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Developing socio-epidemiological indicators of sexual health among migrant population in Chile

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Abstract

Background Monitoring and responding to the sexual health needs of migrants is crucial, given their vulnerability during migration. Therefore, this study aimed to develop socio-epidemiological indicators related to sexual health and communicable diseases among the migrant population in Chile, including dimensions of the contexts of vulnerability and migratory trajectories.

Method We used a mixed methodology within the framework of implementation research and community-based research based on qualitative data, secondary sources, and expert judgment to construct socio-epidemiological indicators related to sexual health among the migrant population in Chile, including vulnerability and migration trajectories. Preliminary indicators were defined. First, qualitative data were collected through semi-structured interviews with individuals of migrant origin and focus groups with members of community-based organizations, primary healthcare providers, and experts. These instruments were then complemented with indicators from secondary sources. The set of indicators was subjected to content validation and ranking through Delphi Groups and expert judgment, ending with validation through a field pilot test.

Results The result was a definitive instrument that included 94 indicators, distributed into 73 questions that correspond to the following dimensions: sociodemographic background, migratory history, and contexts of vulnerability, violence, connection with the Chilean health system, sexual practices, sex work, sexual health (including HIV and STIs) and access to sexual health services, and sexual health needs.

Conclusion Participation of the target population and key actors allowed for consensus on a highly sensitive data collection instrument since its indicators account for the contexts of vulnerability and key structural aspects to address sexual health among migrants from an intersectional perspective.

Keywords Migrants, Sexual health, Epidemiological surveillance, stis

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Text box 1. Contributions to the literature

- This study shows that the development of indicators with the participation of the target population and key stakeholders allows for the creation of a highly sensitive data collection instrument that integrates a diversity of knowledge and experiences.
- The importance of addressing migrants' sexual health from an intersectional perspective is emphasized, enriching the analysis of structural inequalities and vulnerabilities for better understanding.
- A monitoring instrument for migrants' sexual health in Chile is presented, facilitating continuous data collection and overcoming the limitations of cross-sectional surveys through an updatable and adaptable data system.

Background

In 2020, there were 281 million migrants between nations, representing 3.6% of the world's population [1], with an increase of 0.8% between 2000 and 2020 [2].

Migration is considered a social determinant of health (SDH) [3] because it can exert considerable effects on the health of those who migrate. This is due to vulnerability situations during migration, arrival, and settlement in the destination country [4].

Although the health status of migrants is heterogeneous and difficult to compare globally, there is evidence of persistent inequities in access to health services has been reported in various regions [5–7]. Furthermore, mortality from infectious diseases and external causes is higher among migrants [8]. These causes are preventable and demonstrate how SDH influences this population.

Sexual health (SH) is essential for comprehensive well-being, including the physical, psychological, and sociocultural aspects related to sexuality [9]. Addressing the SH needs of individuals of migrants is a crucial challenge for public health because of the vulnerability they face during migration, where they are exposed to sexual abuse and exploitation, especially women, girls, boys, and adolescents [10]. During transit, women have limited access to SH and reproductive services is limited, increasing the risk —especially in irregular migration [11]. Lesbian, gay, bisexual, transgender, queer, and intersex (LGBTQI+) migrants, and particularly transgender people, face additional barriers [10, 12] and double marginalization due to stigma, violence, and discrimination [12–14].

In the international context, studies have found that the incidence and prevalence rates of HIV, hepatitis B, C, and syphilis are higher among migrant populations than in local populations [15]. Although migration does not directly increase the risk of HIV, associated social, economic, and political factors do [16]— including barriers to accessing health services, lack of knowledge [10, 15, 17], low participation in preventive programs [18], and experiences of stigma and discrimination [15].

Chile is a country located at the southernmost tip of South America, with a population of 19,828,563 inhabitants as of 2022 [19]. In the past decade, migration has increased significantly, reaching a total of 1,625,074 foreigners in 2022, which represents 8.45% of the total population [20]. This represents a 25.0% increase compared to the same period in 2018. Concurrently, a re-emergence of the HIV epidemic has been observed, with an incidence of 0.25 cases per 1,000 inhabitants in 2022 [21], and an increase in cases of syphilis and gonorrhea [22]. New cases of HIV among migrants have increased from 20.2 to 33.8% between 2017 and 2021 [23].

