



Programa de Doctorado en Epidemiología y Salud Pública

DESIGUALDAD EN SALUD MATERNA EN LA POBLACIÓN INDÍGENA EN MÉXICO

Tesis Doctoral con mención internacional presentada por

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ABREVIATURAS

CASM: Continuo de la Atención de la Salud Materna

CR: Coverage ratio

ENDES: Encuesta Demográfica y de Salud Familiar (Perú)

ENDSA: Encuesta Demográfica y de Salud (Bolivia)

ENIM: Encuesta Nacional de Niños, Niñas y Mujeres (México)

ENSMI: Encuesta Nacional de Salud Materno infantil (Guatemala)

IH: Indigenous Household

ICC: Índice Compuesto de Cobertura

LAC: Latinoamérica y el Caribe

MER: Mujeres en Edad Reproductiva

ODS: Objetivos del Desarrollo Sustentable

SDGs: Sustainable Development Goal

SI: Self-identification as indigenous

SIL: Spoken Indigenous Language

WRA: Women of Reproductive Age

RESUMEN

Objetivo: Medir la desigualdad en salud materna por etnicidad e identificar los elementos que inciden para su implementación como un instrumento de monitoreo de la equidad en salud en México.

Diseño: El abordaje de la investigación fue mixto a través de componente cuantitativo y uno cualitativo. El componente cuantitativo es un estudio descriptivo transversal con datos secundarios. El cualitativo es un estudio exploratorio descriptivo con datos primarios.

Muestra: Para el análisis cuantitativo se consideraron mujeres en edad reproductiva (MER) de 15-49 años con información de su último embarazo en los 2 o 5 años anteriores a la encuesta. Para analizar el uso de anticonceptivos se consideraron las MER casadas o unidas. Para el análisis cualitativo se realizaron 17 entrevistas a actores clave en el monitoreo de la salud materna. Los informantes eran tomadores de decisiones, coordinadores, técnicos e investigadores pertenecientes al ministerio de salud, observatorios de monitoreo, institutos de investigación y organismos internacionales.

Métodos: En el análisis cuantitativo con datos de encuestas de demografía y salud y de indicadores múltiples por conglomerados se estimó la cobertura por etnicidad de indicadores que cubren el continuo de la atención de las mujeres desde el embarazo hasta el puerperio. Se estimó el Índice Compuesto de Cobertura (ICC) como un promedio ponderado de los indicadores evaluados. Se midieron las brechas por etnicidad a través de razones de cobertura estimadas con modelos de regresión de Poisson ajustados por variables sociodemográficas y utilizando diferentes criterios de identificación étnica. Las mujeres fueron clasificadas como indígenas a través de la autoidentificación, el idioma indígena hablado o el hogar indígena. El análisis cualitativo fue de tipo fenomenológico interpretativo. Se exploró a partir de la propia perspectiva de los participantes su experiencia en el monitoreo de la salud materna para comprender el estado actual en el que se desarrolla y los factores que inciden para que se realice.

Principales variables de investigación: En el componente cuantitativo se analizó: recibió atención prenatal alguna vez, recibió atención prenatal por personal calificado, al menos cuatro consultas prenatales, consulta prenatal en el 1er. trimestre del embarazo, atención del parto por personal calificado, recibió atención posparto alguna vez, y el uso de anticonceptivos modernos. En el componente cualitativo se exploraron los obstáculos y oportunidades relacionadas con la evaluación, la información, los recursos, la gestión y la toma de decisiones.

Resultados: Es posible estimar las desigualdades entre indígenas y no indígenas en el continuo de la atención de la salud materna utilizando criterios relacionados con el lenguaje o la autoidentificación como proxies de la etnicidad. Sin embargo, la proporción de las mujeres indígenas identificadas y la magnitud

de las brechas observadas varían dependiendo del criterio utilizado. Las mayores diferencias entre indígenas y no indígenas se observan al utilizar el criterio del lenguaje. Independientemente del criterio de identificación étnica utilizado, las mujeres indígenas tienen menores niveles de cobertura. Las desigualdades más relevantes se dan en la cobertura de atención del parto por personal calificado y en el uso de anticonceptivos. Considerando el criterio del lenguaje, a nivel global (en el ICC) las distancias mayores respecto a las no indígenas se observan en México en comparación con Bolivia o Perú.

Actualmente no se monitorea ningún indicador desagregado por etnicidad relacionado con la salud o atención materna. El monitoreo de la atención de la salud materna se enfoca principalmente en la estimación de indicadores relacionados con la cobertura de los servicios y la mortalidad materna. Observamos que, desde todos los ámbitos, el sector salud, la investigación, organismos nacionales e internacionales se realizan esfuerzos, pero estos están desarticulados. Los obstáculos y oportunidades señalados por los entrevistados surgen de las limitaciones o ventajas asociadas con la precisión de la evaluación, la disponibilidad de información y recursos, la gestión y la toma de decisiones efectivas. Se reconoce la importancia de medir las desigualdades en la atención de la salud materna, sin embargo, esto no ha conducido a decisiones políticas que permitan desarrollar un indicador para monitorearlas. El apoyo político y técnico papel de las organizaciones internacionales y sus vínculos con los países podría ser crucial para llevar a cabo el monitoreo.

Conclusiones: A pesar de las limitaciones conceptuales y técnicas, es posible estimar las desigualdades en la atención materna por etnicidad pero se debe ser claros sobre cómo se clasifica a la población para una correcta interpretación y su uso adecuado en la toma de decisiones. Las diferencias observadas reflejan las inequidades que enfrentan las mujeres indígenas en la cobertura de la atención de la salud materna. Mientras las desigualdades persistan, identificarlas será un primer paso para su eliminación. Incorporar este tipo de mediciones requiere de superar barreras relacionadas con la disponibilidad y calidad de la información, recursos limitados o escasos (financieros y técnicos), poco compromiso o voluntad política, y la falta de articulación entre los actores involucrados. Así como de aprovechar el actual impulso que la agenda internacional da a la medición de las desigualdades a través de asistencia técnica y apoyo político.

