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From local studies to a regional perspective: pooled analysis of secondary data in a collaborative project on vulnerabilities associated with drug use in Argentina, Brazil and Uruguay (1998-2004)

De los estudios locales a una perspectiva regional: análisis integrado de datos secundarios en un proyecto colaborativo sobre vulnerabilidades asociadas al uso de drogas en Argentina, Brasil y Uruguay (1998-2004)

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ABSTRACT This paper develops the methodological principles of pooled analysis design, using it to study situations of vulnerability among drug users at a regional level. Data from thirteen cross-sectional studies carried out in Argentina, Brazil and Uruguay between 1998 and 2004 were integrated. A critical review of the concept of data matrix which identifies four structural components, allowed us to: define the units of analysis spanning the different original populations; identify a core of common variables (social and demographic characteristics, drug use, sexual practices, serology of blood-borne and sexually transmitted diseases) with their respective values; examine the indicators, dimensions and procedures used to measure the variables; and establish their compatibility with a thematic and comparative analysis of data collection tools. The main result was a new data matrix with 3,534 cases. Multidisciplinary collaboration between teams and institutions from the three countries made it possible to maximize the available sources in order to analyze characteristics of the local contexts and of the overall regional.
KEY WORDS Methodology; Data Analysis; Drug Users; HIV; Infectious Disease Transmission.

RESUMEN Este artículo desarrolla los fundamentos metodológicos del diseño de análisis integrado a partir de su empleo para el estudio de situaciones de vulnerabilidad entre usuarios de drogas a nivel regional. Se integraron datos de trece estudios transversales realizados en Argentina, Brasil y Uruguay entre 1998 y 2004. Una revisión crítica del concepto de matriz de datos, que distingue cuatro componentes estructurales, permitió: definir las unidades de análisis abarcando las distintas poblaciones originales; identificar un núcleo común de variables (características sociodemográficas, uso de drogas, prácticas sexuales, serologías de infecciones de transmisión sexual y sanguínea) con sus respectivos valores; examinar los indicadores, las dimensiones y procedimientos empleados para la medición de las variables; y establecer su compatibilidad mediante un análisis comparativo y temático de los instrumentos. Se obtuvo una nueva matriz de 3.534 casos. La colaboración multidisciplinaria entre equipos e instituciones de los tres países hizo posible maximizar las fuentes disponibles para el análisis de características locales y de la región en su conjunto.
PALABRAS CLAVES Metodología; Análisis de Datos; Consumidores de Drogas; VIH; Transmisión de Enfermedad Infecciosa.

INTRODUCTION

Despite the fact that recent data shows that the transmission of the human inmunodeficiency virus (HIV) is tending to stabilize in a number of countries in Latin America and the Caribbean (1), the epidemic is still concentrated among highly vulnerable populations. Among these populations, drug users – in particular injecting drug users that share drug injection paraphernalia – along with men who have sex with men, transgender people, sex workers and prisoners (2-4) are the groups with the highest prevalence. Vulnerability to HIV and other infections also includes individuals within the sex and drug use networks of these groups.

Argentina, Brazil and Uruguay have historically been the countries with the most widespread injecting drug use in South America (5,6), especially in the urban centers of the La Plata River Basin (Buenos Aires, Montevideo, Rosario and their peripheries) and of the Southern and Southeastern areas of Brazil (Porto Alegre, Florianópolis and São Paulo) as well as in Salvador, in the north of Brazil. Starting in the late 1980s, the cases of AIDS reported in these three countries showed that the sharing of injection paraphernalia among drug users was of great weight in the epidemic and, although HIV transmission caused by shared use of injection materials has decreased since the mid-1990s (7), this reduction was accompanied by increasingly frequent references to the transmission of HIV and of other blood-borne and sexually transmitted infections (BB-STIs) among non-injecting drug users (8-14). Not only are both groups vulnerable to HIV infection and to coinfection by the hepatitis B and C viruses (HBV and HCV), but they also tend to have limited and late access to health care, with a high proportion of diagnoses occurring in the symptomatic stages of the disease (15,16).

All of these factors place drugs users in the center of a socio-sanitary problem that transcends each local context. This regional dimension makes it necessary to develop and implement research designs that allow for more complex analyses, expanding the temporal and territorial scope of the data. In this article, we discuss the model of pooled analysis or integrative data analysis, as originally formulated by Christine Friedenreich

(17-20). This design synthesizes the empirical evidence obtained from different sources that, unlike *systematic review* or *meta-analysis* designs based on published results, integrates raw data, which allows for new analyses. We describe here the use of a pooled analysis design with data from thirteen epidemiological, cross-sectional and descriptive studies carried out between 1998 and 2004 among drug users in Argentina, Brazil and Uruguay. The foundations of the pooling process are reviewed from a critical perspective that substantially differs from the methodological concepts prevailing in epidemiology, based on the reflections regarding the structure of scientific data made by the Argentine epistemologist and methodologist Juan Samaja (21) (a).

THE STRUCTURE OF SCIENTIFIC DATA

...there where the fetishized data was, is where the deconstruction and re-elaboration should unfold.
Juan Samaja (21 p.390) [Own translation].

Working with *secondary data* – produced according to problems, hypotheses and objectives that do not form part of this research study – first requires considering data itself as an object. However, data cannot be understood as a direct and immediate manifestation of an object and its attributes. The transformation of sensory experience into a scientific object offers, as a result, *data*: elemental units of information that allow for the reelaboration of experiences by focusing on a part of the immediate perception, impoverishing their crude richness, their multiplicity and heterogeneity, but, at the same time, enriching experience by concentrating perception on aspects of reality relevant to the researcher's theoretical framework. Data are not predefined entities that may be simply collected in the field. *Data is never given*; it is a complex *construction* articulating an empirical content related to a state of affairs in the world with a content of a theoretical and conceptual nature.

A classic perspective, present in a large part of the methodological literature from different disciplines, conceives of the data matrix as a three-part structure (22,23) made up of units of analysis,

variables, and values. Its function is limited to the comparison of units of analysis, allowing for the calculation of summary, central tendency and dispersion measures. This concept constitutes an obstacle to understanding the genesis of the data, its formative history, veiled by the mystery of a time-honored and closed functionality: the matrix as a tool for data analysis does not account for how values are obtained in each case (b).

Samaja (21) proposes a revision of this perspective which he summarizes in three principles:

1. The data produced in any scientific research study, regardless of the discipline in question, possesses an invariant, general and universal structure that we call *data matrix*.

2. This structure is not made up of three but rather of four elements: *units of analysis*, *variables* and *values*, traditionally identified by classic data theory, to which *indicators* are added as part of data structure.

3. In every research study, data describes the object of study on different interrelated analytical levels, forming a system of matrices. In its simplest form, the system can be understood on three levels: the *anchoring level*, where central units of analysis take place; the s*ubunitary level*, whose units are components of the anchoring-level units, allowing for their description; and the *supraunitary level*, corresponding to the contexts where the anchoring-level units are embedded and which to some extent determine their characteristics. Data as systems of matrices highlights the multiple logical and ontological levels of the object of study in their whole complexity.