The 2020 Global Migration Report [24] highlights the urgency of standardizing and comparing health data for migrants to better understand trends and results. According to this report, it is recommended to monitor care-seeking behaviors, access to services. In addition, health inequities are explained by social class, gender, and ethnicity [25]. Monitoring such inequities is crucial for guiding policies and programs that promote health equity [24]. Health indicators help monitor trends in health status and identify potential health problems; examine health trends linked to exposure to risk factors to guide the creation of public policies; observe and evaluate the effects of health policies and interventions; provide clear and concise information about analyzed issues to stakeholders; and contribute to research on the possible relationships between the social determinants involved [26, 27]. Considering the SH needs associated with migration phenomena at a global level, the development of a community-based surveillance system (CBSS) [28] focused on the SH of migrants in Chile may be a relevant strategy to link these populations with the health system and prevent disease.

This investigation, framed within the study "Community-based surveillance of socio-epidemiological aspects linked to sexual health and related communicable diseases among the migrant population in Chile" (FONDECYT Regular N° 1220371) - COSMIC, aimed to develop socio-epidemiological indicators related to sexual health and communicable diseases among the migrant population in Chile, including dimensions of the contexts of vulnerability and migratory trajectories.

Methodology

Study design

This study was a mixed methodology within the framework of implementation [29] and community-based research [30, 31], for the development of a set of socio-epidemiological sexual health indicators targeted at the migrant population which is part of a community-based surveillance system. These set of indicators are applied at the individual level and, in addition to facilitating data collection and monitoring, they have a secondary objective—outside the scope of this study—of developing an

individual vulnerability index. This index would help identify migrants with greater sexual health care needs.

Study population and setting

This study was conducted in 2023,the target population was international migrants living in Chile in the cities of Antofagasta and Santiago, selected due to the high percentage of migrants. The Metropolitan Region (Santiago) hosts the largest proportion of migrants, accounting for 57.8% of the estimated total foreign population in 2022, followed by Antofagasta with 6.7% [20].

Techniques for collecting information and content validation

Table 1 shows the techniques for collecting information and content validation.

Stage 1: creation of socio-epidemiological indicators

Two complementary stages were conducted to construct and define the list of indicators:

Construction of indicators from a qualitative data survey

A total of 18 semi-structured interviews were conducted with individuals of migrant origin from Bolivia ($n=6$), Colombia ($n=6$), and Venezuela ($n=6$) in the city of Antofagasta, using convenience sampling. Furthermore, **3 focus groups** (FG) were conducted with community-based organizations (CBOs) workers ($n=4$) and primary health care (PHC) workers ($n=2$) from Antofagasta, academic experts ($n=2$) in migration, and workers ($n=5$) from the Ministry of Health (MINSAL) of Chile. The aim **of this study was to explore SH**, **migration trajectories**, **and the contexts of migrants' vulnerability**. All interviews and GFs were conducted by expert personnel, recorded, and transcribed.

A group of five experts in SH and migration was established to construct indicators from the qualitative survey, and review and agree on the indicators. The Atlas.ti 23 software was used to code and categorize according to common themes. The list of indicators also underwent **an individual content review by nine experts** in SH, gender, and migration to form **preliminary matrix of socio-epidemiological indicators**.

Table 1 Process of developing socio-epidemiological indicators

Process	Stage	Method	Outcome
Creation of indicators	Stage 1	Construction of indicators by a primary qualitative survey	Preliminary indicator matrix
		Complementation with secondary data sources	Extensive indicator matrix
Content validation	Stage 2	Modified Delphi Group	Version 1
		Expert judgment	Version 2
	Stage 3	Pilot testing	Final version

Complementation with secondary sources

The preliminary indicator matrix was complemented with 3 secondary sources:

1. **Questionnaire for the study** "Contexts of vulnerability, sexual practices, and institutional barriers to addressing sexual health, HIV, and other STIs in migrant populations" (MIRADASS). It was also used in the previous phase of indicator construction.
2. **National Survey of Health**, **Sexuality**, **and Gender (ENSSEX) of Chile 2022–2023** [32].
3. "Structural and intermediary determinants in access to sexual health care among migrant populations: **A scoping review**" [33].

The first version of the "Extensive Matrix of Indicators" was prepared using an Excel spreadsheet after triangulating with the elements provided by these three sources. The model included dimensions, categories, subcategories, and indicators. Additionally, an "Instrument" type document was prepared with the questions and response categories derived from each indicator.