ABSTRACT

Objective: Measuring inequalities in maternal health by ethnicity and identify the elements that influence its implementation as an instrument for monitoring health equity in Mexico.

Design: The research approach was mixed through a quantitative and qualitative component. The quantitative is a cross-sectional descriptive study with secondary data. The qualitative is a descriptive exploratory study with primary data.

Sample: The quantitative analysis considered women of reproductive age (MER) aged 15-49 years with information about their last pregnancy in the 2 or 5 years before the survey. To use of contraceptives, MERs married or living with a partner were considered. In the qualitative analysis, 17 interviews were conducted with key actors in maternal health monitoring. The informants were decision-makers, coordinators, technicians, and researchers belonging to the ministry of health, monitoring observatories, research institutes, and international organizations.

Methods: In the quantitative analysis with data from demographic and health surveys and multiple indicators by clusters, the coverage by ethnicity of indicators covering the continuum of women's care from pregnancy to the puerperium was estimated. The Composite Coverage Index (CCI) was estimated as a weighted average of the indicators evaluated. Ethnicity gaps were measured through coverage ratios estimated with Poisson regression models adjusted for sociodemographic variables and using different ethnic identification criteria. The women were classified as indigenous through self-identification, the spoken indigenous language or the indigenous home. The qualitative analysis was interpretative-phenomenological and focused on examining experiences about monitoring maternal health care in order to achieve a full picture of the current context in which it takes place and the factors that influence it to be carried out.

Main research variables: In the quantitative component, it was analyzed: Contraceptive use in women married or living with a partner, antenatal care with a skilled provider, four or more antenatal care visits, first antenatal care visit in the first trimester, skilled birth attendance, and postpartum care. In the qualitative component, obstacles and opportunities related to evaluation, information, resources, management and decision making were explored.

Findings: It is possible to estimate the inequalities between indigenous and non-indigenous in the continuum of maternal health care using criteria related to language or self-identification as proxies of ethnicity. However, the proportion of indigenous women and the magnitude of the gaps observed changed according to the identification criterion. The biggest differences are observed when using the language criteria. Regardless of the ethnic identification criteria used,

indigenous women have lower levels of coverage. The most relevant inequalities occur in the coverage of skilled-birth-attendant and in the use of contraceptives. Considering the criterion of language, at a global level (in the CCI) the greatest distances from non-indigenous people are observed in Mexico compared to Bolivia or Peru.

Conclusions: Despite the conceptual and technical limitations, it is possible to estimate the inequalities in maternal care by ethnicity, however, it has to be transparent about how the population is classified to help stakeholders make better decisions. The differences observed reflect the inequities that indigenous women face in the coverage of maternal health care. As long as the inequalities persist, identifying them will be the first step in their elimination. Incorporating this kind of measurement requires overcoming barriers related to the availability and quality of information, limited resources (financial and technical), little commitment or political will, and lack of articulation between the actors involved. As well as taking advantage of the current momentum that the international agenda gives to the measurement of inequalities through technical assistance and political support.

INTRODUCCIÓN

*“Inequality is a defining challenge of our time. But what does it really look like? Do we have the right measures of inequality?”*¹

Las sociedades se transforman, las enfermedades varían y los servicios sanitarios mejoran, pero las diferencias en salud injustas y evitables persiste o aumenta. Aún observamos la “ley inversa de la atención sanitaria”: a mayores necesidades, menor o peor atención, es decir, el uso y la calidad de la asistencia sanitaria varía en sentido inverso a los requerimientos de la población.^{2,3} Los indicadores de salud global muestran que en la salud materna persisten las mayores desigualdades.⁴

En Latinoamérica y el Caribe (LAC) cientos de mujeres siguen muriendo por causas prevenibles relacionadas con el embarazo y parto. Las diferencias se acentúan en poblaciones vulnerables como los indígenas, donde el riesgo de morir durante el embarazo, parto o puerperio, se triplica. Además de tener las menores tasas de uso de servicios prenatales y baja cobertura en la atención del parto por un médico o enfermera. Mejorar la salud materna, particularmente la de las mujeres indígenas, sigue siendo un desafío para la región.^{5,6}

La investigación se ha concentrado en evaluar las diferencias en la cobertura de la atención de la salud materna por niveles de riqueza, evidenciando menores niveles en los quintiles más pobres.^{7,8} Sin embargo, pese a la evidencia de que una mujer indígena tiene mayor riesgo de muerte materna, poco se sabe sobre las brechas por etnicidad en cuyas poblaciones se conjugan distintos determinantes sociales como: la pobreza, bajo nivel educativo, roles de género y factores culturales.

Las principales limitantes son la escasez de datos desglosados por condición étnica, principalmente, en los registros sanitarios, y la dificultad para clasificar a la población por etnicidad de una manera consistente o estandarizada.^{9,10} La etnicidad no está definida por características fijas o fácilmente medibles. Es un concepto subjetivo y contextual que involucra varias dimensiones como el idioma, el territorio, la religión o la raza.^{11,12}

Desde la perspectiva cualitativa, la investigación escasa y se ha centrado en la comprensión de los reportes de resultados de la medición de indicadores compuestos relacionados con la atención materno-infantil, y en la percepción de su utilidad en la toma de decisiones. Estos temas se han explorado en actores clave (ministros, responsables de programa, académicos y donantes). Entre los hallazgos encontrados, se reconoce a estos indicadores como una herramienta relevante en la toma de decisiones, pero que requiere mejorar los mecanismos de comunicación y difusión en audiencias clave.¹³

Recientemente, en relación con el monitoreo de las desigualdades, se han publicado artículos que señalan los desafíos que los países podrían enfrentar al establecer o fortalecer sus sistemas de monitoreo de desigualdades en salud, y las oportunidades que podrían ayudarles a superarlos.¹⁴⁻¹⁶ Las principales barreras están vinculadas con las limitaciones de los sistemas de información, pero también hay dificultades políticas, sociales y culturales. Mientras que las oportunidades vienen desde la construcción de capacidades técnicas y de análisis, encontrar maneras efectivas de usar los resultados.^{14,16}

La presente investigación plantea un abordaje mixto a través de un componente cuantitativo y uno cualitativo para explorar: cómo estimar las desigualdades en salud materna por etnicidad y la magnitud de estas diferencias, así como, el estado del monitoreo actual y los factores inciden en la implementación y uso de indicadores de desigualdad por etnicidad.

