

The development of a research-intervention project with an urban slum

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Abstract

This article analyzes the interface between epidemiology and historical-cultural psychology as it presented itself in a research project in an urban slum. From the outset, the study sought to assess the clinical burden of disease due to diabetes mellitus, iteratively integrating findings into clinical practice, a formal separation between diagnosis and intervention. However, over the course of the study, the project shifted away from this traditional medical model as all stakeholders became engaged in the dialogic process. This process – known as research-intervention – brought to light the constructive nature of knowledge, and produced “zones of senses”. These senses, and the lessons learned during their analysis, engender the development of new model for research and medical practice. In the process of these analyses we highlight several intersecting epistemological paths as we explore the historical-cultural psychology of Vygotsky, the pedagogy of Freire, and the philosophy of the language of Bakhtin.

Keywords: research-intervention; diabetes; health; epidemiology; psychology.

Introduction

The theoretical framework¹

This article describes and analyzes the development of a field-based epidemiology research project through the lens of historical-cultural psychology. The field site was an urban slum in Niterói, a city in the State of Rio de Janeiro, Brazil, called Preventório, encompassed by the Charitas/Hípica neighborhood.

The project, Vulnerable Populations with Diabetes (PVD),² is a collaboration between researchers at the Fluminense Federal University (UFF), and the University of California (UC), Berkeley. Initially, the research methodology was consistent with the traditional model of case-identification (diagnosis) and clinical intervention. Our goal was to thoroughly evaluate the burden of diabetes mellitus (DM) and DM sequelae in Niterói's public health network. The findings from this phase would later on be used to improve service delivery and the health of those involved.

This methodology necessitates a formal separation between diagnosis and intervention, consistent with a more traditional research model. This type of research, in which there is the ideal of a linear appropriation of reality as events occur, turns the research subject into an object to be studied by the researcher (GONZÁLEZ REY, 2010). This perspective derives from the Ethics of Modernity, a culture instilled in us by the dyad that gave rise to modern society– Science-Capital/Work-State. In fields that claim to study social and human phenomena, this approach features an epistemological *status* which is quantitative and a-historical.

It is clear that the main problem with quantification, is not in its operationalization, the process is entirely legitimate in the way in which it produces knowledge; the principal problem lies in what we choose to quantify [...] this side of the problem has been completely ignored by our use, inappropriately, of quantification to guide important aspects of social sciences research (GONZÁLEZ REY, 2010, p. 3).

This criticism is against the instrumentalism which, with regards to human and social phenomena, separates researcher from participant; diagnosis from intervention, and their basis in universal categories for which the relationship between cause and effect is well-established insofar as how it relates to meaning and the ways in which concrete subjects are produced (GONZÁLEZ REY, 2010). In this sense, this type of research is not diagnostic, classifying, or an intervention, it is the summary application of pre-established knowledge that wholly fails to appreciate the reality of the research participants.

The goal of research in public health, specifically epidemiology, is to improve the health and quality of life of populations. We purport to take into account the ecosystem as a whole and how imbalances in said ecosystem could lead to disease. However, when research is done in such a way that it fails to integrate itself into the day-to-day lives of the populations involved, the researchers, as experts, appropriate the knowledge of the participants, treating them as mere objects for study. This approach corrupts the results in the sense that it does not encourage the development of a health state of being, or improve the population's health. Generally speaking, after the dust has settled and data have been collected, researchers offer little in return to the populations they study, aside from the vague promise of having “contributed to scientific knowledge” (HARRIS, 2004).

When the research project positions itself within the realities of their subjects, it highlights the importance of the relationship between education and health, as the population's participation in the development and understanding of their own health requires the adoption

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¹ All translations are original, and done by the first author, a native English speaker.
² The PVD project was approved by the ethical committees of UFF and UC Berkeley; and by the Núcleo de Educação Permanente e Pesquisa (NEPP) of the city of Niterói.

of formal educational theory to develop healthy habits. However, the process must be supported by dialogical models in which the people take ownership of their knowledge, not just passively submit to its acquisition (FERNANDES; BACKES, 2010).

During any discussion of the theoretical framework relating health to education, we must discuss a seminal reference— the pedagogical theory of Paulo Freire. Freire’s work has been cited in health literature as an alternative to the traditional research model – consistent with the Ethics of Modernity,

For many of us, the concrete reality of a specific space is reduced to a combination of material data or facts whose existence, or lack thereof, from our point of view, must be recognized. For me, this concrete reality is more than mere facts or data that are collected more or less for their own sake. It is all of this, all of these data, but also an understanding of how the population involved experiences them (FREIRE, 1986, p. 35).