On this point, it is important to mention the theoretical and methodological implications of defining the indicator as a structural component of the data, instead of considering it a special type of variable that in itself enables the characterization of a particular phenomenon (such is the definition of indicator currently used in the fields of research methodology, epidemiology and other sciences). From a critical perspective, all variables – inasmuch as they require a definition of the criteria for empirical apprehension, the measurement – presuppose an indicator that links the conceptual content of the variable with a state of things in the empirical world

through a specific *praxis*. The indicator is also a complex structure; it includes the *procedures* or *operations* that, when applied to a *dimension* – that is, an aspect or partial and observable manifestation of a variable, perceivable by the senses – allow to determine the value of that variable which corresponds to each unit of analysis and the way it should be classified according to that variable. Thus, this concept of indicator unveils the mystery behind the construction of empirical evidence.

With these definitions in mind, the integration of data requires its *deconstruction* (c): namely, penetrating the structure of that data and reaching analytically its elemental components, in order to contrast the conceptual and operational definitions upon which data is based. Only in this way is it possible to identify what features of what entities were observed and recorded, and using what procedures.

Next, we describe the integration of systems of matrices from different studies (Table 1), each with its four structural components as points of reference. Thus, it was possible in the first place to elaborate a common definition of the units of analysis, which included the original populations, with a greater level of generality. The analysis of protocols, research reports, administrative documents and publications in which the original inclusion criteria were made explicit was the source for this comparison. Then, a common core of variables present in the thirteen original studies was identified, along with their values and their respective indicators. By comparing the indicators, it was possible to establish the qualitative identity of the characteristics studied in each of the original studies. In this case, the comparison was based on a thematic analysis of the questionnaires and the examination of the serologic tests used in each study, which allowed the *operational definitions* and the *operationalizations* to be made explicit.

UNITS OF ANALYSIS

The central populations of the original studies were various groups of drug users. At a subordinate level, the projects were focused on drug use and sexual practices, and, at a contextual level, on living conditions determined by the

Table1. Periods, localities, populations, serological tests and sample sizes in the original studies. 1998-2004.

No	Period	Localities	Population	Serological test					Sample Size
				HIV	HCV	HBV	TP	HTLV I-II	
1	1998	Porto Alegre (RS) Itajaí (SC) São José do Rio Preto (SP) São Paulo - Apta (SP) Sorocaba (SP)	IDU	Yes	Yes	No	No	Yes	287
2	1998	Autonomous City of Buenos Aires	IDU	No	No	No	No	No	60
3	1999-2001	Río de Janeiro	IDU, ex IDU, not IDU	Yes	Yes	Yes	Yes	No	632
4	1999-2002	Autonomous City of Buenos Aires	DU (cocaine base paste)	No	No	No	No	No	25
5	2000-2001	Greater Buenos Aires	IDU, ex IDU	Yes*	Yes	Yes	No	Yes	174
6	2000-2002	Salvador de Bahia (BA) São José do Rio Preto (SP) Florianópolis (SC) Itajaí (SC) Porto Alegre (RS) Gravataí (RS)	IDU	Yes	Yes	Yes	Yes	Yes	821
7	2002-2003	Autonomous City of Buenos Aires Greater Buenos Aires	DU (inhaled cocaine)	No	No	No	No	No	150
8	2002-2003	Autonomous City of Buenos Aires Greater Buenos Aires	DU (non-injected cocaine)	Yes*	Yes	Yes	Yes	No	502
9	2002-2003	Montevideo Greater Montevideo	DU (non-injected cocaine)	Yes*	Yes	Yes	Yes	No	367
10	2003	Autonomous City of Buenos Aires	IDU	No	No	No	No	No	99
11	2003	Montevideo Greater Montevideo	IDU, ex IDU	Yes*	Yes	Yes	No	No	200
12	2003-2004	Autonomous City of Buenos Aires Greater Buenos Aires	IDU	No	No	No	No	No	154
13	2004	Greater Buenos Aires (Avellaneda)	IDU	No	No	No	No	No	63

Source: Own elaboration based on data the from the original studies 1 (26,27); 2 (28); 3 (29,30); 4 (31); 5 (32); 6 (26,33); 7 (34,35); 8 (13); 9 (10); 10 (36); 11 (37); 12 (36,38); 13 (39).

*Cases with positive HIV serology were analyzed with Serological Testing Algorithm for Recent HIV Seroconversion (STARHS) to estimate the yearly incidence. HIV=Human Inmunodeficiency Virus. HCV=Hepatitis C virus. HBV= Hepatitis B virus. TP= Treponema Pallidum. HTLV I-II= Human T-lymphotropic virus type I-II. IDU=Injecting drug users. DU= Drug users.

legal, institutional, and political frameworks. The units of observation and of information in all the studies coincided with the units of analysis of the central level: drug users.

Three studies dealt with other populations that made up what Samaja (21) calls *coordinated data matrices*, which were not included in the pooled analysis. They were independent units of analysis but of the same level of integration as the anchoring level units. They constituted comparison and control groups: sexual partners of drug users (34,35) or young people with no recent experience of injecting drug use (39), whether or not they consumed drugs via other routes.

In turn, each population was originally defined according to specific criteria. By comparing the inclusion criteria, it was possible to define the integrated population as a synthesis of the original conceptual and operational definitions, including groups with different practices.

Inclusion criteria

- *Territoriality:* Two studies applied multicentric designs in eight Brazilian cities. The other populations were contacted in Buenos Aires, Montevideo and Río de Janeiro, and in the localities peripheral to the metropolitan areas of those cities (Table 2). This did not imply that all participating individuals were residents of these cities, but rather that their selection through intentional or snowball techniques, or even coincidentally within contexts of drug use, allowed access to users belonging or in close connection to the local populations of those areas.

- *Places of contact:* In one study carried out in Buenos Aires and in another carried out in Montevideo (10,13), institutionalized drug users were included. These drug users were inpatients at public or private health centers treating drug-related problems.

▪ *Age:* Two studies (29-31) allowed the participation of 15- and 16-year-old drug users, and a third study (28) did not specify a minimum age for participants. In the rest of the studies, those under 18 were excluded.

▪ *Sex:* All the research studies included both men and women; in many of them sex quotas were stipulated to ensure a minimum of information on female drug users.

▪ *Drug use:* The original definitions were diverse but oriented towards populations of drug users with high epidemiological and social vulnerability, defined with two overlapping criteria. The first criterion was related to the substances used: illegal drugs and legal drugs used without medical prescription. However, the illegal or irregular situation of the drugs or their irregular use – without medical prescription in the case of legal drugs – was not enough to define groups as vulnerable in terms of their practices. The second criterion focused on routes of drug administration. Nine projects worked with injecting drug users. The temporal dimension of the injecting drug use had different definitions: while some studies included individuals who had used injected drugs at some point in their lives, without specifying frequency or the conditions of injecting drug use, other studies considered a large timespan (sometime during the last 10 or 20 years), and still others a recent or current period, which in turn could include anywhere from 3 to 12 months prior to the survey. The studies with non-injecting drug users were mainly focused on cocaine, crack and/or cocaine base paste users. Two of these studies (10,13) excluded injecting drug users, focusing on those with no experience of injecting drug use. The rest of the studies included injecting drug users who complied with the minimum criteria regarding non-injecting drug use.

▪ *Serological condition:* The aim of the serological tests was to estimate prevalence, thus individuals who already knew their serological condition to be positive were not excluded.

▪ *Voluntary participation and information:* This criterion was shared by all the projects, which ensured the confidentiality and anonymity of the information provided. All participants provided written consent. In studies using serological tests, participants received information about the tests as well as assistance in dealing with the results and accessing treatments.

