

Social knowledge and the construction of drinking water preference

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Abstract *The analytical categories of Health Surveillance territorialization and daily life guided the design of this study, which aimed to understand from the methodological framework of qualitative research the factors involved in the use of individual supply solutions (ISS) as drinking water sources. We conducted semi-structured interviews with residents of 22 households set at a municipality in the Zona da Mata Mineira. Statements were fully transcribed, processed through content analysis and interpreted based on the psychosocial theory of social representations. It was possible to apprehend the social and affective components of social representations. The social component characterized by the representation of water from IWSS ISS water as clean and of good quality seemed to drive or justify the “resistance” of individuals to use water from public supply. The affective component referred to the use of IWSS water from ISS as a return to and protection of individuals’ origins, a way to strengthen respondents’ identity. The results pointed out that people’s perceptions and demands might guide actions aimed to stimulate trust in the use of public system water and the choice of this source of supply, contributing to health protection.*

Key words *Interview, Social perception, Groundwater*

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Introduction

Despite advances in the organizational normative scope, the operationalization of Health Surveillance as a “technological health intervention method”¹ based on the new coordination of health knowledge and practices¹⁻³ has not taken place, at least in a systematic way, in the daily life of health services and practices.

As Arreaza and Moraes² argue, this new coordination of knowledge and practices requires complex movements of review and incorporation of subjects (beyond health professionals), objects (beyond clinical epidemiological factors), processes (beyond medical health technologies) and ways of organizing work (beyond institutional spaces for health services). It implies, then, an anti-hegemonic movement in favor of a consolidated Brazilian Unified Health System (SUS) and principles as dear as that of integrality.

Coordination between surveillance sectors (epidemiological, environmental health, worker health and health) and contributions of several disciplines (geography, urban planning, epidemiology, administration and social sciences, among others) is essential to this movement, with the political-institutional support of decentralization and reorganization of health services and practices at the local level⁴.

Specifically with regard to Environmental Health Surveillance, a challenge that is imposed at the local level of planning and management is the effective and sustainable implementation of the actions planned in the performance model of the Drinking Water Quality Surveillance (VQACH). Published in 2005, this model defines the field, the way of acting and the main activities required for the operationalization of drinking water quality surveillance actions⁵.

The conceptual and managerial definition of this model is based on SUS principles and directives: (i) doctrinal – integrality, equality and equity; (ii) organizational – decentralization, regionalization and hierarchization; and (iii) executive – use of epidemiology, integration of health actions, environment and sanitation; organization of services so as to avoid duplicated means for similar purposes, dissemination of information and community participation. In addition to the principle of essentiality, understanding that access to water in sufficient quantity and adequate quality is fundamental to human life⁵.

While emphasized in theoretical discussions that guided the design of a national health surveillance policy and covered in VQACH’s model

of action, social participation has not effectively progressed towards the incorporation of participative and territorialized surveillance strategies and remained often restricted to the normative service of disseminating information on the quality of the water distributed.

Thus, it seems quite productive to adopt the concept of “used territory”, as proposed by Monken and Barcellos⁶, inspired by Santos and Silveira⁷, in the reflections on social participation in VQACH. According to the authors mentioned, the central point of the concept of “territory used” is the understanding of *interdependence and inseparability between materiality and its use, which includes human action*⁷. Thus, territory use and institutional political action exerted on it are modified according to the dynamics of social relationships immersed in the spaces of daily life.

Therefore, the effective performance of VQACH requires the recognition of territory in the scale of daily life, which methodologically, as signaled by the authors, requires the investigation of social practices transformed into routine in the setting⁶. This theoretical methodological reference enables us to reflect on a quite common situation in some municipalities, especially small ones, which is the consumption of water from individual supply solutions (ISS).

This is a cause for concern in view of the mistaken idea that groundwater, unlike surface water is protected from contamination⁸. Thus, although supply by ISS contributes to the universalization of access to water, it can expose the population to hazards, since water is not necessarily potable or safe.

For the effective action of VQACH, it is essential to consider that the factors underpinning the use of water from ISS go beyond purely financial and/or physical access aspects. As Empinotti⁹ emphasizes, water is not only a natural resource or a basic need, it actually assumes different meanings, reflecting the social relationships at the time of its collection and management. Thus, water supply and access transcend infrastructure, market and formal institutions, but also involve social relationships that occur mainly through cultural practices related to the processes of obtaining and using water.