Stage 2: content prioritization and validation

Delphi group

The modified Delphi method was used to build consensus on the set of socio-epidemiological indicators to be included for monitoring SH and related communicable diseases in a CBSS of migrants in Chile. This participatory process involves expert consensus without direct confrontation of opinions [34, 35].

A panel of 9 experts in migration, gender, and SH was formed, and they were invited to participate via email with information about the Project and the Delphi process.

A web form (Google forms) was designed. The form contained a complete matrix of questions and response categories, but is divided into four parts due to the large number of indicators. It was planned in such way to reduce the workload of the experts.

Participants were asked to *evaluate each question and response category (indicator) and make the decision to "keep," "modify," or "delete" the questions based on their pertinence and relevance in the context of developing a CBSS to monitor the SH of migrants in Chile.*

After each question, the form contains a space to provide suggestions and modifications to the question being asked.

Three rounds of review were performed over 3 weeks. At the end of each round, the information was systematized in Microsoft Excel, and the aggregated and anonymized results were sent. Reminders were sent to reduce

the dropout rate, and a 1-week flexibility was granted for sending responses.

Validation by expert judgment

Since the modified Delphi Group technique did not sufficiently reduce the indicators, validation by less structured expert judgment was used as a complementary strategy, with the purpose of prioritizing and reducing the number of indicators.

To this end, a panel of 11 experts in migration and SH in clinical, academic, and community environments was formed, of which 10 confirmed their participation. Invitations and information were sent via email.

The panel includes:

- MINSAL representatives: One from the intercultural health area and three from the HIV/AIDS and STI Program.
- Representatives from the two PHC establishments linked to the project.
- Representatives of the four CBOs linked to the project.

The validation process by expert judgment consisted of an individual review using a web form (Google forms), which divided the indicator matrix into 2 parts (A and B). The MINSAL representatives reviewed Part A or B, according to their area of expertise, whereas the CBO and PHC workers reviewed the entire matrix (see Fig. 1).

The form contained the following question for each indicator: *"Is it necessary (relevant and pertinent) to include the question in a monitoring system aimed at identifying greater vulnerability linked to sexual health (and related communicable diseases) of migrants in Chile?"*

Dichotomous response alternatives: *yes or no*.

The result of round 1 was systematized in Excel, and a report was generated. Since Round 1 did not reach the consensus necessary to significantly reduce the number of indicators, a second round of group review was carried out by 2 of the Delphi Group experts.

Stage 3: piloting of the instrument

Once the latest version of the instrument was ready, it was validated through a field pilot test to assess migrants over 18 years old' understanding of the indicator questions.

Four trained interviewers applied the instrument for 3 weeks at the CBOs and PHC facilities linked to the project in Santiago and Antofagasta, establishing a sample of 100 people.