Access to populations

The thirteen original projects used non-probability sampling designs with intentional, coincidental or snow-ball selection. Although these designs have as important limitation that they do not allow for the inference of parameters with known probabilities or for the control over certain systematic biases by randomizing the selection, they were the most appropriate designs available in order contact populations that were difficult to reach, uninstitutionalized, hidden.

The first contact with many drug users was possible because of the intervention and assistance provided in each context by social organizations and institutions participating in or collaborating with the research studies. Some drug users were contacted and surveyed at the Polyclinic of Pharmacodependency at Maciel Hospital and at the Vilarderbó Psychiatric Reference Hospital, in Montevideo (10), and at the National Center for Social Reeductation in Buenos Aires (13).

Table 2. Percentage distribution of the integrated sample by country and locality. 1998-2004.

Country and locality	Sample	
	n	%
Argentina		
Buenos Aires	1,227	34.7
Uruguay		
Montevideo	567	16.0
Brazil		
Río de Janeiro	632	17.9
Porto Alegre	390	11.0
Salvador	194	5.5
São José do Rio Preto	167	4.7
Itajaí	140	4.0
Gravataí	111	3.1
Florianópolis	52	1.5
Sorocaba	38	1.1
São Paulo	16	0.5
Total	3,534	100.0

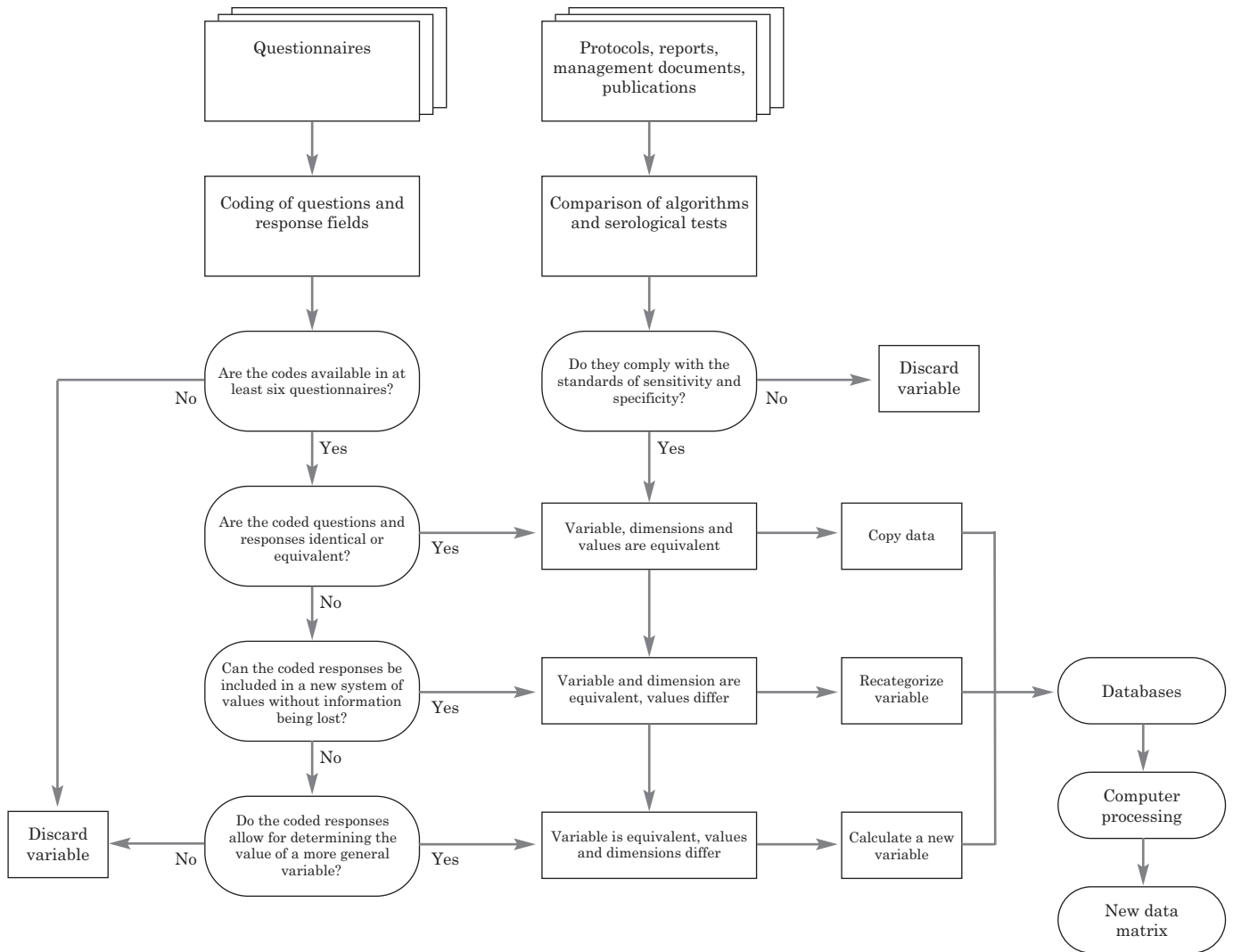Source: Own elaboration based on integrated data (10,13,26-39).

Figure 1. Comparison of instruments (coding of questions and response fields and comparison of algorithms and serological tests) and data processing.

Source: Own elaboration.

VARIABLES, VALUES AND INDICATORS

Instruments for data production

Instrument analysis is based on the close connection between the instrument and the indicator. Instruments concentrate into a single material device two essential aspects of data construction (21): *operational definitions*, that is, the selection of conceptual dimensions that are relevant and able to be captured empirically; and *operationalization*, the design of the concrete procedures to be applied in each case to capture the conceptual content of the variable.

Two processes were adopted according to the type of instrument: the thematic analysis of the thirteen questionnaires used in the original studies using Atlas.ti 5.5 software, and the comparison of algorithms and serological tests (Figure 1).

Thematic analysis is a method commonly used in qualitative investigations to identify, analyze and describe patterns in a discursive textual or non-textual *corpus* (40,41). It allows for the organization and description of contents with a certain degree of detail and the progression in the interpretation of diverse aspects of the subject of research. In this case, the text of the questionnaires was the *corpus* of analysis. In all studies, semistructured questionnaires with closed, semi-open and, to a lesser extent, open-ended questions and response fields were used. The aim of this thematic analysis was to identify relevant dimensions and prescribed procedures in the instruments.

In addition, serological algorithms were compared. Commercial test packages using enzyme-linked inmunosorbent assay (ELISA) were employed to detect HIV, HBV, HCV and HTLV I-II (Human T-ymphotropic virus type I-II), combined in some cases with particle agglutination screening methods and VDRL (Venereal Disease Research Laboratory) to detect syphilis. All the tests complied with the standards of sensitivity and specificity for valid and reliable estimates of prevalence (d).

Furthermore, some of the variables were obtained using dimensions not registered with original instruments, features related to the context in which the field work was carried out: country, city, time period, research study and case identifiers. These features allowed for the creation of *contextual variables*, emerging from the supraunitary level, characteristic of the contexts to which the anchoring levels units belonged. Their indicators arise from the analysis of a set of metadata that exceeds the strict content of the original matrices.