Desde la perspectiva cuantitativa se publicaron dos artículos enfocados en cómo medir y estimar las desigualdades por etnicidad. El primero, titulado "*Indigenous language and inequitable maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia*" exploró el uso del criterio del lenguaje como un proxy para definir el estratificador de etnicidad, y estimar las diferencias en la cobertura del continuo de la atención de la salud materna (CASM) entre indígenas y no indígenas. Los resultados obtenidos mostraron un primer panorama sobre las brechas por etnicidad en el CASM para México y de otros países latinoamericanos (Bolivia, Guatemala y Perú) que tienen también una proporción importante de población indígena y una alta mortalidad materna.

Derivado de la complejidad de operacionalizar la condición étnica, en el segundo artículo llamado "*How the choice of ethnic indicator influences ethnicity-based inequities in maternal health care in four Latin American countries: Who is indigenous?*," se analizó el efecto del uso de distintos criterios de identificación étnica en la estimación de las desigualdades. Criterios relacionados con el lenguaje y la autoidentificación fueron considerados como medidas proxy para clasificar a la población como indígena o no indígena. Se midieron las desigualdades relativas por etnicidad en el CASM a través de la estimación de ratios de cobertura ajustados por otras variables socioeconómicas y demográficas.

Respecto al componente cualitativo a través de la entrevista a informantes clave involucrados en el monitoreo de la salud y atención materna se exploró cómo se realiza el monitoreo actual y qué factores influyen para implementar la medición de las desigualdades por etnicidad. Los hallazgos fueron publicados en el artículo "*Obstacles and opportunities for monitoring ethnicity-based inequalities in maternal health care: Lessons from Mexico.*"

La tesis doctoral por compendio de publicaciones se presenta *grosso modo* en cuatro capítulos. En el primero se exponen dos temas que resultan relevantes que ayudan a fundamentar la necesidad de llevar a cabo el estudio. En el segundo se describe la metodología utilizada para el análisis cuantitativo y cualitativo. En el tercero se presentan las publicaciones generadas a partir de esta investigación. Finalmente, en el cuarto capítulo se discuten los resultados obtenidos y las conclusiones derivadas del estudio realizado.

OBJETIVOS

General

El objetivo principal, es medir la desigualdad en salud materna por etnicidad e identificar los elementos que inciden para su implementación como un instrumento de monitoreo de la equidad en salud en México.

Específicos

1. Clasificar a la población por etnicidad
2. Estimar los indicadores del continuo de la atención materna que componen el índice de cobertura compuesto, en particular, en áreas de planificación familiar, atención prenatal, atención del parto y posparto por etnicidad
3. Estimar el índice de cobertura compuesto del continuo de la atención materna por etnicidad
4. Conocer el estado y procesos del monitoreo de la salud y atención materna en general y en poblaciones indígenas
5. Identificar los elementos que inciden en la implementación del monitoreo de las desigualdades en la atención de la salud materna a través de la entrevista a actores clave

CAPÍTULO I. ¿POR QUÉ MONITOREAR LAS DESIGUALDADES POR ETNICIDAD EN LA ATENCIÓN DE LA SALUD MATERNA?

1.1 Mujeres indígenas: vulnerabilidad y desigualdad

Las mujeres indígenas suelen enfrentar una triple desventaja debido a su pertenencia étnica, sexo y residencia predominantemente rural. Su condición de mujer y de indígena las coloca en una posición de mayor vulnerabilidad, son generalmente analfabetas o con menor educación, las primeras víctimas de la pobreza y mueren con mayor frecuencia por causas evitables relacionadas con el embarazo, parto o puerperio respecto a otras mujeres.^{5,6,17,18}

La etnia ha sido reconocida como un determinante social de las inequidades en salud porque reflejan una distribución injusta de los riesgos y los recursos sanitarios. Las diferencias observadas en las personas pertenecientes a grupos étnicos en comparación con la población general son prevenibles e innecesarias, y el permitir que persistan es injusto.^{19,20}

En todo el mundo, las mujeres indígenas suelen presentar los peores resultados en salud materna que otras poblaciones. Además de tener una menor probabilidad de beneficiarse de los servicios de salud materna. En LAC, los países con mayor población indígena o afrodescendiente (Bolivia, Brasil, Guatemala, Ecuador, Haití, México, Perú, y República Dominicana) tienen mayores tasas de mortalidad materna en la región o en el número absoluto de muertes, como en el caso de Brasil y México.^{5,6,21,22}

En muchas comunidades del LAC las mujeres indígenas tienen tres veces más probabilidad de morir por causas relacionadas al embarazo y el parto que las mujeres no indígenas que viven en las mismas comunidades.⁶ En México, en municipios predominantemente indígenas con alto y muy alto grado de marginación y aislamiento geográfico y social, el riesgo de muerte materna puede ser hasta nueve veces mayor que en municipios mejor comunicados.²¹

Respecto a la cobertura en el continuo de la atención de la salud materna, algunos estudios han documentado que tanto en México como en otros países de la región los niveles son menores en las mujeres indígenas. Las mayores

brechas de cobertura se observan principalmente en la atención del parto por médico o enfermera y en el uso de anticonceptivos modernos.^{23,24}