These reflections guided the design of this study that sought to understand the factors involved in the use of ISS, more specifically shallow wells, as a source of drinking water, by residents of the urban area of a small municipality of Minas Gerais state, Brazil.

Methodology

The incorporation of the daily life scale as a methodological pathway to understand the “territory used” underpinned the design of the study based on the assumptions of qualitative research. However, the locus privileged by qualitative investigations is daily life and the experiences of common sense, interpreted and re-interpreted by individuals who experience them¹⁰. It is also necessary to consider the purposes of this type of study, which include the search for the understanding of the internal rationale of groups, institutions and stakeholders with regard to cultural values and representations about their history and specific themes.

Study setting and selection of households

The study was conducted in a municipality in the Zona da Mata Mineira region with a population of 72,220 inhabitants, of which 67,305 were urban dwellers and 4,915 living in rural areas¹¹. According to the 2010 Demographic Census, 90.7% of households received water from the public supply network and 8.9% from wells or springs. According to data from the municipal Autonomous Water and Sewage Service (SAAE), approximately 83% of the population was served by sewage collection systems and 98% by water supply¹²; however, sewage treatment was practically non-existent (only 0.02% of sewage collected is treated)¹³.

This study was part of a dissertation work that included, besides the qualitative research component, the inspection and monitoring (for six months) of the water quality of ISS located in households in the urban area of the municipality. The selection of households that were part of the study was based on the registration of the water supply means carried out by the VQACH service in the municipality in 2005 and updated in 2007. According to records in the Municipal Health Secretariat (SMS), 571 ISS were identified, of which 460 (80.6%) were classified as shallow wells, 77 (13.5%) as deep tubular wells and 34 (5.9%) as mines/springs distributed across 36 neighborhoods/districts. Initially, districts that had at least ten households with a registered ISS, corresponding to 17 (47.2%) locations were considered. The selection of households followed the proportionality of ISS in each location; thus, a larger number of households was selected in districts where there were more households with ISS. In addition, households whose individual solutions supplied

exclusively one household were privileged, with the understanding that a more precise characterization of practices related to the individual solution would be likely in these households.

Thus, 93 ISS were selected for the inspection of the individual solutions, corresponding to 93 households and reaching approximately 17% of households with individual solution in use registered at the SMS. In order to monitor water quality, 25 (26.9%) households were selected from those selected for inspection, located in nine different neighborhoods/districts of the municipality. For this selection, neighborhoods/districts with a higher number of households supplied by ISS were privileged. At first, the qualitative study would be carried out in the 25 households selected for the monitoring of water quality; however, due to the refusal of residents in two households when informed of the need for recording and due to the loss of material recorded in one interview, the qualitative study was performed considering 22 households. In these households, the individual supply solution corresponded to shallow wells, which in the municipality is usually named “cistern”.

Data construction

We conducted semi-structured interviews guided by a previously elaborated script that addressed: 1) perceptions about drinking water, including household water consumption; the choice for this water and the opinion about its quality, besides the opinion about the water of the public supply system and 2) drinking water required characteristics.

All interviews were recorded and performed individually, from August 2009 to February 2010, within households, in a quiet environment. In some households, interviews took place after a first visit to schedule, allowing respondents to feel more comfortable while expressing their ideas and opinions. In some interviews, we noticed that respondents felt insecure in answering some questions. In these cases, we sought to explain to them that the purpose of the interview was not to verify their knowledge, but rather their opinion and viewpoint on the subject.

After full transcription, interviews were processed by thematic content analysis¹⁴. This technique facilitates the analysis of the whole and particularities, the classification of information into categories and the identification of “meaning cores” understood as a unit of meaning in the whole communication.

Built on the theoretical methodological proposal of the study, the interpretation was based on the psychosocial approach of the theory of social representations. Thus, we relied on the concept elaborated by Moscovici¹⁵ and resumed by Sá¹⁶, who said that social representation refers to “a modality of knowledge generated through communication in daily life, with the practical purpose of guiding behaviors in concrete social situations.”

According to the theory originally thought by Moscovici, in order to account for the informal and more daily life relationships of human life on a more collective or social level, it is important to consider both individual behaviors and social facts. What is perceived is a two-way street, not only the unidirectional influence of social contexts on individual behaviors, states and processes, but also their participation in the construction of their own social realities¹⁷.