In making these assertions, we are not denying the very important contributions and medical advances that have been achieved with the traditional epidemiologic research model, but defending the idea that the participation of social actors brings new meaning to, and improves the diversity of available interventions. In doing so, their reality is described by the participants themselves via a bidirectional dialogue with the researchers and medical experts.

In the field of epidemiology, the approach guided by the Ethics of Modernity tends to produce what we call conservative health promotion. As such, thirty years since the promulgation of the Ottawa Charter, a foundational document in the field of health promotion, we must assess whether or not we have made progress in implementing any of its proposals.

According to Buss (2000), there are two different types of health promotion. One, which we call the “conservative” model, seeks to develop health practices that engender individual behavioral change. These education and health promotion activities focus on the modification of individual behavioral risk factors, such as smoking, lack of physical exercise, and dietary control. However, continuing with Buss (2000) and Traverso-Yépez (2007), there is a more contemporary model for health promotion, which in this article we call critical health promotion. This model is a more progressive interpretation of health in which

[...] activities are geared to the collective and their environment, understood in a broad sense: the natural environment, social, political, economic, and cultural components that are encouraged with public policies that engender good health (healthy choices would be the easiest) and by strengthening (empowering) these individuals and their community’s capacities to improve their health and well-being (BUSS, 2000, p. 167).

During the implementation of the work described herein, this alternative research model, different from the classical diagnostic model was produced via a

dialogic process between all stakeholders – researchers, community actors and health professionals. We did so because researchers made the empowerment of the participants a primary objective. The term *empowerment*, in our research, is derived from an epistemological approach that focuses on the production of subjectivity, which, in the field of health promotion, engenders the idea that no health practice can be carried out in a subjective sense, but only as the collective interpretation of the accumulation of a number of subjective experiences (MORI; GONZÁLEZ REY, 2012).

Thus, the subjective sense draws from different human experiences, and, as that individual reacts to these different contexts and processes them, new subjective senses emerge. This emergence changes the initial subjective sense that corresponded to the previously dominant subjective configuration as it related to that experience (MORI; GONZÁLEZ REY, 2012, p. 146).

This epistemological approach is based on the idea of subjectivity as the Russian psychologist Lev Vygotsky (1996, 2000, 2010) described his work. It is based on the principles of the dialectical method of Marx, in which all phenomena are fluid processes that constantly change, and among these are the so-called higher mental functions. An analysis of Vygotsky’s work allows us to maintain that subjectivity is a process that helps a subject overcome Cartesian logic, and shift towards the idea that psychological systems develop during the process of individuation and differentiation of man in their culture’s social and historical context. And, more than this, an understanding of subjectivity only occurs via knowledge of one’s own internal contradictions. That is to say that the subjective process³ occurs in a scenario of conflict, replications, contradictions, and tensions in the world of concrete meaning.

Breaking from the idea of the organized subject and the reinterpretation of subjectivity as a process of cultural-specific forms of relationship, reveals an individual’s historical context. This replacement of the psychological method produces real-time interventions. For Vygotsky, the method does not consider the handling of the human experience as a mere social fact, and it does not happen because of a biological oversimplification or by encouraging principles of introspection (naïve psychocentrism). It is also impossible to achieve this by strictly relying on ‘clinical observation’ or by promoting individual behavioral models. This is because there is no subject to be known “from the outside” by the researcher. As subjectivity finds itself within the process of intersubjectivity, it is within the context of these practical activities that we must ‘understand’ the subject.

We cite another author, Bakhtin (2011), who, like Vygotsky, affirms the dialectic Marxist method as a way to overcome reductionism in the humanities.

³It is important to make a clarification: Vygotsky’s work does not make mention of the term ‘subjectivity’, however, we defend this, as have others, because the concept is foundational in his work when he affirms man’s need to be creative even within these social conditions (SAWAIA, 2009).

Understanding another's utterances means to orient oneself in relation to them, to find one's proper place in their corresponding context. Using a series of our own words, we make our own corresponding replica of every spoken word that we are in the process of understanding. The more numerous and substantial these replicas are, the deeper and more real our understanding is (BAKHTIN; VOLOCHINÓV, 2009, p. 137).

When thinking about health research, this same method serves as a reference because the dialectic epistemology advocated by Vygotsky and Bakhtin breaks away from the representation of a strict linear processes of determination. This break introduces pluridetermination, which refers to what some call praxis and multiple doings, multiple techniques. This does not represent the totality of all techniques and fragmented knowledge, but it highlights the diversity of possibilities available in the field. In the field of health, we must prove that a specific research-based intervention gives prominence to social actors in various communities through the production of tools that encourage praxis between the knowledge of the research participants and that brought forth by the researchers.

This process – which we call intervention-research – highlights the interpretative-constructive nature of knowledge, and produces 'sense zones', which give voice to stakeholders in the field, thus producing new ways to carry out research and health practice, approaching social criticism.