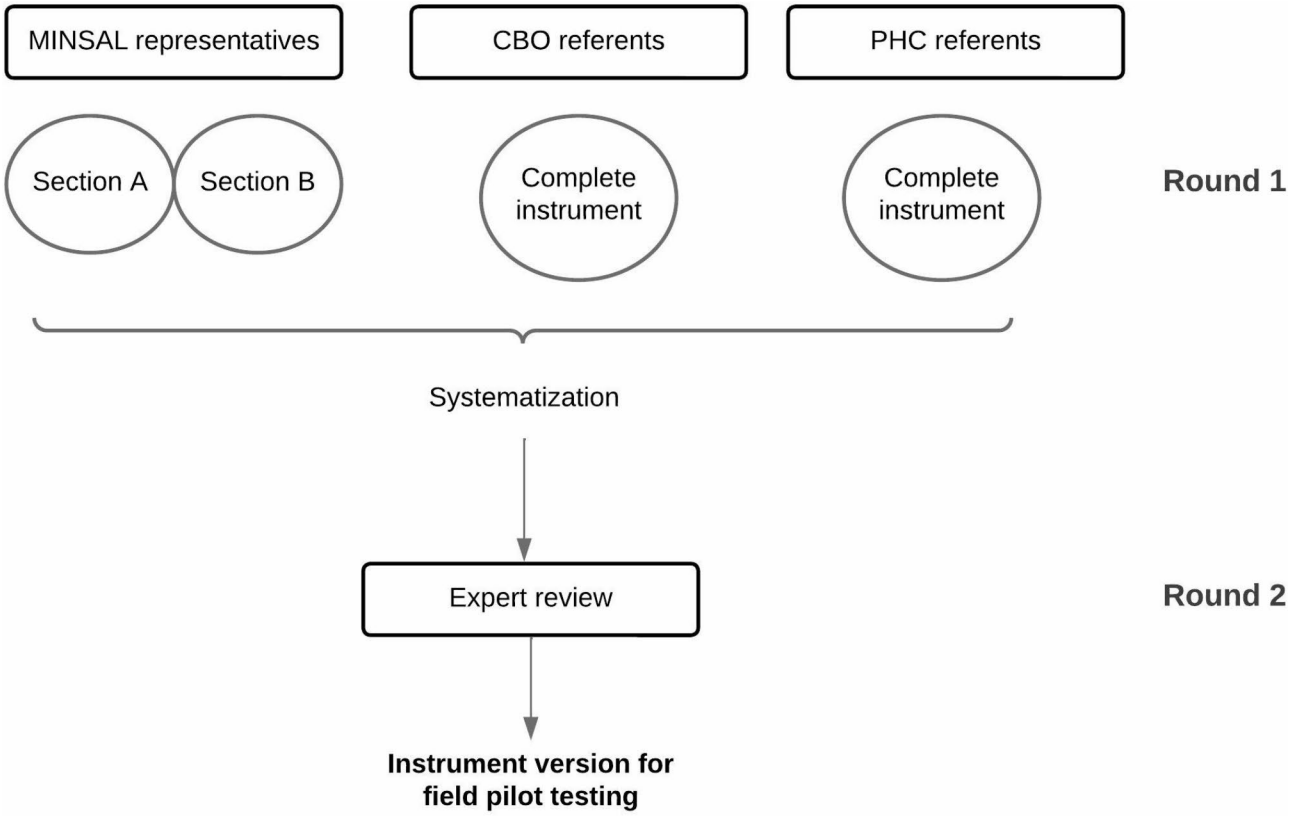

Fig. 1 Validation process of expert judgment

The instrument was reviewed and adjusted on the third day of piloting. During the piloting, the interviewers recorded aspects of wording, structure, and personal sensitivities. This information was analyzed to facilitate the modifications that led to the final instrument.

Results

Stage 1

Construction of indicators from a qualitative data survey

To construct the indicators, a team of 5 **experts** coded and categorized the information from 13 interviews, including proposing preliminary dimensions, categories, and subcategories. Information from the interviews was triangulated using the three FGs. After the preliminary indicators were defined, questions and response categories were developed based on the coded information.

The list of indicators and the instrument with questions and response categories were reviewed by the team during telematic sessions, resulting in 168 indicators distributed into 130 questions. Then, an **individual content review was conducted by nine experts**, who provided feedback via email. This modified the indicators, questions, and response categories, and adjustments to the organization of dimensions and categories.

Finally, a preliminary **matrix of socio-epidemiological indicators** was created with 170 indicators contained in 132 questions, distributed in 5 dimensions and 26 categories (see in supplementary material): migration trajectory and contexts of vulnerability, violence, SH imagination, SH and access to health, and connection with the health system.

Complementation with secondary sources

From secondary sources, 39 indicators (17 questions) to the preliminary matrix, totaling 203 indicators (149 questions) (see supplementary material). The dimensions and categories were reorganized, adding 2 new dimensions: "Sociodemographic Background" and "Sex Work". In addition, new categories such as "Sexual Practices" were included, which did not emerge in the initial qualitative approach. This caused the Extended Matrix of Indicators (see Table 2).

Stage 2

Modified Delphi group

Round 1 The established consensus criteria were.

- Agreement greater than 50% to eliminate a question/indicator.
- Agreement greater than 50% to keep a question/indicator (with no expert selecting the option to eliminate).
- Questions/indicators without consensus will be subject to a second round of consensus.

In round 1, 9 experts sent their responses, and 18 indicators and questions were eliminated. There was no consensus among the 88 questions (129 indicators), so a second round of individual review was conducted. See results in Fig. 2.

Round 2 The 9 experts were asked to review the indicators that did not achieve consensus and 8 of 9 responded. The criterion of an agreement greater than 50% was applied to "keep" or "eliminate" an indicator. Therefore, 63 questions were retained, 15 were eliminated, and 10 did not reach a consensus.