According to Herzlich¹⁸, Moscovici’s concept of social representation is an attempt to address the reciprocal influence of social structure and that of the individual. Thus, Moscovici argues that subject and object are not functionally distinct, but make up an indivisible set. This means that an object does not exist by itself, but only in relation to a subject (individual or group); the subject-object relationship determines the object itself. In establishing its representation of an object, the subject somehow makes it up, reconstructs it in its cognitive system to adapt it to its value system, which, in turn, relies on its history and social and ideological context in which it is inserted¹⁹.

Additionally, data on age, gender, average family income, occupation/profession and household residence time were collected at the time of the interviews.

Interviews were held only after signing the informed consent form and the Human Research Ethics Committee, Federal University of Viçosa approved the study protocol.

Results

Twelve (54.5%) female informants and ten (45.5%) males, with a mean age of 63 years (SD = 15.9) participated in the study, and the youngest at the time of the interview was 31 years old and the oldest, 84 years old. The average household residence time was 34.3 years and the average family income was concentrated in the range of 1-2 minimum wages for both genders. In gener-

al, respondents were retired, performed low-level professional activities or, in case of women, were housewives.

All respondents reported using water from ISS for some purpose, and 20 (90.9%) reported using it for drinking. In the remaining two, residents consumed water from the public water supply system or bottled water. Of the 22 households visited, while the public water supply system was available at the location, only two (8%) were connected to the network, reinforcing that the mere physical availability of the service does not ensure the consumption or use of this type of source. In one household, water used for consumption (drinking) was from the public water supply system, while in the other, both the water from the individual solution and from the public system were used for drinking.

From the content analysis, it was possible to sort narratives into ideas associated to the option of water from the individual solution and ideas associated with advocating for water from household.

Ideas associated with the option for water from the individual solution

In the set of narratives, we perceived that ideas associated with the choice of water from ISS were elaborated around the meaning cores “condition or option” and “water quality”.

Regarding the “condition or option” meaning core, the use of water from ISS appears as a “condition” since 13 (59.1%) respondents reported that the public supply system was not available at the time the family moved to the place and ISS was the only available source and was, thus, the solution found to ensure the family’s access to water: *When we moved here there was no house here... it was farm! Up there, a mine came down and everyone who came to live here bought a lot here and started to use the water! Then several houses started to spread out up there and water ran out, right? That is when we made the cistern.* (Female, 82 years).

However, even after the public water supply became available in the locations, respondents reported that there was no interest in using the new service, thus constituting an “option”.

As for the “water quality” meaning core, it was possible to identify that the use of the ISS as a water source in some cases is not related to any complaints or mistrust regarding the quality of public supply water, since even if they did not choose this source of water, some respondents

consider it as of good quality, *It cannot be bad, because it is treated water, right!* (Male, 70 years); *SAAE water is good, right? Well treated, pure... SAAE water is very good, very good...* (Female, 69 years), with reference to the positive action of chlorine: *They use chlorine: it should be good, right?* (Male, 64 years).

In contrast, there was also a reference to chlorine as a diminishing factor, associated with undesirable organoleptic characteristics: *I preferred it (water from the cistern) because street water has that taste of chlorine... I don't think that this stuff is good...* (Male, 70 years).

It should be noted that all respondents who mentioned chlorine as responsible for giving a taste to water never had their domicile connected to the public water supply network.

The cost was also mentioned as a negative factor for the choice of water from public supply and valorization of water from ISS: *It is like making a hole in the cistern, we avoid putting street water because it is more expensive for us... One bill here and one bill there, and so forth; it is a burden for us, right!* (Male, 70 years); *Oh, because... we already pay the electricity bill... It's difficult for me to pay for street water...* (Female, 78 years). It is worth remembering that respondents' average income was concentrated in the range of 1-2 minimum wages, which may limit the use of water from public system.

Also with regard to water quality, respondents mentioned organoleptic characteristics, water abundance and lack of diseases at home as positive attributes associated with water from individual solution.

Ideas associated with advocating for water from household

From the analysis of statements, it was possible to perceive that the ideas associated with advocating for water from household were elaborated around the meaning cores of "revival of origins" and "other people's water, not mine!"

More than reasons for not consuming water from the public supply system, what emerges in the statements is the justification for the use of well water. Advocating for the individual solution that supplies the household and the water it provides is clear. In narratives, reference to well water is often made lovingly, using expressions that indicate affection: *It has always been a very special water! Water is special for us! It is special for drinking, for everything ... it is special for everything.* (Female, 69 years).