Intervention-research is based on the voices of the people, emphasizing that they can not be understood without, or beyond their own cultural context (social, historical, political and economic). It is a production of the dialectic relationship between subjectivity and objectivity, as described by Freire (1986). As such, if we are to consider critical health promotion as a category of analysis, we are unable to understand these phenomena, or develop alternatives to them, without observing the lifestyles of the populations involved through their lens. The goal of research is not a monopoly on the production of knowledge by universities and research centers at the expense of local knowledge by promoting practices that seek to change behavior and make these social actors culpable. When we shift this discussion from the field of individual actions to that of the entire population which defines the individual and provides context for that in which they are situated, we realize that this is a condition for the promotion of awareness. This idea closely aligns with critical health promotion – the questioning of reality in the context of its cultural practices; a break with processes that dilute the social dimension of nature. It is a dialectical understanding of the relationship between society and nature.

Therefore, the research we describe was an effort to carry out intervention research. It was done together with social actors, 'giving them voice' and facilitating their own decisions about health practice as a rebuttal to the status quo. That is, the participation of social actors brings the perspective of social transformation, because, by bringing

awareness to the condition of historical possibility, political, economic and social health conditions, we facilitate a critical assessment of the establishment and how we can encourage its transformation.

If [...] my choice is liberating, if reality presents itself to me not as something stationary, fixed, situated, present, there, but in the dynamic relationship between objectivity and subjectivity, I cannot reduce these popular groups to mere objects of my research. I simply cannot understand the reality in which they live other than by understanding it with them as an additional subject of this knowledge, being for them, an understanding of previous knowledge (what happens at the level of everyday experiences), as it turns into new knowledge. If my interest is in understanding the way that popular groups think and perceive, they cannot be mere incidents in my study. To say that direct participation, interference by popular research groups in the research process influences the 'purity' of the results, implies a defense of the reduction of these groups to pure objects for researching that, consequently, the only subjects are the professional researchers. In the liberating perspective in which I situate myself, on the contrary, the research acts as knowledge, has as cognizant subjects, on one side, the professional researchers; on the other, popular groups and, as an object to be unveiled, concrete reality. Even more, in this particular way of conceiving and practicing research, popular groups deepen their understanding, as subjects, and in this understanding of themselves and their relationship to reality, they are able to overcome, or are overcoming, prior knowledge in its most naïve presentation. Thus, doing research, I teach and learn with these popular groups. Returning to the area to implement the research results I am not only educating or being educated: I am doing more research. In the sense here described research and education find themselves in a permanent, dynamic flux. (FREIRE, 1986, p. 35-36).

Below, we tell the story of our research, and how it evolved from a conservative methodology to one that begin to align itself more closely with social criticism.

Dona Maria and the research

The objective and setting

The PVD project, a collaboration between UFF researchers and their colleagues at UC Berkeley, had as its study objective a comparison of DM and its sequelae in the public health network of Niterói, Brazil. The research described herein occurred over a period of seven months – November 2014 to May 2015 – in Niterói, Rio de Janeiro Brazil, in the communities of Morro do Preventório and Morro da Charitas (Hípica), both located in the neighborhood of Charitas. The choice of Niterói and of these communities was by convenience; the authors Cardoso, Alves and Snyder have an ongoing collaboration (BRAGA et al., 2014). UFF also has a bi-weekly field-site education class for the training of medical students that meets in the health posts that serve the communities (Ribeiro and Corrêa).

DM and its sequelae were chosen for two reasons. First and foremost, the global burden of DM is on the rise. In Brazil, DM is seventh in terms of disability-

adjusted life years (MURRAY et al., 2012). Aside from this, DM is intimately related to a number of communicable diseases; it increases one's risk of urinary tract infections, tuberculosis, skin and soft tissue infections, and others (JOSHI et al., 1999; MULLER et al., 2005; BERTONI; SAYDAH; BRANCATI, 2001; ROCHA, J. et al., 2002; HAMILTON et al., 2013). In areas that lack infrastructure, such as in the urban slums of Brazil, the interaction between the recent surge in DM (MURRAY et al., 2012), and communicable diseases causes increased incidence, prevalence, morbidity, and mortality (RILEY et al., 2007).

According to Family Health Program of Niterói (PMF-Niterói), diabetics should be seen at least monthly, depending on disease severity, coming to the health post to measure their fasting plasma glucose (FPG), renew or pickup prescriptions, or to consult with a health professional. If the patient is incapable of visiting the clinic health professionals conduct home visits (BRASIL, 2013). Along with these initial goals, the research evolved into something more: during our analysis of the environment we developed a different research model, one that was more inclusive than our initial conservative model. In this section, we discuss how the inclusion of social actors forced us to critique our methodology, and align it more closely with intervention-research.