Questionnaires, questions and answers

The thematic analysis of the questionnaires followed three steps, similar to those described by Brandt *et al.* for the integration of clinical research questionnaires (43). The first entailed the *coding of questions and record fields according to theme*. Nine significant themes were identified: contextual units of analysis, socio-demographic characteristics, imprisonment, access to health care services and to drug treatments, means of drug consumption, substances consumed, shared use of injection materials, sexual practices, and previous diagnoses of HIV, BB-STIs and tuberculosis.

The second step involved *the selection of relevant available variables*. To ensure a minimum quantity of data for each of the concepts of interest, the selected codes were those that made reference to record fields with relevant content and that were present in at least six of the original studies.

Once the relevant variables were identified, the analysis of the questionnaires allowed for a comparison of the formulation of each question – that is, *the manner in which participants were asked* – and, in accordance with the theme of each question, the identification of the dimensions of the variables. Using those dimensions, *the indicators were compared and their compatibility was assessed.*

Results of the comparative thematic analysis of the questionnaires

There were four possible results:

1. Variables could be directly integrated, as the questions and the set of answers of each questionnaire, although not identical in formulation, were equivalent in meaning. That is, although the procedures could differ in their forms, they were applied to the same dimensions of

equivalent variables, with equivalent systems of categories. In these cases, it was necessary to consider the linguistic differences in the Spanish spoken in Buenos Aires and Montevideo and the Portuguese spoken in the different Brazilian cities, as well as the different meanings that the terms used could denote and connote in each context. As with any survey, the operationalization required a semantic transposition in two directions: from the concepts to the native terms used to refer to practices as well as their concrete conditions and their objective and subjective effects, in a language understandable to participants; and then, from the native terms used in the answers to the conceptual contents. For this analysis it was important to take note of which terms were used in each questionnaire to refer to the phenomena to be described. This was reflected in the formulation of the questions, in the literal and/or figurative usages of certain terms to refer to certain notions, and in the relationships among common, medical-scientific, commercial and legal definitions of substances, practices and conditions in which they were developed. Thus, the identification of equivalent dimensions required the comparison of the particular usages of language in each context.

2. Variables could be integrated by establishing a new system of categories (responses) that could include the original values without an important loss of information. In order to do this, it was essential to recategorize variables based on equivalent dimensions, while harmonizing differing systems of categories with different levels of measurement (nominal, ordinal, interval and ratio), such as the frequency of injecting drug use during the last period of consumption versus the last time injecting drugs were used. In these cases, values had to refer to periods of time both compatible and conceptually significant. Another example is that of the variables related to education, whose original values corresponded to the educational systems of Argentina, Brazil and Uruguay. The differences among the countries and among the provinces in Argentina were resolved by grouping together the years of formal education in two ordinal categories that possessed a greater level of generalization but that maximized the quantity of answers

available: up to seven years – complete primary education according to the classic system of education in Argentina – and more than seven years of education.

3. *Variables with different dimensions could be integrated into a variable with greater level of generalization.* In these cases, the dimensions of the variables and their values were different, but there were answers to some questions that related to equivalent aspects of the object. For example, a question related to the number of children participants had, in contrast with a question that asked whether or not they had children. The second question admitted only a nominal categorization between those participants who had children and those who did not; the first question, on the contrary, permitted a scale of natural numbers: *0, 1, 2… n* number of children. When the questions were integrated, their values were synthesized in two variables with different levels of measurement: a dichotomous variable which permitted a greater number of answers with the values "no children" or "one child or more"; and another variable with a measurement level in intervals related to the amount of children that individuals had. In the same way, questions related to the *frequency of injecting drug use*, *the age individuals had used injecting drugs for the first time*, *shared used of injection paraphernalia*, *type of substances used*, although possessing more specific dimensions, made it possible to determine whether or not the individual had ever used injected drugs in his/her life.

Another variable of this type arose from combining different questions related to the use of condoms or, in more general terms, related to safe-sex practices (e). These questions held difficulties because they originally referred to diverse aspects of condom use, according to: type of partner (stable or occasional, same or different sex), type of penetration, situation (during the last relationship or during the most recent relationships), proportion or frequency of condom use, and different periods of time. They also differed in value types, either dichotomous (yes/no) or ordinal (always/sometimes/never or always/almost always/sometimes/rarely/never). To integrate them, an index with all the available dimensions was created in order

to identify whether individuals manifested not using condoms at some point, in any of the conditions, situations or type of practices mentioned. It was possible then to obtain a proxy measure of condom use consistency among drug users.

4. *Certain variables lacked indicators compatible with the original matrices.* A large proportion of the original questions had no equivalent, which reduced the amount of available data, given that the measurement criteria, that is, the selected dimensions and values, were substantially different.

RECONSTRUCTION

Some of the dimensions identified in the instruments of data collection were useful for building variables with multiple answers based on sets of dichotomous questions – people with whom the participants lived, access to health care services or most frequent companions during drug consumption – or based on open questions – main sources of income, with up to three simultaneous and different answers among a total of sixteen possible answers – that allowed for more than one answer.

Samaja's theory makes it possible to notice the multifunctional nature of some indicators, inasmach as the observation of a particular and concrete aspect of the object allows, in several cases, to determine the value corresponding to the unit of analysis in more than one variable. In other cases, different dimensions also permit the determination of a single variable value. For example, age, whose original dimensions were both the years of age of the individual and the number of years passed between the survey date and the individual's date of birth. Both dimensions complied with validity requirements as they made reference to relevant and observable aspects.

The procedures, at the same time, ensured a minimum of reliability: it can be assumed that the variations in the values were not biased but rather fundamentally responded to different states of the object, although results could also vary because of differences in accuracy and precision in the performance of procedures. However, the indicators proved to be reliable because they allowed for the control of systematic bias.

This concept of indicator also accounts for the complexity of data, as constructs that combine, through specific practices, a theoretical content with an empirical content. The use of indices is a perfect example of this. According to Samaja's perspective, an index is a type of indicator in which the procedures – observation, measurement, interrogation, etc. – are applied not to one but to several dimensions of the same variable that, because of logical and/or arithmetic relations, allow to ascertain a specific value as a result. For example, to determine if individuals *had ever shared injection paraphernalia* we considered if they had shared at least once any of the following: needles, syringes, recipients for mixing substances, filters, liquids used to clean needles and syringes or any other material whose shared used could possibly transmit diseases. Up to five dimensions combined according to logical relations – in this case, whether individuals had ever shared one or more of those materials at least once in their lives – constitute a complex index for the same variable.

Thus, the *deconstruction* of data made it possible to reach the structural components, identifying dimensions and procedures in an eminently analytical way. Restoring the structure of data and advancing to the *reconstruction* process required a synthetic inverse movement, going from abstract structures to concrete data, integrated in a new system of matrices. The material integration was carried out through computerized routines for database processing. These routines allowed for the identification of some inconsistencies in the bases. The original records and field notes were checked to establish whether these were errors in the processing and/or inputting of survey information or in their application. The correction of those non-sampling errors derived from the original processing enabled enabled the improvement of the integrated data quality.

The integrated sample

There has been some criticism about the designs of systematic revision and meta-analysis regarding the validity of integrating and analyzing results obtained from different sources (45-47). In

a marvelous article, 25 years after the pioneering presentation of the modern meta-analysis design (48), Gene Glass reflects on certain criticisms to his proposal, one of which claimed that meta-analysis "mixed apples and oranges" (49). The answer of this US researcher demonstrates an epistemological depth infrequent in methodological literature: comparing differing objects – like oranges and apples – that comprise a broader category, in order to indicate their differences and similarities, is a fundamental part of scientific work.