There are reports of well digging by respondents or family members, a process that took years: *I have been taking water to do everything at home for seven years... And from there we piped it all and bought the pump...* (Female, 69 years).

Respondents report that water consumption throughout the life of family members and the good health situation they enjoy today is a way to prove and reaffirm the good quality of the individual solution water: *My children were all raised with this water! Today they are married, parents of children...* (Female, 82 years); [...] *my mother will be 97 years old... She used the well her whole life and she is healthy!* (Male, 59 years).

Regarding the meaning core "other people's water, not mine!"; statements revealed that water from other people's home, whether from ISS or from the public supply system network was used as an example to refer to water without quality or that causes some harm to health. *I got sick once, lady... I drank some water... At someone's home... It affected my stomach, I was getting sick...* (Female, 69 years); *Mine is in the ravine there in the corner... theirs (neighbor) is in the middle of the lot... Mine is on the edge of the street, the other people's one is in the middle of the lot, then theirs extracts water from the marsh...* (Male, 64 years); *That water boils from the ground... Healthy, clear water pours out from the ground... However, that river water (quoting the spring used by the public supply) is on the other side... You know? It flows by those banana trees out there; my water has nothing to do with that water over there!* (Female, 78 years).

Also in relation to this meaning core, statements translate the image of water "born" in the own backyard, under the earth, stored inside the well, capped, without contact with the external environment, that is, "under the protection of residents", unlike water from the public supply captured from a shallow source flowing a long way until reaching residences: *I believe that it is better than street water... I think... I don't know if it is, but I think so. Because it is capped, right? Reserved there, no one messes with it...* (Female, 79 years); *I believe that cistern water is cleaner than that of the SAAE. The SAAE's has pipe glue, hand dirt from workers washing there when doing some repairs, dirt from the street and everything goes into the water. Mine is right here, inside my home* (Male, 73 years).

The idea of control, considering that one knows the origin of water, implies to recognize clean water as something inherent, proper to water ("the" condition) and that if it is not naturally in this way, there is no way to transform it into a

suitable water: *nothing cleans the water, the water has to be clean* (Female, 79 years).

Discussion

The reports point to the access to water as a dynamic process and linked to the family life history, appearing now as a condition, when the ISS is the only option of water source, at the onset of residence in the location, sometimes as an option, even when having the provision of the public supply service, they choose to keep using water from the alternative solution. In addition, reference to the place of origin was shown as a justification for the well/mine option. Many respondents claimed to have lived in the “farm” and be used to drinking mine water, choosing to continue to use this type of supply, “now living in the city”. There are also reports of preference for individual solutions because they have not adapted to the water from the public supply system. These behavioral traits evidence what Boltanski²⁰ labels as magical refusal to urban condition, besides the attempt to resume ties with the past^{20,21}. Wells/mines and the water option of these sources can be seen as symbols in the first case, and in the second, a way of perpetuating the experience of generations, that is, a tradition, which, according to Giddens²², is a way of dealing with time and space, introducing any particular activity or experience into the continuity of the past, present and future, which, in turn, are structured by recurrent social practices; as Sobrinho²³ says, guiding individuals and assuring them conformity and constancy of certain practices over time.

Linking water access to the life story of individuals is also expressed in narratives that indicate affectivity when referring to well/mine water. Spink²⁴ affirms that representations are not mere cognitive expressions; they are also permeated by affection. According to Campos and Rouquette²⁵, representations, as a mode of social thought, are mediated by an affective realm provided by the individual’s condition before the object.

Well digging often coincides with the moment of home building, moving to the home, starting the marital relationship, birth of children and the beginning of a new life. The well emerges and underpins the environment of that family, as an integral part of the house and, according to Valadares²⁶, home is primarily a place of presence and story building and the marks of these built histories are fixed as milestones of an identity²⁷. Elali²¹ says home is an environment that connects

people (individuals and generations), times (past and future of individuals) and various elements of the socio-environmental context where it is inserted, and is considered a source of identity for individuals and their families.

Thus, well and the water flowing from it are not mere physical elements of the environment, they are an integral part of the house, of the family, they are part of people’s life story; they connect and reference times (childhood, youth) and experienced moments (house construction, marriage); they are elements of reference and construction of people’s memory. Thus, advocating for well and water is protecting one’s own identity, the revival of origins as well.