Intervention-research is based on the dialectical materialism of historical-cultural psychology, as emphasized in this paper's introduction. There are similarities between this approach, and so-called intervention-research, whose theoretical framework constitutes the foundation of institutional analysis, as they are both participatory in nature. They position themselves in opposition to traditional social sciences research with respect to their relationship between the research and the field of inquiry, and their relationship between theory and practice. This relationship between researcher and social actor is justified because we seek to analyze and understand the concrete reality that arises from that population's specific needs. It is of no use to impose our demands and practices on populations in an abstract way, as delineated by Freire (1986). The search for *praxis*, the relationship between theory and practice, means that,

[...] The practices that constitute the social, and the references which give them their meaning, are produced concomitantly, as knowledge and action of reality are constituted over the course of the research process in accordance with analyses and collective decisions, giving

the community participant an active presence in this process. Knowledge is thusly built among that which has already been produced, and incorporated into the researcher's previous assumptions and his actions in the field (ROCHA, M., 2006, p. 169).

This is precisely the story of our research: how we, as researchers, identified these fundamental components of intervention research: the relationship between researcher and social actor, and the relationship between theory and practice.

First however, we describe study setting. The history of Preventório, with approximately 6,000 residents in 2010, began in the mid-19th century, when the Jurujuba Cove Hospital was created for the isolation of those afflicted with smallpox, cholera, and yellow fever from the Federal District of Rio de Janeiro. (TAUNAY, 1948; SOUZA, 2006). In the mid-1970's, employees at UFF School of Nursing (presently UFF's Central Archives) began to construct houses around the school. As one resident related,

My parents told me that, over time, to ease their commute to work, employees began to build homes on the land surrounding the hospital. Fishermen followed this example, and later came their relatives who had been evicted from Charitas. This flow never stopped, and the community continues to grow (NITERÓI ANTIGO, 2016).

Per the 2010 Brazilian Census, the average age was 26 years (Table 1).

Table 1 – Characteristics of the communities of Preventório and Charitas in the 2010 Brazilian Census.

Característica	N	
População residente	6.022	
No. de domicílios ocupados	1.840	
Idade media	26	
	Abaixo de 18	1.881
	Acima de 18	4.147
Alfabetismo		
	Idade 15-24	1.184
	Idade 25 a mais	2.257
Renda mensal media por casa (mediana)*	0.25-0.5x SM	
Água da rede	1.683	
Lixo coletado	1.770	
Esgoto da rede	1.712	
Eletricidade	1.839	

* The 2010 Census only reports income in terms of portions of the minimum wage (MW)

In November 2014, there were 267 diabetics, a population prevalence of 4.4%. However, seeing as children in Niterói's public health system are rarely tested for diabetes, the adult prevalence (age 18 and older, study inclusion criteria) was 267/4147 (6.4%). In all, 372 residents were interviewed, of whom 166 were diabetic. The study population had an average age of 54.4 years, two thirds of whom were women (67.7%) (Table 2).

Table 2 – Characteristics related to access to healthcare in the PVD project, stratified by diabetes status, Niterói, Rio de Janeiro, 2014-2015.

	População Total	Diabéticos	Não-diabéticos
Profissão (n, %)			
Aposentado	107 (28,8)	59 (36,0)	48 (23,1)
Desempregado	30 (8,1)	17 (10,4)	13 (6,3)
Do Lar	39 (10,5)	13 (7,9)	26 (12,5)
Educação			
Analfabeto	33 (8,9)	17 (10,4)	16 (7,7)
1° a 4° serie incompleta	78 (21,0)	42 (25,6)	36 (17,3)
Problemas nos olhos			
Total	82 (22,04)	62 (37,8)	20 (9,62)
Catarata	52 (14,1)	37 (22,7)	15 (7,3)
Retinopatia	9 (2,4)	6 (3,7)	3 (1,5)
Glaucoma	11 (3,0)	9 (5,5)	2 (1,0)

These numbers are likely underestimates. Low rates of schooling, coupled with restricted access to healthcare (including a lack of basic health knowledge, or an understanding of at what point one must seek medical care during illness), prevent reliable disease notification. This is even more likely given the 170% increase in DM burden in Brazil since 1990 (MURRAY et al., 2012). There are probably a number of other undiagnosed diabetics that live in the community, exacerbated even more so by Brazil's recent political and economic turmoil, which has led to a lack of resources for health promotion. At one point, PMF-Niterói even suspended diagnostic tests for diabetes. The population estimate for diabetes in the city of Rio de Janeiro (Niterói is part of the greater Rio metropolitan area) according to Vigitel (used by the Ministry of Health to estimate the disease prevalence in Brazilian Capitals) is 7.4% (95% confidence interval (CI): 6.1-8.7) (BRASIL, 2012). Further, diabetes prevalence tends to be elevated among low-income populations (GASKIN et al., 2014).