Las diferencias observadas podrían reflejar los obstáculos que deben superar las mujeres indígenas debido a barreras en el acceso a los servicios, del lenguaje o en la calidad de la atención debido a situaciones de discriminación.^{5,22} Además, las normas culturales y sociales de cada grupo étnico guían sus creencias y prácticas entorno a la atención de su salud y en su comportamiento reproductivo. Lo cual podría incidir indirectamente en los niveles de cobertura de los servicios sanitarios.^{25,26}

Uno de los principales desafíos para luchar contra las desigualdades étnicas es el vacío en la disponibilidad de información.^{22,27} La falta de datos desagregados por etnicidad podría estar ocultando profundas desigualdades que requieren de soluciones eficaces orientadas a evitar que más mujeres indígenas mueran por causas que son evitables con una oportuna y adecuada atención sanitaria.^{22,28}

1.2 Objetivos del Desarrollo Sustentable: Momento estratégico

Actualmente, México enfrenta una agenda internacional que busca reducir la mortalidad materna, la cobertura universal de los servicios de salud sexual y reproductiva, así como la equidad en salud, a través del cumplimiento de los Objetivos del Desarrollo Sustentable (ODS). Los ODS, bajo la premisa de “*to Leave No One Behind*”, hacen un llamado no solo a reducir las desigualdades en salud, sino también a medirlas y monitorearlas por ingreso, educación, género, etnicidad, discapacidad, etc.²⁹

En el contexto de los ODS el monitoreo de las desigualdades ha ido ganando atención como prioridad política. La agenda 2030 para los ODS ha dado un mayor impulso para el establecimiento o fortalecimiento de los sistemas de monitoreo de las desigualdades en salud. Por lo que de forma global se ha impulsado el establecimiento de observatorios nacionales de inequidades en salud. En México, desde 2015 se inició la conformación del Observatorio Nacional de Inequidades en Salud.^{14,30}

Así mismo, el Plan Nacional de Desarrollo 2019-2024, de manera similar, incluye como uno de sus principios rectores “No dejar a nadie atrás, no dejar a nadie

fuera”. Bajo este principio, el gobierno mexicano manifiesta promover un modelo de desarrollo “*orientado a subsanar y no a agudizar las desigualdades*”.³¹

Con la adopción del compromiso de los ODS y apegado a lo establecido en el actual plan de gobierno conlleva el reto de pasar del discurso a la acción, lo que brinda un momento estratégico para crear y fortalecer las capacidades institucionales para monitorear las desigualdades sociales. El monitoreo de las inequidades en salud debería ser una prioridad que requiere la concentración de los esfuerzos de distintos actores dentro y fuera del sector salud.³²

Bajo este marco, pareciera ser el momento oportuno para medir las desigualdades por etnicidad en la atención de la salud materna. Esto permitiría, en primer lugar, visibilizar las brechas que existen y que requieren de una pronta respuesta.

CAPÍTULO II. METODOLOGÍA

El abordaje de la investigación fue mixto a través de componente cuantitativo enfocado a la estimación de las desigualdades por etnicidad y uno cualitativo con el propósito de identificar las barreras para la implementación y uso de este tipo de indicadores como herramientas de monitoreo de las inequidades por etnicidad.

2.1 Componente cuantitativo

Con datos secundarios de encuestas demográficas y de salud de representatividad nacional, se realizó un análisis descriptivo transversal de las desigualdades en el continuo de la atención de la salud materna por etnicidad. Se consideraron datos para México y otros países latinoamericanos con una proporción importante de población indígena y una alta mortalidad materna (Bolivia, Guatemala y Perú).

Se consideraron mujeres en edad reproductiva (MER) de 15-49 años que proporcionaron información sobre su último embarazo en los últimos 2 o 5 añosⁱ al momento de la encuesta. Para analizar el uso de anticonceptivos se consideraron las MER casadas o unidas.

En la selección de los indicadores se consideró la perspectiva del CASM, en la cual cada fase es esencial (proceso de gestación, parto y posparto) y reducir la mortalidad materna depende tanto de la cobertura de la atención como de la calidad de los servicios prestados.³³ Debido a que durante los controles prenatales es posible la identificación temprana de riesgos y complicaciones a considerar en el parto, el cual debe ser atendido por personal calificado y al interior de los servicios de salud. La atención inmediata del posparto y un adecuado seguimiento contribuyen a la reducción de mortalidad por infecciones y hemorragias.¹⁹

Para medir las desigualdades se utilizaron métricas simples que permiten hacer comparaciones por pares, indígenas vs no-indígenas, debido a que suelen ser más intuitivas y fáciles de entender.³² Se estimaron diferencias absolutas y

ⁱ En los últimos 2 años en México y 5 años en Bolivia, Guatemala y Perú.

relativas de indicadores relacionados con el uso de anticonceptivos modernos, la atención prenatal, del parto y el puerperio. Con la desigualdad absoluta observamos la magnitud de la diferencia entre los dos grupos, mientras que con la relativa se muestran las diferencias proporcionales.

Primera Fase

Se analizaron las desigualdades absolutas en la cobertura de la atención por etnicidad considerando como un proxy de la condición étnica el criterio del habla lengua indígena ([ver publ. CQn 1](#)). Si la mujer indicaba que hablaba una lengua indígena se clasificaba como indígena, en caso contrario se identificaba como no-indígena. Se realizó una caracterización sociodemográfica por etnicidad en cada país considerando algunas variables de interés tales como: edad, educación, estatus marital, nivel socioeconómico, área de residencia y afiliación a algún seguro médico.