Round 3 Two experts reviewed and discussed questions/indicators that did not lead to consensus in round 2. A review of the entire instrument was conducted to ensure the harmony and coherence of the prioritized indicators. As a result, 2 questions (5 indicators) without prior consensus were kept and 18 were eliminated (8 without prior consensus and 10 that were included but affected the coherence of the instrument).

These rounds allowed for constructing a prioritized indicator matrix; however, the expected reduction was not achieved. Version 1 of the instrument contained 98 questions (140 indicators) distributed into 8 dimensions (see supplementary material), including "Sexual Practices."

Table 2 Dimensions and categories of the extended matrix of indicators resulting for stage 1

Dimensions	Categories
Sociodemographic Background	Sex assigned at birth, sexual identity, country of birth, language, religion or creed, and educational level.
Migratory trajectory and contexts of vulnerability	Context of departure, networks, context of migratory journey, capacity for agency on the way to Chile, and capacity for agency since settling in Chile.
Violence	Gender violence, sexual violence, and discrimination.
Sexual health as an imaginary	Sexual initiation, sexual socialization (sex-diverse community), family planning, sexual practices, and prevention methods.
Sex work	
Sexual health and access to health	Gynecological check-up, Pap smear, breast examination, menstrual health, sexual satisfaction, and/or dysfunction, HIV, STI (non-HIV), pregnancy, abortion, childbirth, sexual health needs.
Linkage with the health system	