Morro do Preventório has two health posts within the Single Health System (SUS): Preventório I: Abel Santamaria e Preventório 2: Calixto Garcia. Both are overseen by PMF-Niterói. Generally, these health posts are a resident's first point of contact with formal healthcare.

Aside from these two health posts, the community has a number of other resources: an award-winning community bank, a public high school, a daycare center (temporarily relocated elsewhere due to the construction on the Transoceanic Niterói tunnel, with a new one under construction elsewhere in the community) and two bilingual high schools (French and Chinese). Immediately proximate to the community is the 79th Police Ward, a fire department, and the Jurujuba Psychiatric Hospital.

The Research

Initially, researchers developed a protocol for interviewing community residents that thoroughly evaluated how each one experienced DM. Formal epidemiologic methods were used to compare the burden of disease in this community and other non-slum residing populations.

Consistent with protocol, we visited the homes of previously diagnosed diabetics that had stopped seeking treatment at the health post along with community health workers (CHW). These, and other diabetic patients, were invited to participate in the study, as health professionals made an effort to resume or continue their palliative care. Researchers and health professionals initially planned several public events to generate interest and explain the researchers' presence in the community. However, early on in the project, when researchers and health professionals were still testing survey instruments, one of the professionals (also a resident of the community) reported that one of the residents' primary concerns was nutrition: access to, food quality, and dietary content. Over the course of this initial phase of the research we noted a number discussions between, and with, health professionals and residents around the community's dietary difficulties. One of the main complaints was about the type of information available for dietary control. Many recipes and special foods indicated for diabetics are expensive, aside from the fact that the locations where they are sold are difficult to access from Preventório.

The community's inquires related to their diet established what we now recognize as one of the main research themes, nutrition. This is one of the most fundamental aspects of intervention-research: identify the problems and needs at the research site by discussing them with social actors. With these indications we can strengthen a community's organized action, an essential objective of all activities carried out under the auspice of health promotion.

Note that we only undertook this analysis after the research had begun; that is to say that the initial objective was not intervention-research. It became such after the researchers were able to analyze the narrative of what had already come to pass in the field. So, only after completing this aspect of the research project were we able to identify food as a driving theme. We understand that this came about due to a strategy that was initially limited by its subtle proximity to subjects in the field, arising only as the product of a demand elaborated by the very actors in the setting under study. That is, by inserting the researchers into the community's routine and by exposing the population to the goals of the research project, diet became a central theme so that the initial research goals could be achieved—collecting data to compare the burden of disease related to DM (and its sequelae) in the Niterói's public health network. We believe that the presentation of this request by the community, during the initial thematic research (FERNANDES; BACKES, 2010), was a replica, in the Bakhtinian sense. It was evidence of a rebuttal to traditional research practices in health promotion; a rebuttal to the information and practices that assaults populations and disqualifies their existence as social actors. We recognized this replica as an opportunity to transform our research and our epidemiologic practice. Consequently, we made an effort to bring to the forefront an operational ethic that disrupted this vertical relationship in the field of research, and in everyday life, giving voice to these social actors.

We can call this process a replica in the Bakhtinian sense, as the team's presentations to the community were not explicitly intended to be a driving theme of the research, but only one approach. This discussion with residents, reaffirmed by health professionals, evolved into a replica of this practice. Over the course of the project, residents and health professionals developed a series of words that created a narrative around the theme of nutrition – a Bakhtinian replica (BAKHTIN; VOLOCHINÓV, 2009).

Subsequently, the researchers gathered a group of residents to visit the community markets and develop recipes using ingredients available in the area. This action by the researchers revealed another important step in the development of intervention research: it encouraged motivation and facilitated the conditions for social organization, subsequently contributing to the exchange of knowledge between researchers, health professionals and community residents and ultimately engendering the collective action that is necessary to transform health or overcome adversity within the community. In addition, this step can be compared to what Fernandes and Backes (2010) call encryption and decryption/critical unveiling. In analyzing their traditional diets, stakeholders developed a narrative around their dietary difficulties. Following, “[...] the ideas to which they were exposed in the first stage (give meaning to values and original sources according to their reality) stimulated a discussion around the meaning of generating themes in the context of their lives” (FERNANDES; BACKES, 2010, p. 569).

We believe that this moment revealed itself during these trips. This makes us aware of the population's autonomy, as evidenced by the participation of social actors.

Following up on these actions that encouraged the community's autonomy, the researchers organized events in each health post with the theme of “dietary renewal”, alongside health professionals (CHW and nurse technicians) and UFF medical students. Researchers developed a number of recipes for the diabetics (with a focus on increasing the consumption of fruits and vegetables) and pamphlets describing the disease (how to prevent, control, and lead a healthy life with the disease). All residents were invited to the events by delivering personalized invitations to the homes of pre-diabetic and diabetic residents.