Se analizaron siete indicadores que cubren el continuo de la atención que reciben las mujeres antes y durante el embarazo, el parto y posparto: 1) recibió atención prenatal alguna vez (ACP), 2) recibió atención prenatal por personal calificado (CPPC), 3) al menos cuatro consultas de control prenatal (NCP), 4) consulta prenatal en el 1er. trimestre del embarazo (PTCP), 5) atención del parto por personal calificado (APPC), 6) recibió atención posparto alguna vez (CPos), 7) uso de anticonceptivos modernos por mujeres casadas o unidas (UA).

Se calculó el nivel de cobertura para cada uno de los indicadores con sus respectivos intervalos de confianza considerando el efecto de diseño de cada una de las encuestas. La cobertura se definió como el porcentaje de mujeres que reciben una intervención específica entre aquellas que lo necesitan.

Adicionalmente, se estimó un Índice Compuesto de Cobertura (ICC) como un promedio ponderado de 6 de los indicadores evaluados y que otorga igual peso a cada una de las fases del continuo de la atención, y se estima con la siguiente fórmula:

$$\frac{1}{4} \left(UA + \frac{CPPC + NCP + PTCP}{3} + APPC + CPos \right)$$

Considerando como meta un 100% de cobertura de cada una de las intervenciones correspondientes a los indicadores. El ICC toma valores del 0 a 100, por lo tanto, valores cercanos al límite superior reflejan mejores niveles de cobertura del continuo de la atención de la salud materna.

Segunda Fase

Tras el análisis de los resultados obtenidos en la primera fase y la complejidad conceptual y técnica observada para definir el estratificador de etnicidad adecuado para estimar las desigualdades. Se midieron las desigualdades relativas por etnicidad a través de ratios de cobertura (CR) del CASM. El considerando diferentes criterios de identificación étnica relacionados con el lenguaje o la autoidentificación. Esto permite observar si las brechas entre indígenas y no indígenas pueden ser mayores o menores dependiendo de los criterios utilizados.

Se midieron los seis indicadores de cobertura considerados en el ICC de la primera fase. Los CR se estimaron a través de modelos de regresión Poisson (ver 3.2) ajustados por edad, educación, nivel socioeconómico, área de residencia, afiliación a algún seguro de salud y si las mujeres eran beneficiarias de un programa social relacionado con la atención materna. Los CR se obtienen dividiendo la cobertura alcanzada por los indígenas vs la de los no- indígenas, por lo que un valor cercano a 1 significa que la cobertura es similar entre ambos grupos.

Las estimaciones, el análisis estadístico y gráficos fueron realizados con el software Stata 14.

2.2 Componente cualitativo

Se revisaron documentos normativos y estratégicos para identificar a las instituciones o áreas del sector salud involucradas en el monitoreo, así como reportes de organismos nacionales e internacionales que abordan el tema. A partir de la información recolectada, se realizó un mapeo de actores y procesos claves para el monitoreo de los indicadores en salud materna. Además, se solicitó a los participantes que indicaran a otras instituciones o actores que también podrían estar relacionados con el monitoreo.

Se realizó un muestreo intencional ([ver 3.3](#)), es decir, los participantes fueron seleccionados de acuerdo con la posibilidad de ofrecer información detallada y relevante. Se entrevistó a actores claves involucrados en la estimación, monitoreo, utilización y gestión de indicadores en salud materna. Los informantes eran tomadores de decisiones, coordinadores, técnicos e investigadores pertenecientes al ministerio de salud, observatorios de monitoreo, institutos de investigación y organismos internacionales.

Se realizaron 17 entrevistas, en las cuales se utilizó una guía que cubría: información general del entrevistado y su experiencia, indicadores de monitoreo utilizados o estimados, fuentes de información, problemáticas y necesidades en el monitoreo, grupos de interés o vulnerables y aspectos de gestión estratégica. Las entrevistas fueron grabadas y transcritas para su codificación y análisis.

El análisis realizado fue de tipo fenomenológico interpretativo, el cual se centra en comprender el contenido y significado de la información recolectada ([ver 3.3](#)). Se exploró a partir de la propia perspectiva de los participantes su experiencia en el monitoreo de la atención de la salud materna para comprender el estado actual en el que se desarrolla y los factores que inciden para que se realice.

Se realizó una exploración detallada de cada una de las transcripciones las cuales fueron leídas en repetidas ocasiones para reconocer los aspectos más significativos que mencionaron los participantes en sus discursos. Se identificaron las similitudes, contradicciones, diferencias o ampliaciones que los informantes mencionaban. Se consideraron todos los temas posibles que fueran relevantes para el análisis y se buscó la conexión entre ellos. Dos investigadores definieron los problemas generales y los temas principales como un medio para garantizar la calidad y el rigor del análisis de las respuestas.

CAPÍTULO III. PUBLICACIONES

3.1 Indigenous language and inequitable maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia

Autores: Nancy Armenta Paulino, María Sandín Vázquez & Francisco Bolúmar

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The screenshot shows the WHO Bulletin website interface. At the top, there is a navigation bar with 'Global' and 'Regions' dropdowns, and language options: العربية, 中文, English, Français, Русский, and Español. The WHO logo is on the left. Below the navigation bar, the page title is 'Bulletin of the World Health Organization'. The main content area features a sidebar on the left with links: Bulletin, Past issues, Information for contributors, Editorial members, How to order, About the Bulletin, and Disclaimer. The main article is titled 'Policy & practice' and 'Indigenous language and inequitable maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia'. The authors are Nancy Armenta Paulino, María Sandín Vázquez, and Francisco Bolúmar. The article is marked as '12' in a blue circle. Below the title, there is a small circular icon with the number 12. To the right of the article title, there are social media icons for Facebook, Twitter, and a plus sign. Below the article title, there is an 'ABSTRACT' section with the text: 'Indigenous language and inequitable maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia' followed by the authors' names. At the bottom of the article, there is a note: '(Submitted: 08 May 2018 – Revised version received: 28 September 2018 – Accepted: 01 October 2018 – Published online: 31 October 2018.)' and the DOI link: 'http://dx.doi.org/10.2471/BLT.18.216184'.