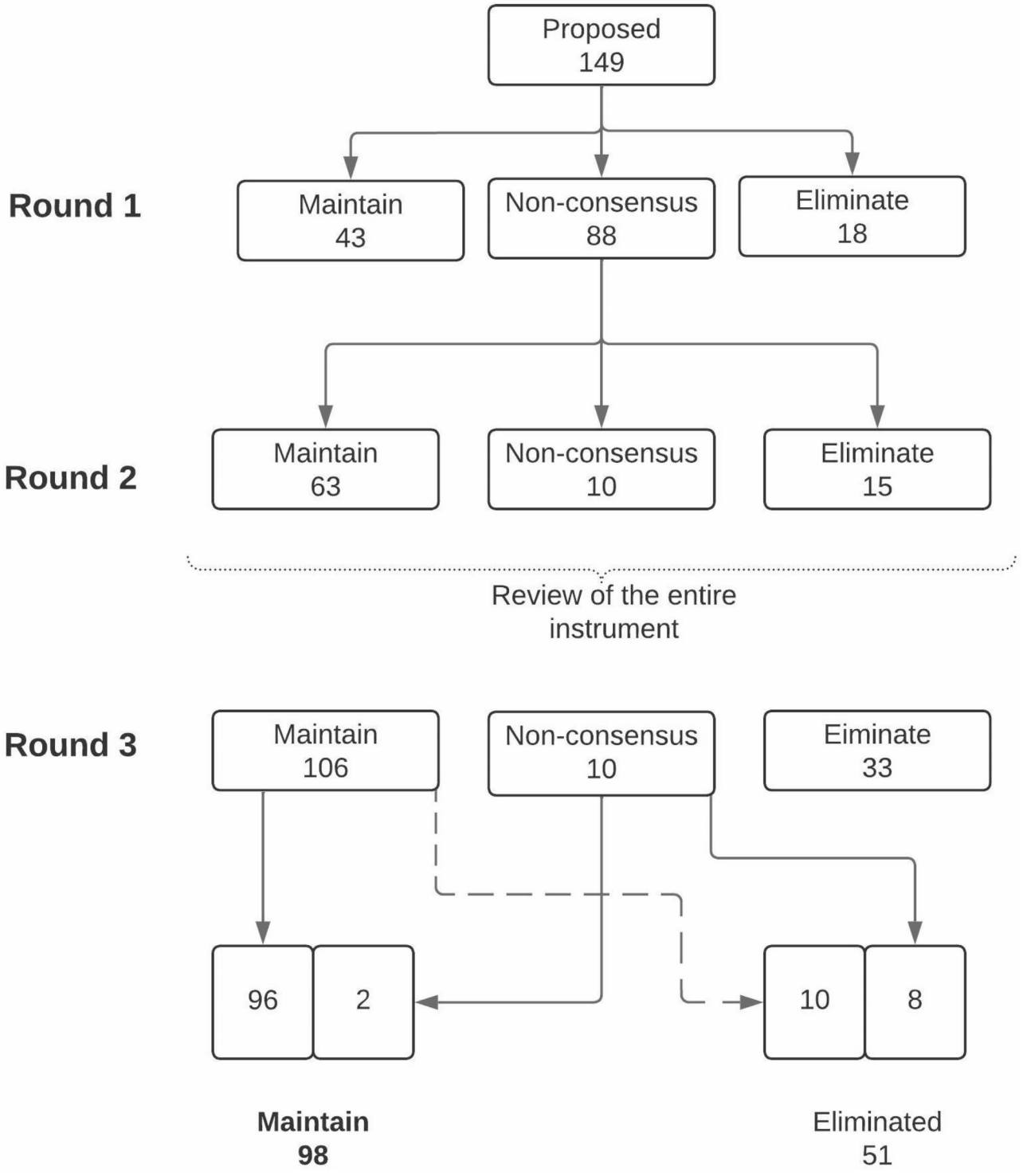

Fig. 2 Process and results of initial ranking of indicators

Validation by expert judgment

Round 1 in round 1, 22 questions reached a consensus above 20% for elimination. No consensus was reached to prioritize the indicators. Therefore, it was decided to carry out a second round to reduce the extent of the instrument.

Round 2 Two experts reviewed all the indicators as a group. Priority was given to eliminating indicators with a consensus greater than 20% (2 experts or more) in round 1, requiring 100% consensus in round 2.

29 questions were eliminated: 17 questions were agreed upon in Round 1, and 12 questions were agreed upon in

Table 3 Results of the expert judgment validation

Round 1			Round 2
Yes	**No**	**Questions**	**Eliminated questions**
100%	0%	43	6
87.5%	12.5%	32	6
75%	25%	**16**	12
62.5%	37.5%	**6**	5

Round 2. The question "Age" was added and two questions from the item "SH needs" were divided. As a result, "**Version 2"** of the final matrix had 71 questions and 102 indicators after eliminating the "Sexual Imagery" dimension and redistributing its questions into "Violence" and "SH and Access to SH."

Phase 3: piloting and final version

The instrument was adjusted once the piloting began by adding a new question and indicator to "Time in Chile" and modifying six questions by complementing their response categories.

The application was completed in 100 individuals, with an application duration of between 10 and 15 min. Final adjustments were made and indications for the instrument manual were identified after analyzing qualitative records.

The following modifications were made to the instrument during the pilot phase:

- Adjustment of questions to improve clarity.
- Modification of response options:
  - Incorporation of new options and replacement of previous ones based on the pilot phase results.
  - Reorganization and inclusion of multiple responses when necessary.
- Addition of questions to improve the transition between.
- Elimination of redundant questions.
- Reorganization of key questions to facilitate the collection of relevant information, such as "sex work."
- Simplification of compound questions by reducing response options and reorganizing content, as in the case of "HIV knowledge" and "sexual health needs."

The dimensions, categories and set of indicators are presented in Table 4, and the subcategories are discussed in more detail in the Supplementary material.

The final instrument had **73 questions and 94 indicators**. Table 5 shows the organization of the instrument:

Discussion

This research was framed according to a community-based research methodology that involves the active participation of the community in all its phases. This allows the quality and validity of the research to be improved through the incorporation of the knowledge of the individuals involved and a co-learning process [30, 31]. Consistent with this approach, the methodology involved the incorporation of adaptation and iteration processes in its different phases, which developed capacities through problem solving and conferred legitimacy to the procedures [36].

A set of indicators for monitoring the SH of migrants in Chile was developed and defined, resulting in an instrument composed of 73 questions and 94 indicators selected based on their relevance. We believe that the development of a monitoring instrument of this type, aimed at migrant populations, is valuable not only in Chile but also worldwide. This is because it exceeds the potential of a cross-sectional survey—by configuring a continuous data collection system that constitutes a source of information for action—with the potential to be permanently updated and adapted to different contexts.

An innovative and relevant aspect was the construction phase of measurable indicators from the primary qualitative data. The interviews collected information from the target population, thus incorporating key dimensions reported by them. Moreover, triangulation with secondary data sources allowed for the incorporation of previously validated indicators for both the general population and the migrant population, as well as diversification of the whole matrix, adding structural and specific indicators from the SH field. This allows for future data comparability to understand differences in key indicators' behavior in populations with vulnerable contexts. Aligned with our research, we identified a similar experience proposing outcome indicators on community participation in improving SRH, highlighting how community engagement and empowerment enhance their capacity to achieve sustainable improvements in this field [37].