During these meetings, the researchers noted intense interest among residents (actively engaging by asking and responding to questions), with one principal complaint: many residents failed to show an interest in the printed material. Despite this, residents left from these meetings clutching the recipes and pamphlets, expressing their excitement to distribute them to family, friends, neighbors and others. Again, we meet with the replica that is positions itself in opposition to an instructionist ideology. Consequently, we resolved to listen to the demands of the social actors with the intent of designing innovative palliative care by cultivating new relationships between community members, health professionals and researchers to achieve our initial research objectives: compare the burden of DM (and sequelae) in the public network of Niterói and iteratively incorporate these results into clinical practice to improve the population's health.

Aside from this, another opportunity arose. Upon reviewing the already collected data, we observed a high prevalence of illiteracy and functionally illiteracy, in addition to a high prevalence of blindness and degenerative diabetic eye disease. These mostly elderly participants reported asking their children and grandchildren to read the information included in the pamphlets. However, this solution perpetuated the instructionist ideology, and the operational ethic guided by this detachment.

Now, we move on to discuss the fact that much of the information did not reach the target population. This guided the team of researchers to the premise that it is absolutely essential to “give voice” to the community because the information contained in these posters, flyers and the like, was behaviorist and instructionist, ideologies which do not lead to the transformation of established practice—in which the true needs of the population are not taken into consideration.

However, when developing new activities, such as participatory collective activities, social actors have the opportunity to express themselves and collectively present demands or describe incidents that the experts themselves, as outsiders, are unable to identify on their

own. A thorough appreciation of the life stories and experiential knowledge of a community is essential to raising awareness or changing existing health practices.

After receiving this feedback, researchers reviewed already collected data, realizing that nearly a quarter of the target population (primarily diabetics and those with an elevated risk for the development of DM) were illiterate (108, (29.0%) illiterate or 1st-4th grade incomplete) aside from the fact that another quarter of the participants reported difficulties reading due to their vision problems. For example, 21.7% (82 people) of the population had a diabetes-related eye disease (glaucoma, retinopathy, cataracts) (Table 2).

Thus research coordinators proposed the development of an instrument using the language of art – a song with video, to present the same information in the pamphlets. Soon after, the researchers met with health professionals in the health post, and several residents, to identify themes, draft lyrics and plan the video. Researchers opted to produce a samba to reach the target population, which was older than the community's average (the average age in the community was 26 in 2010, however the average study age was 54.4 years).

The actors were the community's residents. The film's "star", Dona Manuela, affectionately referred to as Dona Maria Manuela in the video, is one of the mothers of Preventório, appearing at Preventório every day to greet health professionals. Aside from this, she also contributes to the healthcare of other residents, remembering those who need to come to the post to measure their FPG, and accompanying them during their physician consults.⁴

Even so, this study had several limitations and moments of ambiguity that, at times were more in line with a traditional research method. The researchers were forced to choose a musical producer who was not a community resident in an effort to ensure the highest quality of recording and video production. Clearly the preference would be for residents to create the music on their own, and future iterations will shift to this community narrative, as this technical appropriation encourages the development of knowledge, a concept closely aligned with Vygotsky's teachings.

In this way, the manipulation of the language of art allows for more thorough engagement beyond simply replacing the pamphlets. Artistic language is a means of mediation between scientific knowledge and the population's spontaneous knowledge. That is, art promotes the development of thought. It is much more than a simplistic, lighthearted undertaking, as it is with this language that our imagination permits the approximation of our preconceptions in our quotidian routines with scientific concepts. In this way, it is much more than a behaviorist approach; it provides guidance to people for their health and well-being. It is necessary, and art is an excellent medium for this, to create strategies

⁴All of the participants and actors in the video conceded their rights to appear in the video and the rights to their images. No one was compensated for participating in the video. The images and lyrics were registered on registramusica.com.br under number RGM-25972-20150514 to the producer and the rights were conceded to the researchers until a community representative can be identified.

that permit populations to internalize the fundamental concepts that help them develop into subjects of these health processes. Art brings into play the creative process, allowing populations to appropriate information and, through creative activity, rebuild their everyday concrete relationships (VIGOTSKI, 2010).

Imagination in Vygotsky's work (2010) is not a psychological function opposed to the free exercise of thought and reason, but a human condition related to man's creative capacity, a key aspect of new aesthetic experiences – the production of new lifestyles and activities; it is therefore a condition for the development of thought. It is the mastery of technique, similar to the concept of productive activity of Marx, which promotes qualitative transformation in subject development. "If, as youth, it was difficult to overcome the difficulties that seek to minimize or interrupt creative outbursts, now it is the opposite: these limitations and difficulties encourage creative activity [...]" (VIGOTSKI, 2010, p. 118).