In the case of this integrated analysis, each of the populations was originally defined assigning certain constant and specific characteristics, expressed in the inclusion criteria and related to their drug use practices. The integration subsumed those characteristics into a broader category with a greater level of generality.

What in Glass's metaphor would allude to *fruit*, which includes *apples* and *oranges*, in this research study is the category of drug users. Mixing different objects – in this case, injecting drug users with non-injecting drug users – as if they were apples and oranges makes sense in that it allows for the comparison of groups with different practices. Therefore, many of the constants among the original populations – being an injecting drug user or a non-injecting drug user, being from Argentina, Brazil or Uruguay, according to the project – now work as variables that allow for the identification of different subgroups in the integrated sample.

The integration aimed basically at the use of illegal drugs: heroin, cocaine, and derivatives of cocaine and/or its process of production, like cocaine base paste or crack. Some legal drugs were also included: amphetamines and benzodiazepines used without a regular medical prescription. The diversity of substances is related to the polyconsumption practices of these groups. Half of the participants had used three or more types of drugs during their lives, with a maximum of ten, including illegal drugs, alcohol and non-prescribed medicines.

Both injecting and non-injecting drug use were considered. Among participants that had never used injecting drugs, consumption of substances included: smoked drugs (mainly crack, cocaine paste, cocaine and heroin), inhaled drugs (like cocaine) and some drugs consumed orally (benzodiazepines, LSD and other hallucinogenic drugs, codeine, amphetamines, metamphetamines, metilendioximetamphetamines – ecstasy – and other synthetic drugs).

A new matrix

Of the 3,605 available records, 71 corresponded to individuals under 18 or to cases with incongruities in the different age indicators. Excluding these cases, an integrated sample of 3,534 drug users surveyed during a period of 7 years, from March 6, 1998 to October 28, 2004, was obtained.

The integrated matrix contains 79 variables, four of which have multiple answers combining between three and ten dimensions. Regarding the levels of measurement, five are discrete ratio variables referring to quantities: years of age, completed years of formal education, age at which first drug consumption occurred and age at which first injecting drug consumption occurred, and number of children. Also included were the date of birth, the date the survey was conducted and the year of the last HIV test taken. Three other variables are ordinal: the level of education attained, the last period in which injecting drugs were used and the frequency of injecting drug use. The rest of the variables are nominal, most of them dichotomous (yes-no).

Not all variables from the integrated matrix have the same sample size, which would have required a prospective integrated analysis design (17) in which all studies share the same matrix, similar operational definitions and common data collection instruments. The number of valid responses for each variable is given by the original data: as it was previously stated, not all of the studies had the same variables and much of the available data was not compatible. However, the simple variable with the smallest amount of data recorded 992 effective values, outnumbering by 171 cases the largest original sample size.

In the integrated matrix, 724 cases were women (20.5%), 2,808 cases were men (79.5%), and in two cases values for the variable of sex were not obtained. In addition, 70% (2,474) corresponded to populations of current or former users of injecting drugs and the rest to non-injecting drug users (1,060).

Moreover, the integrated matrix contains data regarding groups with different degrees of proximity and possibility of access to health care services, most of whom were not institutionalized: 3,436 cases – 97.2% of the integrated sample – were contacted in settings commonly frequented by drug users. Only 98 cases, from two studies conducted in Buenos Aires and Montevideo, were surveyed at health centers where the participants were hospitalized for problems related to drug use.

Table 3 shows the serological tests available in each of the original studies, with a maximum of 2,976 results for HIV and a minimum of 1,259 results for HTLV I-II (84.2% and 35.6% of the integrated sample), the prevalences obtained from the integrated data, and the sample sizes of each serological test. When the prevalences of each of the infections are analyzed – as an *effect variable* – by sex, only the prevalence of Hepatitis C is associated with the variable of sex, being more frequent among men (34.7%) than among women (22.7%).

Finally, Figure 2 shows the prevalences of each infection according to the use of injecting drugs at least once. With the sole exception of the *treponema pallidum* antibody test, and taking into account that in studies with populations of non-injecting drug users, HTLV I-II serological tests were not performed, the rest of the prevalences were higher among injecting drug users. However, the high prevalences of HIV, HCV and HBV among non-injecting drug users, several times greater than the prevalences estimated for the general population of the three countries (1,50-53), coincide with the tendency identified in the literature review (8-14). These prevalences show the importance of widening the perspective of analysis in order to consider situations of vulnerability in a broader sense, including other practices that make the transmission of BB-STIs possible.

DISCUSSION

Integrated analysis is a heterodox research design using secondary data which has not frequently been employed in the region (f). Moreover, this type of design has not been frequently used for
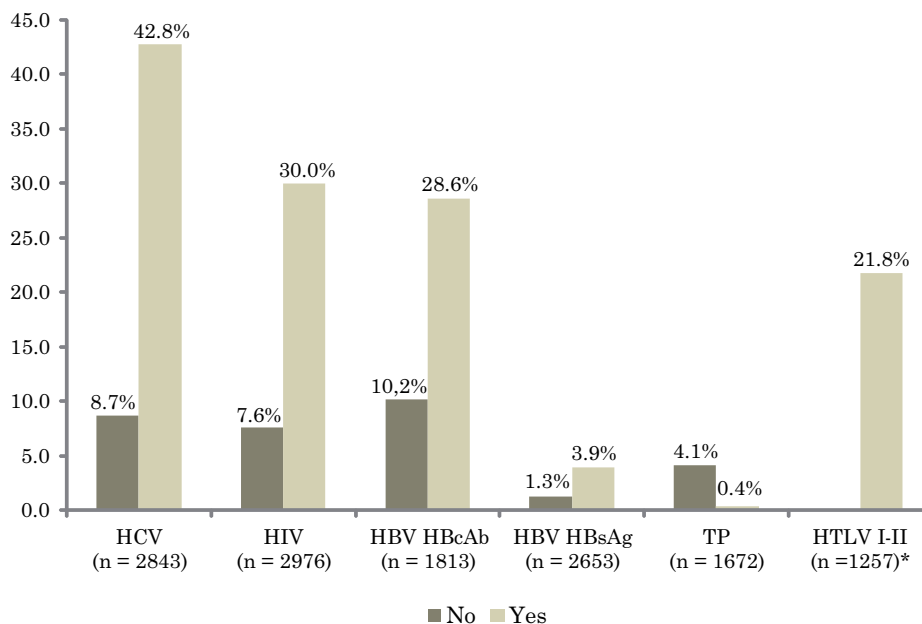
Table 3. Positive results to serological tests for HIV, HBV, HCV, syphilis and HTLV I-II corresponding to the original studies integrated. 1998-2004.

Type of serological test	Serological tests conducted	Positive results	
		n	%
HIV (ELISA)	2,976	687	23.1
Hepatitis C virus (ELISA)	2,843	914	32.1
Hepatitis B virus (ELISA)			
Core antibody	1,813	914	32.1
Surface antigen	2,653	567	16.0
Syphilis (VDRL)	1,672	567	16.0
HTLV I-II (ELISA)	1,259	632	17.9

Source: Own elaboration based on integrated data (10,13,26-39).

HIV=Human Inmunodeficiency Virus. HBV= Hepatitis B virus. HCV=Hepatitis C virus. HTLV I-II= Human Lymphotropic virus type I-II. ELISA= Enzyme-lynkedInmunosorbent assay. VDRL= Venereal Disease Research Laboratory.

the integration of epidemiological data that allow populations to be characterized both sociodemographically and in terms of their practices.