The participation of experts in migration and health issues, health professionals, and community workers, who contributed with their extensive knowledge and experience of working with migrant populations—both in the construction phase and in the validation of content—facilitated the achievement of a broad consensus to be achieved. The participation of experts is essential when constructing instruments because it allows for the incorporation of rigor into the process based on knowledge and learning from accumulated experience.

The set of proposed indicators reflects the complexity of migration, which includes structural barriers and cross-cutting axes of inequality. The SH of migrants

Table 4 Dimensions and categories and set of indicators

Dimension	Category	indicators
Sociodemographic Background	Sex assigned at birth, sexual identity, age, country of birth, and educational level.	Sex assigned at birth, sexual identity, age, country of birth, and educational level.
Migratory trajectory and contexts of vulnerability	Context of departure	Reason for migration, intimate partner violence as a reason for migration, sexual violence as a reason for migration.
	Context of migration	Duration of the journey to Chile, elapsed time since arrival in Chile, mode of transportation during the journey to Chile, mode of entry into Chile.
	Settling in Chile	Migration status, employment status, domestic work, Type of work, receipt of wages/salaries, housing conditions. Occurrence of the following situations during settlement in Chile: retention of identification documents, living or sleeping in public spaces, loss of management or control over personal income, physical violence by strangers, Sex work, Transactional sex.
Violence	Discrimination, gender violence, sexual violence.	The following indicators, considering their occurrence since arrival in Chile: Perception of discrimination experienced, reason for discrimination encountered, sexual abuse or assault, sexual violence, physical gender-based violence, psychological gender-based violence, economic gender-based violence, sexual violence within intimate relationships, expression of sexuality in Chilean society.
Connection with the health system	Contact with the health system and access barriers.	Health care coverage, contact with the health care system in Chile, reason for using or contacting the health care system, reason for lack of access to the health care system in Chile
Sexual practices	Sexual initiation, sexual partners, condom use, chemsex, and last sexual relationship.	Age at first sexual intercourse, consent for first sexual intercourse, stable partner in the last 12 months, casual partner in the last 12 months, frequency of condom uses with casual partners in Chile, reason for not always using condoms with casual partners in Chile, Chemsex, Date of last sexual intercourse, characteristics of the last sexual intercourse
Sex work.		Engagement in sex work in Chile, context of initiation into sex work, frequency of condom uses during sex work, reasons for inconsistent or non-use of condoms in sex work.
Sexual health and access to sexual health	Gynecological or urological check-up	Time elapsed since the last gynecological/urological consultation, country of the last gynecological/urological consultation, reason for not accessing gynecological/urological care in Chile.
	Pap smear	History of ever having a Pap smear in lifetime, time elapsed since the last Pap smear, result of the last Pap smear, reason for never having had a Pap smear.
	methods for preventing pregnancy	Use of family planning methods in Chile, current pregnancy status, type of contraception used in Chile, source of contraception in Chile.
	STIs (not HIV) or other genital infections	History of STIs, names of diagnosed STI(s), treatment of diagnosed STI(s), abnormal genital discharge (in the last 12 months), sores or lumps on the penis/vagina or anus (in the last 12 months).
	HIV	The following indicators, considering Knowledge of HIV transmission routes: vertical transmission (during childbirth), vertical transmission (through breastfeeding), sexual transmission, sharing needles or syringes, transmission via blood transfusion or surgery, lack of knowledge or myths. Awareness of PrEP, history of ever having an HIV test (by country), reason for not having an HIV test in Chile, reason for having an HIV test in Chile, result of the last HIV test, use of antiretroviral therapy, experience of discrimination for living with HIV.
	pregnancy	Occurrence of pregnancies, age at first pregnancy, total number of pregnancies, number of unplanned/unwanted pregnancies, prenatal care in the country of origin (for the last pregnancy), occurrence of pregnancy in Chile, prenatal care in Chile (for the last pregnancy).
	abortion.	Occurrence of abortion (and type)
Sexual health needs	Need for sexual healthcare access in Chile and unmet needs.	Need for routine preventive gynecological/urological check-up, or care for discomfort in genitals/breasts, Need for access to breast examination, need for access to healthcare services for transgender individuals, unmet need for routine preventive gynecological/urological check-up, or care for discomfort in genitals/breasts, unmet need for breast examination, unmet healthcare needs for transgender individuals.