Vygotsky's ideas about art and technique continue to inspire. He describes the conditions of the time and projects into the future. Almost 100 years later, we experience certain conditions of life, knowledge, and the development of technology that enable new ways of objectifying our experiences. We create new languages and learn new ways to communicate. We experience the diverse possibilities of *image in action* and we are deeply moved by them (SMOLKA, 2010, p. 122, author's griffin).

Therefore, the research team decided to produce music, and a video whose protagonist's were the community's residents. This inclusion ensured population participation, offering possible avenues for the development of new demands and transformative practices, starting with meetings to screen the video, in addition to the actions undertaken in developing the video itself. At the time, we had yet to realize the possibilities that art offers as a condition for the development of thought and for internalizing concepts. This perspective will be one of the driving forces behind the continuation of this project, so that this practice presents itself as intervention research.

After meeting and discussing with residents and health professionals, the team decided that the music would tell the story of an elderly woman (Dona Maria), who discovered that she was pre-diabetic, and decided to pass her health message to her friends in the community.⁵

The researchers sought to produce information that was useful to the population; therefore the purpose of the video was to encourage healthy dietary habits. Simultaneously fulfilling PMF-Niterói's goals and strengthening primary care for diabetes in the diabetes control program, the video had two main messages related to a diagnosis of diabetes, and how to deal with the disease: 1) an individual can lead a happy and healthy life with diabetes, and diabetes can be controlled with

⁵The video can be found with English subtitles at (<https://www.youtube.com/watch?v=p80BNySqqxk&feature=youtu.be>) and without subtitles at (<https://www.youtube.com/watch?v=Gyb75gnXfVY>). It is available on YouTube, for free, for any who wish to watch, but those who are interested in using it otherwise can enter into contact with the authors to receive an .mp4 file for use as desired.

dietary changes, and 2) this can be done through regular meetings with health professionals at the health posts, regular use of your medications, and with small increases in physical activity (for example a brief thirty minute walk several times a week).

Even taking into account the population's reported difficulties with reading, the researchers created a pamphlet to contribute to the dissemination of the music. The pamphlet also includes several recipes for natural juices, and easy dietary tips alongside these lyrics. In this way, anyone could have access to the lyrics even without hearing the music.

Even as we sought to be more participatory in our work, we found ourselves regressing to a more instructional methodology. This was due to our own difficulties in developing participatory activities based on our biased and ingrained expert knowledge model, which tends to be based on medical knowledge and practice. All of us: researchers, population, and healthcare practitioners are influenced by this biased health-disease-care-model in our daily practice. These practices engender a narrative about health situated in a discursive genre: "every epoch and every social group has its own repertoire of discursive forms in socio-ideological communication. Every type of social discourse corresponds to a set of themes, that is, every type of social discourse represents a distinct group of subjects" (BAKHTIN; VOLOCHINÓV, 2009, p. 44). Bakhtin (2011) proposes two ways to conceptualize speech – primary and secondary. Both are developed during more complex instances of social production, they absorb and transmute, during their development, primary genres that have developed during spontaneous verbal communication.

This relationship between the scientific genre (secondary) and the genre of popular knowledge (primary) is often produced by what Bakhtin calls linear style, which is a form of orientation that creates "[...] crisp external contours around cited speech" (BAKHTIN; VOLOCHINÓV, 2009, p. 156), which creates dogmatic tendencies, the rational tendency which is itself of Modernity. This is a means of appropriating another's speech characterized by depersonalization and a preoccupation with objectivity. In this way, as we develop different means for giving voice to our research population, we depersonalize these voices. This is the heterogeneity of speech, the ambiguity, the drama of social practices.

When we take into consideration the network of cultural communication – and here I emphasize the relevance of Bakhtin, when we are able to think about overlapping or 'chaining' voices (text and signs) – we recognize that the agents/human collective – social subjects – in their most diverse trajectories and means of cultural exchange, find themselves engaged in the mobilization of health-disease-care 'models'. Thus, it is important to note that our statements and entries are recognized and objectified as social signs. Therefore they are invested in historical actuality, conforming habits, forcing themselves to

translate one language into another, acquiring new forms (and quality), configuring and/or modifying cultural practices, but always do so with the risk of producing (new) disruptions and interference (SILVA, 2003, p. 146).

However, we understand that researchers and health professionals produce a dialogical space, insofar as they are agents of medical-scientific discourse, they are also subjects of concrete social practice, subjects arising from diverse populations, with their own speech and tools for medical discourse. This exercise of criticism and reflection of our own practice, as we seek to do here, is perhaps one path (maybe the principal path) for a meaningful dialogue with social actors (SILVA, 2003). In this way, Bakhtin will serve as an important reference for the next steps of this project.