Indigenous language and inequitable maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia

Nancy Armenta Paulino,^a María Sandín Vázquez^a & Francisco Bolúmar^a

Abstract Latin America and the Caribbean still have high maternal mortality rates and access to health care is very uneven in some countries. Indigenous women, in particular, have poorer maternal health outcomes than the majority of the population and are less likely to benefit from health-care services. Therefore, inequities in maternal health between different ethnic groups should be monitored to identify critical factors that could limit health-care coverage. In adopting the United Nations' sustainable development goals, governments have committed to providing equitable and universal health coverage. It is, therefore, the right time to assess ethnic disparities in maternal health care. However, finding a standard method of identifying ethnicity has been difficult, because ethnicity involves several features, such as language, religion, tribe, territory and race. In this study, spoken indigenous language was used successfully as a proxy for ethnicity to detect inequities in maternal health-care coverage between indigenous and non-indigenous populations in four Latin American countries: Guatemala, Mexico, Peru and the Plurinational State of Bolivia. Although, quantifying ethnic inequities in health care is just a starting point, this quantification can help policy-makers and other stakeholders justify the need for monitoring these inequities. This monitoring is essential for designing more culturally appropriate programmes and policies that will reduce the risks associated with maternity among indigenous woman. As long as inequities persist, identifying them is an important step towards their elimination.

Abstracts in **عربي**, **中文**, **Français**, **Русский** and **Español** at the end of each article.

Introduction

Countries in Latin America and the Caribbean have some of the highest adolescent pregnancy rates in the world and adolescent pregnancies are more common among uneducated, poor and indigenous women. In these countries, women with socioeconomic disadvantages are more likely to postpone seeking care and experience delays in accessing services and receiving adequate health care.^{1,2} These difficulties highlight the challenges still faced in these countries in improving maternal health.^{1,3}

Indigenous women form one of the most vulnerable groups in these countries: they experience substantially worse maternal health outcomes than the majority of the population and are less likely to benefit from services.^{1,4} In addition, they are more likely than other women to experience social and economic exclusion and to die during pregnancy or childbirth.^{5,6} Indigenous populations are adversely affected by a combination of different social determinants of health, such as poverty, limited education, disadvantageous gender roles and cultural factors. Table 1 lists differences in some of these social determinants between indigenous and non-indigenous people in four Latin American countries.^{7,8} In addition, health disparities between different ethnic groups may also reflect the effect of discrimination on access to health services, or on the quality of the care provided.^{1,9,10}

Given these disparities, it is both useful and necessary to monitor inequities in maternal health between different ethnic groups. Monitoring would help quantify differences between groups and identify critical factors that limit the coverage of care. Governments, health-care organizations and other key actors could then focus research on problematic areas to determine their cause. Subsequently, policies, programmes and practices could be changed to benefit the health of indigenous women and to ensure that resources are allocated efficiently.¹¹

By accepting the United Nations' sustainable development goals (SDGs), governments have committed themselves to continuing efforts to reduce maternal mortality and inequities in maternal health, both within and between countries. The agenda of the SDGs provides a major impetus for establishing or strengthening systems for monitoring health inequalities and calls for the production of "data disaggregated by income, gender, age, ethnicity, disability and other relevant characteristics."¹² This is, therefore, the right time to assess disparities in maternal health care between different ethnic groups. However, quantifying the influence of ethnicity on health inequities is not an easy task. Ethnicity is not defined by fixed or easily measurable characteristics; it is instead considered a subjective and contextual concept that involves several dimensions, such as language, religion, tribe, territory and race.^{13,14} The main obstacles are a lack of disaggregated data and the difficulty of identifying ethnicity in a consistent or standardized way across countries. Previous surveys carried out in several countries have used a heterogeneous set of questions to capture ethnicity and there have even been differences between surveys repeated in the same context in different years.^{15–18}

In previous studies of the size of the indigenous population in Latin America and the Caribbean, the most common criterion used for identifying ethnicity is spoken indigenous language. Questions about language have been included in censuses and national surveys for many years.^{17,19–22} From a social perspective too, spoken indigenous language has been considered a marker of ethnicity because it is a manifestation of people's attachment to their culture.^{17,19,23} Consequently, this criterion may be useful for studying variations in health inequities between different ethnic groups. Here we report on how the criterion of spoken indigenous language can be used as a proxy for ethnicity in investigations of inequities in maternal health care coverage between indigenous and non-indigenous populations.

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Table 1. Characteristics of indigenous and non-indigenous people and maternal health care, Guatemala, Mexico, Peru and the Plurinational State of Bolivia, 2010 and 2015

Characteristic	Country			
	Guatemala	Mexico	Peru	Plurinational State of Bolivia
Maternal mortality ratio in 2015, per 100 000 live births	88	38	68	206
Maternal health issues in 2015	(i) indigenous women had a maternal mortality ratio three times that in non-indigenous women; (ii) only 30% of indigenous women had a skilled birth attendant; and (iii) the proportion of women with an unmet need for contraception was four times higher in the poorest quintile than the richest	(i) pregnant women with private insurance had more antenatal consultations and received higher-quality services than women with public or no insurance; (ii) a low educational level increased a woman's risk of dying from eclampsia or haemorrhage; and (iii) women with pregnancy complications experienced delays because of ineffective triage	(i) the maternal mortality ratio in some mainly indigenous regions was more than six times higher than in the national capital; (ii) the difference between the poorest and richest quintiles in the proportion of women who had a skilled birth attendant was 32 percentage points; and (iii) in some areas, the advanced equipment needed for emergency obstetric care was available only in provincial capitals	(i) the maternal mortality ratio was one of the highest in the world; (ii) the difference between the poorest and richest quintiles in the proportion of women who had at least four antenatal visits was greater than 20 percentage points; and (iii) the difference between rural and urban women in the proportion who had a skilled birth attendant was 26 percentage points
Indigenous population in 2010	5 881 009	16 933 283	7 021 271	6 216 026
Indigenous people as a proportion of the population in 2010, %	41.0	15.1	24.0	62.2
Ethnic inequities in 2010				
Proportion living on less than US\$ 4 per day, %				
Indigenous people	77	40	32	44
Non-indigenous people	49	23	16	20
Proportion educated to lower than primary level, %				
Indigenous people	43	48	52	41
Non-indigenous people	20	33	35	22
Proportion living in rural areas, %				
Indigenous people	ND	46	47	52
Non-indigenous people	ND	19	18	13