This project, therefore, is original in many aspects. Its aim is to allow for a series of broad analyses that enable the comparison of data from different contexts and the partial result of each study with the results from the integrated data. Furthermore, having an integrated matrix based on raw data, instead of the partial results from each original study – as in a meta-analysis design – allows for the use of that data according to other problems, other hypotheses and the new objectives of the researcher, as well as for avoiding and overcoming the *publication bias* of the original results (17).

Similarly, the possibilities of analyzing data are increased because of the effect of the sample size (n = 3,534), much larger than is generally seen in local research studies with drug users, and because of the quality of the data, which was enhanced by the correction and detection of errors found in the original matrices. A sample of this size allows for the identification and improved knowledge of the situations of vulnerability within groups that were very small in the original samples. For example, among drug users: women, in particular those who have sex with other women – a population which represented 94 cases in the integrated sample, while in all the original studies head no more than 25 cases; men who have sex with men – 627 cases

Table 3. Positive results to serological tests for HIV, HBV, HCV, syphilis and HTLV I-II corresponding to the original studies integrated.1998-2004.

Source: Own elaboration based on integrated data (10,13,26-39).

*In studies with non-injecting drug users, serological tests of HTLV I-II were not performed.
HIV=Human Inmunodeficiency Virus. HBV=Hepatitis B virus. HCV=Hepatitis C virus. TP= Treponema pallidum. HTLV I-II=Human Lymphotropic virus type I-II. HBcAb=Hepatitis B core antibody. HBsAg= Hepatitis B surface antigen.

in the integrated sample as compared to an average of 52,2 per study and a maximum of 209 in the original studies; and those individuals with different working situations and with different access to health care services – public, private, work-based health insurance – that had a prior experience of imprisonment or treatment for drug-related problems.

Many of the original studies were the first extensive epidemiological research studies developed with drug users in the three countries. This implied that some of the designs were exploratory or descriptive, resulting in greater heterogeneity of the available data. Moreover, the non-probabilistic nature of the samples made it impossible to know the probability of their being representative of each population. The integrated sample carries these original limitations. Thus, the conclusions obtained from the integrated analysis must be considered as hypotheses

regarding general tendencies in specific groups of drug users.

Nonetheless, these research studies, because of their novelty in many cases, were developed considering similar problems, hypotheses and objectives, directed at better understanding the living conditions, the practices related to drug consumption and sex, and the serological condition of different groups of drug users, in order to provide a diagnosis of the situation of HIV and BB-STI epidemics. These coincidences are what made the integration possible, thus allowing the knowledge about the subject to be maximized, common problems and situations among drug users of the three countries between 1998-2004 to be identified, and – once more, as a hypothesis – possible tendencies with their current projections to be identified using the available sources.

It is important to highlight that the integration of data is a complex process developed in two

directions: from the deconstruction of the original data and its structure, the conceptual abstraction of the variables, to the concrete, elemental level, relative to its empirical dimensions, and from that point, returning along the path of synthesis, from the redefinition of the populations and the variables, to the integration and consolidation of a new data matrix. Juan Samaja's thesis about the structure of scientific data has been the conceptual basis for this process. Later analyses will account for the potential and validity of the integrated matrix.

Because of its complexity – and singularity – the practical development of the integration process required great time and effort. As has been indicated by Blettner *et al.* in their typology of the designs of reviews and integration of secondary data (17), as well as by Brandt *et al.* in their proposal for comparing questionnaires (43), coordinated work among research teams, the primary producers of data, is essential for this type of design. Access to data, the deconstruction of that data, the interpretation, comparison and selection of indicators, the restructuration and the final integration were only possible because of the communication and close collaboration among the researchers and the institutions of the three countries.

The use of common research designs and instruments – such as the behavioral surveys conducted among High-Risk Drug Users (CODAR) [*Consumidores de Drogas de Alto Riesgo*] by researchers from different countries of the Americas and Europe that seek to establish a standardized data collection tool (55), and that have begun to be used in studies with drug users in the region (7) – will facilitate the development of *prospective integrated analyses* in the future.

Therefore, it is essential to continue working with a common, agreed-upon research agenda, in which the treatment of common problems in the region may be combined with the specific interests of each group in each local context. This agenda must plan for the integration of new data, recently produced, in other local and national areas, and with other subpopulations.

So long as the integration process remains open and the mass of data produced is increased, both the possibilities of analysis and the solidity of results will continue to improve. Therefore, wide access to public information and to the documentary archive of scientific production, as well as official support for this type of projects, have been and will continue to be essential in order to make cooperation between different teams from different countries possible.

ENDNOTES

a. Juan Samaja (1941-2007). Sociologist graduated from the Universidad de Buenos Aires, with a diploma in Public Health. Professor and coordinator of various undergraduate and graduate courses in various Latin American universities; tenured professor of Research Methodology in Psychology, Faculty of Psychology, Universidad de Buenos Aires. Doctor of Sciences from the National School of Public Health Sérgio Arouca of the Fundação Osvaldo Cruz, with the thesis *Epistemological foundations of health sciences* (1997), directed by Maria Cecília de Souza Minayo.

b. According to the perspective formalized by the Norwegian political scientist Johan Galtung (22) and adopted by others such as Paul Lazardfeld

(23), the three-part structure relates to social science data – Galtung does not mention its validity in other disciplines – and each study involves only one matrix. Samaja comments that "the presupposition that in a research study it is possible to speak of only one data matrix and of a three-part structure in which there are no indicators – both of which are assumptions – has the great disadvantage of concealing the numerous transitions, mediations and transformations that occur within the process of scientific creation" (21 p.169) [Own translation].

c. The concept of *deconstruction*, which refers to the ideas of the French philosopher Jáques Derrida, leads to the interpretation of scientific practices as textualities in a broad sense, as discursive and metadiscursive practices (24). Esther Diaz remarks that "deconstructing the essential tool of the researcher, language, constitutes a propedeutics of methods and can help to make assumptions explicit and to make approaches flexible, two aspects required by scientific rigor when it is inspired by a critical spirit, but neglected in scientific practice when it is governed by blind obedience to the established mandates" (25 p.268) [Own translation].

d. A description of the serological methods used to estimate the HIV incidence in cross-sectional studies conducted in Brazil, and the analysis of their advantages and limitations, can be found in the work of Morgado and Bastos (42).

e. Martin *et al.* (44) present an interesting pooled analysis aiming to assess the effectiveness of the use of condoms to prevent the transmission of the herpes simplex virus type 2 using six different studies, based on different problems, objectives and designs, and demonstrate the integration of data with different systems of categories related to the use of condoms using different procedures and dimensions.

f. While revising this article, we came across the work of Francisco José Dutra Souto *et al.* published in the May 2012 issue of *Journal of Medical Virology* (54), in which the authors present an epidemiological pooled analysis produced with the data of nine cross-sectional studies conducted between 1993 and 2008 in the state of Mato Grosso, Brazil. This pooled analysis is aimed at broadening the estimations of HCV prevalence and assessing the risk associations within different groups, with an integrated sample of 3,910 cases. It is the first known reference of this type of work in the region.