Thus, we return to the relationship between theory and practice, also described in the introduction of this article, for the dialogicity between the discursive genre of researchers and health workers, the discursive genre of science, and the discursive genre or populations. This relationship facilitates movement and implies replication, a new truth, or according to the Bakhtinian or Vygotskian perspectives, the production of dialogue toward a creative understanding. The search for understanding in the field, beginning with conflicts and replicas, is a condition for dealing with what is found in concrete relations. What we want is for our understanding of modes of action to engender other practices, other relationships and lifestyles. During the course of the study, participants were oriented as to the goals they would achieve by participating in the research, the methods used, and the expected results. These same participants were asked to describe their health, and develop their own goals that they would achieve by participating in the study. This dynamic with subjects in the field again reaffirms this dialogicity, as they felt the need to develop a narrative that questioned medical discourse. This was the reality of the project, with meetings between researchers, health professionals and social actors. This not only affirmed the respect of one group towards the other, but it also offered the possibility to develop a flexible work plan. According to de André (2005), this type of research, done via participant observation with feedback from participants is paramount to the success of any project. Clearly the initial work of this project was developed per the demands of the people as they intersected with the needs of researchers and health professionals. We understand that we did not completely depart from traditional research practice, as even with our efforts we still produced some instructionist practices. However, we reflect on our actions, which will create different ways of agitating in the field during the next phases of the project.

It is important to highlight that integration and collaboration between researcher and researched improves the quality of the research for the researchers. When the researcher inserts himself into a community, even in an observational study, there is the inevitable reality that they are disrupting the balance of action in that community. Becker (1993) says that when a

researcher inserts himself into a participatory research project, he has the ability to observe the situation with less disruption. What this also offers is the possibility that the researcher can receive feedback, bringing his attention to things that may have been previously unrecognized. According to Bodgen and Biklen (1994), participatory research facilitates the development of collaborations between researchers and participants, where the subjects make decisions about their participation. Freire is an important reference to justify this participatory bias, because in his work research is fundamentally based in the discourse of populations.

The participatory nature of our project left the community more satisfied with their interactions at the health posts. The meetings, the video, and the interactions with researchers opened a dialogue between patients and their health professionals, offering new possibilities to include their needs in the daily activities of these professionals.

When the researchers brought the materials developed over the course of the project, and the preliminary results from the study to the coordinators of PMF-Niterói, the coordinators reported that never before had any research done within their system created a good that could be used by health professionals to improve their population's health.

Aside from creating materials and results for the study (materials such as PVD study results, and also the tools used such as the music, pamphlets and recipes) the researchers are in the process of developing a website to present the research results.⁶ This method of divulging results has two advantages: the participants will have access in real-time to the results on a single platform. Aside from results such as publications and graphics published in scientific journals, there will also be information curated for those who are not health professionals. It will also offer a place where participants can contact the researchers with a "contact" widget, which will maintain the dialogue between parties, and offer a means by which other interested parties (ranging from the public, to the government, to financiers) could accompany the participatory aspect of the project alongside any epidemiologic results.

This report and the analysis herein demonstrate the commitment of a group of health researchers to building an alternative to the traditional research model. We see that, specific action, without the direct intention to change research practices, can be done in such a way that we are forced to carry out intervention-research. We hope that this analysis allows us to, based on the theoretical framework of Freire, Bakhtin and Vygotsky, encourage new means of producing knowledge in our interactions with the population in the next phase of this project. We further hope to establish a practice that favors thematic research, coding and unveiling, thus promoting critical health promotion and a new type of relationship between researchers, health workers, and social actors.

Final considerations

The research described here, aside from generating more meaningful epidemiologic results, aligns with seminal documents that establish the importance of public health and critical health promotion – The Alma Ata Declaration and The Ottawa Charter (WORLD HEALTH ORGANIZATION [WHO], 1978, 1986), promulgate the idea that "individuals in their exercise of citizenship must continue to actively participate in the development of public sector policies" (MELLO et al., 1998, p. 584; WHO, 1978) promoting an ethical operator that places the scientific knowledge of researchers and health professionals, and the popular knowledge of social actors in the community, in dialogic conditions. This new relationship is not a detachment from discursive genre, but the exchange of knowledge from day-to-day concrete practices.

When the researchers planned participatory research, which we call here intervention research, and involved the target population in the decision making process, identifying issues with the goal of building a specific good for the population under study, the scientific results became much richer. Moreover, this kind of research offers a number of possibilities for the continuation of long-term collaborations between the researchers and the population involved, perpetuating the development of future questions of interest to the population.

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⁶ www.ucbrileylab.com/pvd

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