ND: not determined.
Data sources: The World Bank.²⁴

Key concepts

Ethnic and Indigenous groups

An ethnic group is defined as a **collectively** that identifies itself, and it is identified by others, with regard to certain common elements, such as language, religion, tribe, nationality, race or a combination thereof, and whose members share a common feeling of identity.^{16,24,25} An indigenous group is a particular form of ethnic group: its members have an established history in a particular territory and have a common language and culture.^{17,18,24} At least four elements should be taken into account in defining indigenous peoples: (i) recognition of identity; (ii) common origin (iii) territoriality; and (iv) the linguistic-cultural dimension. The first element refers to the sense of belonging to a group, the second refers to the idea of coming from common ancestors, the third recognizes traditional occupation of a specific territory, and the fourth is linked to an attachment to a culture, language, worldview and way of life.^{17,21}

Ethnicity and language

Ethnic group expresses its culture and social identity through language, be-

cause language is intimately linked to mental and ideological processes and to the perception of internal and external worlds. Language is a fundamental point of reference by which an ethnic group finds its own identity. Many indigenous cultures have traditional knowledge that is transmitted only orally.^{4,22,23,26}

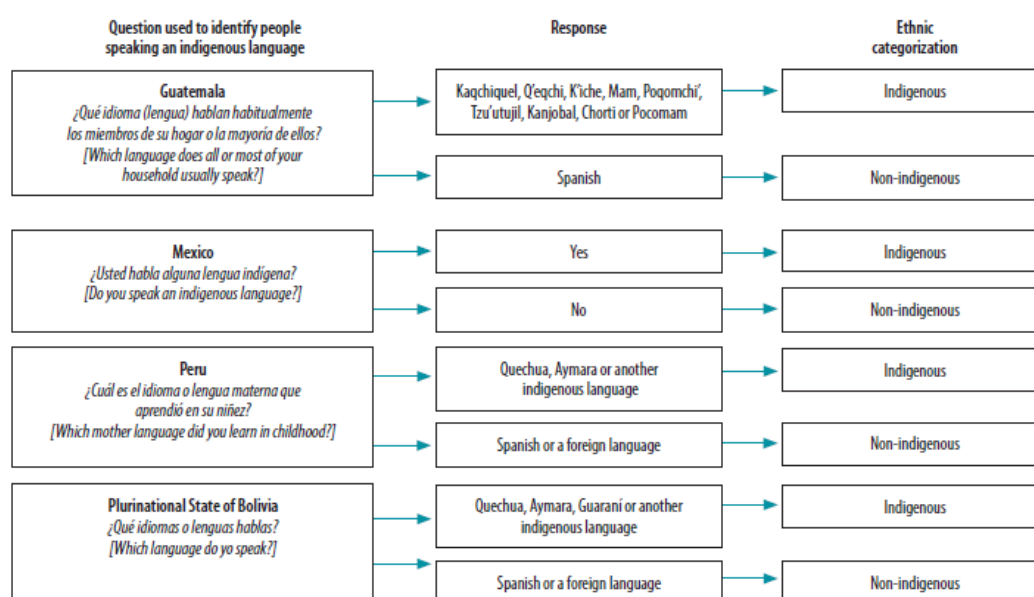
Despite the problem of how to deal with data on multilingual individuals, people who report speaking an indigenous language are highly likely to be members of the indigenous group that speaks that language, because language is more than simply a means of communication. Language is also a central element of culture and of the process of socialization.^{4,19,23,26} Language is therefore important for studying health care in indigenous groups. Language can be used as a proxy for membership of an indigenous group and is a strong determinant of access to health care.^{20,27} The presence of a language barrier has been closely linked to the limited access to health care that results from being unable to communicate with health-care personnel. Several studies have documented that poor health outcomes are more likely when there are language and cultural barriers between patients and

health-care providers.^{28,29} Language barriers may also influence patients' perceptions of the quality of care. Conversely, it is also possible to use the criterion of language to indirectly investigate differences in health care associated with these barriers.

Measuring inequities by ethnicity

Studying how inequities in health vary according to ethnicity involves dividing a study population into appropriate groups. However, how subgroups within a population are defined may depend on the method of data collection, the data available and the population's characteristics. In the past, most surveys performed in Latin America and the Caribbean asked whether people spoke an indigenous language, what language they spoke or which language was spoken most often in their homes. Examples of the questions asked in four Latin American countries are shown in Fig. 1. We believe that using the criterion of primarily speaking an indigenous language enables us to identify a group of women who share a culture related to maternity, who could experience a language barrier and who could suffer

Fig. 1. Survey questions used to identify people speaking an indigenous language, Guatemala, Mexico, Peru and the Plurinational State of Bolivia, 2008, 2009 and 2015



Note: The questions listed were used in the 2008 Demographic and Health Survey in Bolivia, the 2008–2009 National Survey on Maternal and Child Health in Guatemala, the 2015 National Survey of Children and Women in Mexico and the 2015 Demographic and Health Survey in Peru.^{30–32}

discrimination, all of which may affect maternal health care.