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BIBLIOGRAPHY

1. ONUSIDA. Global report: UNAIDS report on the global AIDS epidemic 2010 [Internet]. 2010 [cited 10 May 2012]. Geneva: Joint United Nations Programme on HIV/AIDS; 2010. Available from: http://www.unaids.org/globalreport/Global_report.htm.

2. Malta M, Magnanini M, Mello M, Pascom AR, Linhares Y, Bastos F. HIV prevalence among female sex workers, drug users and men who have sex with men in Brazil: A systematic review and meta-analysis. BMC Public Health. 2010;10(1):317.

3. Pando MA. Aportes a la epidemiología del HIV en Argentina: Prevalencia e Incidencia en grupos vulnerables. Actualizaciones en Sida. 2010;18(68):1-8.

4. ONUSIDA/MSPRO. Informe nacional sobre los progresos realizados en la aplicación del UNGASS: Uruguay, 2010. Montevideo: ONUSIDA, Ministerio de Salud Pública, Programa Prioritario ITS/SIDA; 2010.

5. Aceijas C, Friedman SR, Cooper HLF, Wiessing L, Stimson GV, Hickman M. Estimates of injecting drug users at the national and local level in developing and transitional countries, and gender and age distribution. Sexually Transmitted Infections. 2006;82(Suppl 3):S10-S17.

6. Mathers B, Degenhardt L, Phillips B, Wiessing L, Hickman M, Strathdee S, Wodak A, Panda S, Tyndall M, Toufik A. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. The Lancet. 2008;372(9651):1733-1745.

7. Rossi D. VIH en personas que usan drogas en América Latina y el Caribe. In: Retos planteados por la epidemia del VIH en América Latina y el Caribe, 2009 [Internet]. Lima: ONUSIDA, OPS, UNICEF; 2009 [cited 12 May 2012] p. 31-42. Available from: www.unaids.org.br/biblioteca/links/OPAS-OPS/OPAS%2024.pdf.

8. Caiaffa WT, Zocratto KF, Osimani ML, Martínez PL, Radulich G, Latorre L, Muzzio E, Segura M, Chiparelli H, Russi J, Rey J, Vazquez E, Cuchi P, Sosa-Estani S, Rossi D, Weissenbacher M. Hepatitis C virus among non-injecting cocaine users (NICUs) in South America: can injectors be a bridge? Addiction. 2011;106(1):143-151.

9. Muzzio E, Rajput S, Naveira J, Segura M, Vila M, Ralón G, Galante A, Drago SM, Bouzas MB, Zapiola I, Griemberg G, Deluchi G, Menga G, Cuchi P, Tang A, Weissenbacher M, Rossi D.

Infecciones y otros problemas de salud en usuarios de pasta base de cocaína en un centro asistencial de Buenos Aires, Argentina. Revista Argentina de Salud Pública. 2010;1(4):14-19.

10. Osimani ML, Latorre L, Garibotto G, Scarlatta L, Chipparelli H, Vidal J. VIH, Hepatitis B, Hepatitis C y VDRL en usuarios de cocaína no inyectable en Uruguay. Adicciones. 2005;17(2):157-162.

11. Pechansky F, von Diemen L, Kessler F, Hirakata V, Metzger D, Woody GE. Preliminary estimates of human immunodeficiency virus prevalence and incidence among cocaine abusers of Porto Alegre, Brazil. Journal of Urban Health. 2003;80(1):115-126.

12. Ralón G, Pando MA, Fassano A, Naveira J, Parga J, De Lisa R, Barros S, Verón D, Rossi D, Salomón H, Vila M. Seroincidencia y seroprevalencia de VIH en usuarios de drogas en Argentina. In: Actualizaciones en sida. Salta: Sociedad Argentina Interdisciplinaria de Sida, Fundación Huesped; 2009. p. 16.

13. Rossi D, Radulich G, Muzzio E, Naveira J, Sosa-Estani S, Rey J, Griemberg G, Friedman SR, Martínez-Peralta L, Weissenbacher M. Multiple infections and associated risk factors among non-injecting cocaine users in Argentina. Cadernos de Saúde Pública. 2008;24(5):965-974.

14. Zocratto KBF, Osimani ML, Peralta LM, Latorre L, Muzzio E, Segura M, Chiparelli H, Proietti FA, Rey J, Vazquez E, Cuchi P, Estani SS, Rossi D, Weissenbacher M, Caiaffa WT. Sexual behavior and HBV infection among noninjecting cocaine users (NICUs). Substance Use & Misuse. 2010;45(12):2026-2044.

15. Malta M, Bastos FI, Silva CM, Pereira GFM, Lucena FF, Fonseca MG, Strathdee SA. Differential survival benefit of universal HAART access in Brazil: A nation-wide comparison of injecting drug users versus men who have sex with men. Journal of Acquired Immune Deficiency Syndromes. 2009;52(5):629-635.

16. Zala C, Rustad CA, Chan K, Khan NI, Beltran M, Warley E, Ceriotto M, Druyts EF, Hogg RS, Montaner J, Cahn P. Determinants of treatment access in a population-based cohort of HIV-positive men and women living in Argentina. Medscape Journal of Medicine [Internet]. 2008 [cited 12 May 2012];10(4):78. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2390686/.

17. Blettner M, Sauerbrei W, Schlehofer B, Scheuchenpflug T, Friedenreich C. Traditional
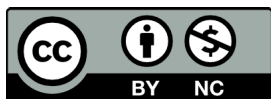
reviews, meta-analyses and pooled analyses in epidemiology. International Journal of Epidemiology. 1999;28(1):1-9.

18. Curran PJ, Hussong AM. Integrative data analysis: The simultaneous analysis of multiple data sets. Psychological Methods. 2009;14(2):81-100.

19. Friedenreich CM. Methods for pooled analyses of epidemiologic studies. Epidemiology. 1993;4(4):295-302.

20. Friedenreich CM. Commentary: Improving pooled analyses in epidemiology. International Journal of Epidemiology. 2002;31(1):86-87.

21. Samaja J. Epistemología y metodología: Elementos para una teoría de la investigación científica. 3ra ed. Buenos Aires: Eudeba; 1999.

22. Galtung J. Teoría y métodos de la investigación social. Buenos Aires: Eudeba; 1966.

23. Lazarsfeld P, Boudon, R. Metodología de las ciencias sociales: conceptos e índices (Tomo 1). Barcelona: Laia; 1973.

24. Derrida J. La estructura, el signo y el juego en el discurso de las ciencias humanas. In: La estructura y la diferencia. Barcelona: Antrophos; 1989. p. 383-401.

25. Díaz E. La construcción de una metodología ampliada. Salud Colectiva. 2010;6(3):263-274.

26. Caiaffa WT. Projeto AJUDE-Brasil: avaliação epidemiológica dos usuários de drogas injetáveis dos Projetos de Redução de Danos (PRD) apoiados pela CN-DST/Aids [Internet]. Brasília: Ministério da Saúde; 2001 [cited 12 May 2012]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/51projeto_ajudeBrasil.pdf.

27. Caiaffa WT, Bastos FI, Freitas LL de, Mingoti SA, Proietti FA, Carneiro-Proietti AB, Gandolfi D, Doneda D. The contribution of two Brazilian multi-center studies to the assessment of HIV and HCV infection and prevention strategies among injecting drug users: the AJUDE-Brasil I and II Projects. Cadernos de Saúde Pública. 2006;22(4):771-782.