Table 5 Organization and instrument question before and after the pilot

Sections	Version 1 questions (Before the pilot)	Questions after the pilot
Sociodemographic background.	**6**	**6**
Migratory trajectory and contexts of vulnerability	**11**	**11**
a. Migratory journey	6	6
b. Context of settlement in Chile and its socioeconomic situation	5	5
Violence	**5**	**5**
Connection with the Chilean health system	**4**	**4**
Sexual practices	**8**	**10**
Sex work	**4**	**3**
Sexual health and access to sexual health	**31**	**31**
a. Gynecological/urological care	7	7
b. Pregnancy prevention	3	3
c. STIs (and other genital infections)	5	5
d. HIV	8	8
e. Obstetric history (pregnancy, abortion, and childbirth)	8	8
Sexual health needs	**2**	**3**
Total	**71**	**73**

cannot be studied in isolation because of their vulnerabilities and the associated impact [10]. Migration processes should be analyzed from a gender perspective because they are influenced by the intersection of various associated dimensions, such as race, class, sexuality, sexual orientation, and identity [38, 39], and marked by intersectional violence [40]. Therefore, it is essential to approach studies and interventions on migration and social security from an intersectional perspective to understand how power systems affect individuals and groups [41, 42].

Therefore, in the development of the instrument for monitoring the social security of migrants, priority was given to indicators of dimensions that address structural inequities from an intersectional perspective in its different phases—such as "Migratory Trajectories and Contexts of Vulnerability" and "Violence." These indicators included in the instrument will allow us to reduce the knowledge gap and expand the analysis by including social security variables, structural factors, and contexts of migrant population vulnerability. Among the indicators of violence, "Discrimination" and "Sexual Violence" were included. The literature shows that the gender diversity/LGBTI + population and women are groups in which these inequities are intensified. Examples of this in Chile are the high percentage of LGBT individuals who report discrimination (64% in the last year) and homophobic harassment (45%) [43]. Women report more sexual assaults and abuse than men (5.6% versus 7%) [44].

The literature reports efforts to identify sexual health indicators primarily at the population level, targeting the general population [45, 46], some based on review methodologies [47] (reference USA). Our results align with key areas such as family planning, sexual violence, and STIs/HIV [46, 47]. In reproductive health, proposed indicators related to health and well-being, such as stigma, fulfillment of support needs, productive roles (work, education, domestic tasks, caregiving), and social roles [48], also align with those in this study. While indicators of sexual satisfaction and function/dysfunction were considered [46, 48], they were excluded during the prioritization of our instrument. However, their inclusion may be relevant for future research.

This study has some limitations. The most common definition of health indicators is population-based [49], but this work focuses on individual indicators for a CBSS, which may be confusing, although there are similar experiences [50, 51]. The instrument was developed in Spanish because the objective is to implement a CBSS, and community devices do not have intercultural facilitators for its application in other languages. Therefore, in the future, considering that migration processes include individuals who speak other languages, it is essential that versions be adapted and translated to these populations. Furthermore, it was not possible to prioritize enough indicators using only the Delphi method, which led to the need to complement it with a less structured methodology, such as consulting experts.

Conclusion

The construction of indicators with the participation of the target population and key actors made it possible to reach a consensus on an information collection instrument that aims to be highly sensitive, since it incorporates the diversity of knowledge and experiences, as well as an intersectional perspective, contexts of vulnerability, and fundamental structural aspects for addressing sexual health in migrants.

Abbreviations

CBSS	Community-based surveillance system
CBOs	Community-based organizations
PHC	Primary health care
SH	Sexual Health
FG	Focus Group
LGBTI+	Lesbian, gay, bisexual, transgender, queer, and intersex

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13690-025-01587-3.

Supplementary Material 1

Supplementary Material 2

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Author contributions
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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
This project was approved through Act No. 017/2022, of May 10, by the Bioethics Committee, the Vice-Rectorate for Research and Doctorate of the Andrés Bello University, and the Scientific Ethics Committees of the North (No. 022/2023) and Antofagasta (No. 038 – 23/2024) Metropolitan Health Services. Informed consent was obtained from all subjects involved in the study.

Consent for publication
Not Applicable.

Competing interests
The authors declare no competing interests.

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