healthicization” [41]. An analysis of publications regarding the production of health games in Brazil indicated that the problem of in-game medicalization and healthicization seems to be related to the reproduction of hegemonic conceptions of health and medical interventions without a critical examination of the health approach used [17]. The problem is associated with an instrumental conception of the games themselves, designed merely as a channel for the unilateral transmission of knowledge, but incapable of promoting community participation.

Out of the field of serious games, in relation to entertainment games, medicalization manifested itself by the inclusion of “game disorder” in the 11th revision of the International Classification of Diseases by the World Health Organization. This inclusion has been criticized by many scholars, who have pointed out serious problems with the initiative, such as lack of reliable research for such classification, confusion of a symptom (irregular use of games) with its psychological causes and its use as a disguised method for oppressing and controlling vulnerable groups like children and youth [42].

As a whole, there is still a tendency to consider health as something that merely affects the body [11], or even as something that emerges from or depends on medical practice. It is safe to argue that this inhibits the development of games that explore the complexities of human health, including social, economic and political factors that influence health [42, 43]. Despite not being so visible as the other aforementioned challenges, it is necessary to avoid the medicalization perspective, since it imposes many limits to the field of Games and Health.

5 Looking Ahead

Each of the challenges mentioned above is far more complex than it is possible to detail in this work, requiring cooperation among those who desire to see the advancement of the field of Games and Health, in order to benefit society. These issues were heavily discussed in the 3rd Workshop of Games and Health, during the SBGames 2018. Speakers and the audience, composed mostly by game researchers and health professionals, engaged in a lively debate looking for ways to overcome such problems, outlining some initiatives to be pursued in the years to come.

It became clear, even before the first presentations, that the lack of a common vocabulary was a significative hindrance for the advancement of the field. In many cases, people described similar phenomena using different terms. Or worse, often a term had widely different meanings for different researchers, creating all sort of misinformation. For the participants present at the event, an agreement was reached on the fact that creating a common vocabulary, built upon the knowledge and research already developed in many universities, companies and research institutes, could strengthen the

Health Games field in Brazil, in alignment with the currents of thought and research abroad.

Coupled with a common vocabulary, the field of Games and Health also needs a set of standard procedures, a guide for good practices in Health Game Research and Development. Often people beginning in the field do not understand the need or reason behind some practices, like informed consent terms, submission to Ethics committees, procedural rhetoric, usability tests, and clinical trials. Assembling good practices based on research already published could provide a starting place for researchers, designers, and developers eager to create projects of games for health that consider all specificities as well as the needs for testing and recording practices and results.

Finally, the third initiative proposed was the creation of an open database for all projects in the field of Games and Health. It was clear to all participants that there are much more initiatives than one can possibly follow or even discover. Since Games and Health is a field intrinsically interdisciplinary and Brazil is a country so big and diverse, health games emerge in a multiplicity of places, and many end without notice and record, hampering the progress in the field. A database of completed and ongoing projects would draw researchers, designers, and developers closer, therefore helping to strengthen the projects developed, both from the research and the game design perspectives. It would also help to foster partnerships, which in turn would make the search for funding easier.

These three initiatives were collectively built in the first moment when a significant number of Brazilian game researchers, scholars, health professionals, and developers, representing many institutions, gathered together to discuss the situation of this newborn field of Games and Health, and plan ahead ways to evolve it. The work on these three fronts already started and, despite being directed by some volunteers, it will count with the contributions and participation of the larger community of researchers and professionals, which will provide an organic development for the field. Hopefully, such initiatives will fully develop in the next couple of years, fostering a more dynamic and prolific field of Games and Health, in the end helping to improve the health of the Brazilian population.

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