According to Hall²⁸, identity fills the space between the “inside” and the “outside” and the fact that we project “ourselves” into cultural identities, while internalizing their meanings and values, making them “part of us” contributes to align our subjective feelings with the objective places we hold in the social and cultural world. Identity “stitches” the subject to structure, stabilizing both the subjects and the cultural worlds they inhabit, making both reciprocally more unified and predictable²⁸. Spink²⁴ argues that the affective role of identity protection refers to the elaboration of collective or individual strategies for the preservation of threatened identities.

Water from ISS is ideal for consumption in the daily action plan and is translated in its continuing use, even if water from the public supply system is considered of good quality due to the treatment received, as some respondents mentioned. Thus, although new information are anchored to existing representation, such as benefits of water treatment, the perception of good water quality of the well/mine is preserved. On the other hand, mention of organoleptic characteristics as water rejection factors of the public supply system, such as “chlorine taste” was explored by studies carried out in different contexts²⁹⁻³¹. In a study carried out by Carmo et al.³¹, authors argue that representations about drinking water are constructed from the senses, especially taste and sight. Thus, the evidence of chlorine, perceived by taste or smell or even by water’s whitish aspect, makes this element easier to identify and experience in the daily life of individuals.

Water’s organoleptic characteristics should be considered as important elements that may indicate hazards associated with the supply or other forms of people’s exposure, for if consumers detect, for example, any different taste in the water, they may deem it unsafe for consump-

tion³², leading to rejection and the choice of other water sources, which are not necessarily the target of water quality control and/or surveillance actions³¹.

Thus, both “water” and “access to water” have different meanings according to who uses the resource. For engineers and technicians, the problem of water access is only solved by improving infrastructure, bringing water and sanitation to households. For some individuals, the use of well water is part of their relationship with the past, with their place of origin with their life story⁹. Therefore, the relationship between the water’s physical characteristics and issues related to its access are part of cultural, historical and economic relationships that build its meaning.

The analysis of statements showed that the rejection of water from the public water supply system was not related to the lack of credibility of this service as an institution, but to treated water, the use of products that can alter water’s natural and organoleptic characteristics and, thus, harm the health of those who consume it. Tampering with and compromising natural tap water (which was collected, treated and distributed) compared to natural waters (from wells/mines) were suggested by Strang³³ to explain different taste perceptions of these waters and as a tap water rejection factor.

According to Empinotti⁹, when water is collected, treated and distributed by the public supply service, its meaning changes, since, according to certain opinions, it can serve certain purposes (cleaning, for example) and not others (drinking, for example). Thus, the physical characteristics of water and its social meaning are created from one another.

With regard to the cost of water as a justification for choosing ISS, Empinotti⁹ points out the tension between two models of water management where one is based on infrastructure and payment for such service and another on the model where the use of water is carried out directly at the source through the construction of wells. The author continues by saying that, in poor

communities, the family economy does not support the payment for piped water service, which neutralizes the intention to facilitate the distribution of treated water, making projects based on market laws and access to technology unable to solve problems related to basic sanitation and water supply. Consequently, the rationale for expanding coverage of sanitation services based on this model excludes significant segments of the population, in conflict with the fundamental principle of universal access, on which the national guidelines for basic sanitation, established by Law N° 11.445/2007³⁴ are based.

Conclusions

Covering the spaces of daily life allowed us to perceive aspects imbricated in the choice of using an individual supply solution as a water source. The social and affective components of social representations, referring respectively to the orientation of conducts and communications and the protection and legitimation of social identities emerged from the respondents’ narratives. Regarding the social component, the representation of water from individual solutions as clean and of good quality anchored to the “natural” feature of water, lost due to the addition of substances like chlorine during the treatment seems to lead or justify the “resistance” of individuals to use water from public supply. The affective component of social representations was related to the use of water from individual solution as a return to and preservation of origins, as a way to strengthen the identity of respondents.

The concept of “territory used”^{6,7} and the methodological development that lead to it, such as the incorporation of daily life as an analytical category have identified, in this study, the importance or need for VQACH to stimulate trust in water from the public system and the option for this source of supply, contributing to health protection and promotion.

Collaborations

ACC Soares participated in the design of the study, data collection, systematization, data review and interpretation and paper writing. RF Carmo participated in data interpretation and paper writing and critical review. PD Bevilacqua participated in the study design, data review and interpretation, paper writing and critical review.

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