28. Touzé G, Rossi D, Cymerman P, Ereñú N, Faraone S, Goltzman P, Rojas EJ, Vázquez S. Prevención del VIH/SIDA en usuarios de drogas: resultados de un proyecto de investigación e intervención. Buenos Aires: Intercambios Asociación Civil; 1999.

29. Hacker MA, Friedman SR, Telles PR, Teixeira SL, Bongertz V, Morgado MG, Bastos FI. The role of "long-term" and "new" injectors in a declining HIV/AIDS epidemic in Rio de Janeiro, Brazil. Substance Use & Misuse. 2005;40(1):99-123.

30. Hacker MA, Leite IC, Renton A, Torres TG de, Gracie R, Bastos FI. Reconstructing the AIDS epidemic among injection drug users in Brazil. Cadernos de Saúde Pública. 2006;22(4):751-760.

31. Touzé G, Vila M, Pawlowicz MP, Rossi D. Saberes y prácticas sobre drogas: El caso de la pasta base de cocaína. Buenos Aires: Intercambios Asociación Civil, Federación Internacional de Universidades Católicas; 2006.

32. Rossi D, editor. Sida y Drogas: Reducción de daños en el Cono Sur. Buenos Aires: Ministerio de Salud de la Nación, Intercambios Asociación Civil; 2001.

33. Caiaffa WT, Bastos FI, Proietti FA, Reis ÂCM, Mingoti SA, Gandolfi D, Doneda D. Practices surrounding syringe acquisition and disposal: effects of Syringe Exchange Programmes from different Brazilian regions – the AjUDE-Brasil II Project. International Journal of Drug Policy. 2003;14(5-6):365-371.

34. Rossi D, Pawlowicz MP, Cymerman P, Goltzman P, Touzé G. Sexual risk behaviour in cocaine users from Buenos Aires City [Internet]. 15th International Conference on the Reduction of Drug-Related Harm: Conference handbook. Melbourne, Australia: Australian Drug Foundation, International Harm Reduction Association, Centre for Harm Reduction; 2004. p. 136-137 [cited 12 May 2012]. Available from: http://www.ihra.net/contents/194.

35. Rossi D, Pawlowicz MP, Cymerman P, Goltzman P, Touzé G, Nkowane M, Vázquez E, García Hamilton L, Weissenbacher M, Saxena S. Rapid assessment and response on sexual risk behavior in cocaine users from Buenos Aires City [Internet]. The XV International AIDS Conference Abstract Book. Bangkok: International AIDS Society; 2004 [cited 12 May 2012]. Available from: http://www.iasociety.org/Abstracts/A2173835.aspx.

36. Rossi D, Rangugni V. Cambios en el uso inyectable de drogas en Buenos Aires (1998-2003). Buenos Aires: Intercambios Asociación Civil, Ministerio de Salud y Ambiente de la Nación, ONUSIDA, ONUDD; 2004.

37. Osimani ML, Vázquez Pedrouzo R, Chipparelli H, Guchin M, Latorre L, Garibotto G, Gherardi Pérez A, Vidal J. Seroprevalencia para los virus de la inmunodeficiencia humana, hepatitis

B y C en usuarios de drogas inyectables. Revista Médica del Uruguay. 2005;21(3):207-214.

38. Rossi D, Pawlowicz MP, Rangugni V, Zunino Singh D, Goltzman P, Cymerman P, Vila M, Touzé G. The HIV/AIDS epidemic and changes in injecting drug use in Buenos Aires, Argentina. Cadernos de Saúde Pública. 2006;22(4):741-750.

39. Rossi D, Zunino-Singh D, Pawlowicz MP, Touzé G, Bolyard M, Mateu-Gelabert P, Sandoval M, Friedman SR. Changes in time-use and drug use by young adults in poor neighbourhoods of Greater Buenos Aires, Argentina, after the political transitions of 2001-2002: Results of a survey. Harm Reduction Journal [Internet]. 2011 [cited 12 May 2012];8(2). Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3039540/.

40. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77-101.

41. Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in systematic reviews. BMC Medical Research Methodology [Internet]. 2008 [cited 12 May 2012];8(45). Available from: http://www.biomedcentral.com/1471-2288/8/45.

42. Morgado MG, Bastos FI. Estimates of HIV-1 incidence based on serological methods: a brief methodological review. Cadernos de Saúde Pública. 2011;27(Suppl 1):S7-S18.

43. Brandt C, Cohen D, Shifman M, Miller P, Nadkarni P, Frawley S. Approaches and informatics tools to assist in the integration of similar clinical research questionnaires. Methods of Information in Medicine. 2004;43(2):156-162.

44. Martin ET, Krantz E, Gottlieb SL, Magaret AS, Langenberg A, Stanberry L, Kamb M, Wald A. A pooled analysis of the effect of condoms in preventing HSV-2 acquisition. Archives of Internal Medicine. 2009;169(13):1233-1240.

45. Egger M, Smith GD. Meta-analysis bias in location and selection of studies. British Medical Journal. 1998;316(7124):61-66.

46. Molinero-Casares LM. Metaanálisis: claves para interpretar una herramienta de investigación controvertida. Hipertensión. 2001;18(5):232-240.

47. Ruano-Ravina A, Figueiras A, Barros-Dios JM. El metaanálisis a debate. Medicina Clínica. 2002;119(11):439.

48. Glass GV. Primary, secondary and Meta-Analysis of research. Educational Research. 1976;10(5):3-8.

49. Glass GV. Meta-Analysis at 25. Special Education Programs Research Project Directors' Conference (1999 Jul 15) [Internet]. Washington DC: US Department of Education; 2000 [cited 12 May 2012]. Available from: http://www.gvglass.info/papers/meta25.html.

50. Barreto ML, Teixeira MG, Bastos FI, Ximenes RA, Barata RB, Rodrigues LC. Successes and failures in the control of infectious diseases in Brazil: social and environmental context, policies, interventions, and research needs. The Lancet. 2011;377(9780):1877-1889.

51. Pinto MT, Rodrigues ES, Malta TM, Azevedo R, Takayanagui OM, Valente VB, Ubiali EMA, Covas DT, Kashima S. HTLV-1/2 seroprevalence and coinfection rate in Brazilian first-time blood donors: an 11-year follow-up. Revista do Instituto de Medicina Tropical de São Paulo. 2012;54(3):123-130.

52. Dirección de sida y ETS. Boletín sobre el VIH-sida en la Argentina. 2011;XIV(28).

53. Dirección General de Salud. Boletín epidemiológico: Situación epidemiológica del VIH-SIDA en Uruguay (1983-2009). Montevideo: Ministerio de Salud Pública, DEVISA-PPITS/SIDA; 2009.

54. Souto FJD, Fontes CJF, Pignati LT, Pagliarini MES, Menezes VM, Martinelli ALC, Figueiredo JFC, Donadi EA, Passos AD. Risk factors for hepatitis C virus infection in Inland Brazil: an analysis of pooled epidemiological sectional studies. Journal of Medical Virology. 2012;84(5):756-762.

55. Bravo MJ, Mejía IE, Barrio G. Encuestas de comportamiento en CODAR: Herramientas básicas para vigilancia de segunda generación de la transmisión de VIH y otras ITSS en Consumidores de Drogas con Alto Riesgo [Internet]. Washington DC: Organización Panamericana de la Salud; 2008 [cited 12 May 2012]. Available from: http://www.paho.org/Spanish/AD/FCH/AI/VIH_drogas.htm#Encuestas.

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