Selecting indicators

Another essential consideration in evaluating health inequities is selecting the most appropriate indicators. For maternal health care, we believe that any analysis should consider women's health-care coverage across the continuum of care from before pregnancy

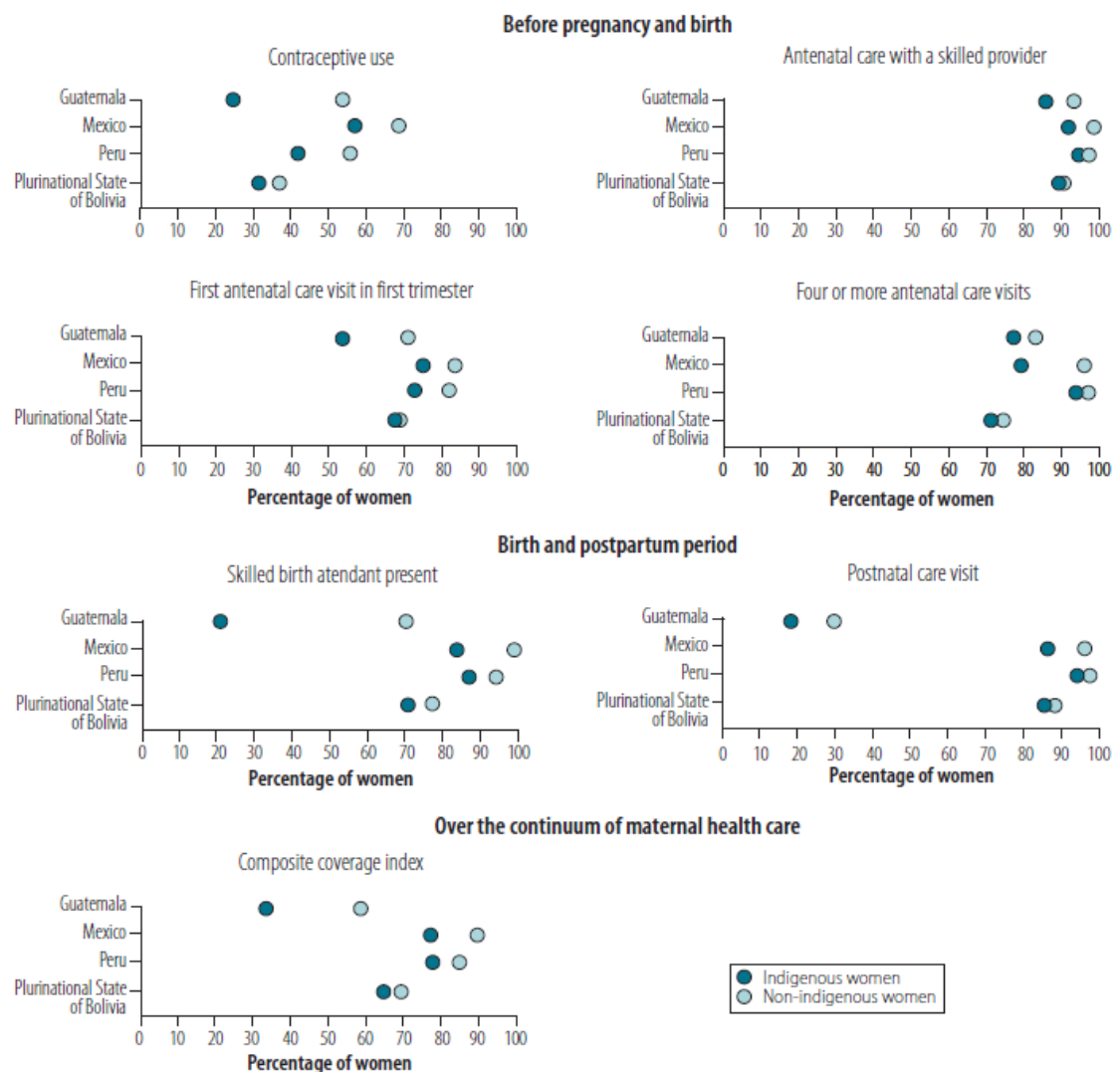
through to pregnancy, childbirth and the postpartum period. However, when viewed from the perspective of the continuum of care, every phase is important and, if possible, a composite index should be formed from all indicators monitored. Fig. 2 gives examples of the indicators used in previous studies. In addition, reducing mortality also depends on high care coverage and on the quality of the services provided.³³

Nevertheless, the final decision on which indicators to monitor depends on the context and national and local needs.

Case studies

We looked at ethnic inequities in maternal health care in four Latin American countries where a substantial proportion of the population is indigenous and where the maternal mortality ratio is high: Guatemala, Mexico, Peru and

Fig. 2. Maternal health care coverage, by ethnicity, Guatemala, Mexico, Peru and the Plurinational State of Bolivia, 2008, 2009 and 2015



Notes: For each indicator, coverage was defined as the percentage of women who received the intervention among those who needed it. The composite coverage index is the weighted average of coverage of the six other indicators illustrated. Data for this figure were derived from the 2008 Demographic and Health Survey in Bolivia, the 2008–2009 National Survey on Maternal and Child Health in Guatemala, the 2015 National Survey of Children and Women in Mexico and the 2015 Demographic and Health Survey in Peru.^{30–32}

the Plurinational State of Bolivia. We obtained data from Demographic and Health Surveys and Multiple Indicator Cluster Surveys.^{30–32} When we used spoken indigenous language as a proxy for ethnicity, we found differences in maternal health care between different ethnic groups in all four countries despite efforts made over the last two decades to reduce maternal mortality in response to the millennium development goals (Fig. 2).³ In most cases, differences between ethnic groups were significant. However, ethnic differences in maternal health-care coverage varied substantially between countries and indicators. Differences were most apparent in the first and last stages of the continuum of care. The indicators that demonstrated the most substantial ethnic differences across all four countries were contraceptive use and the presence of a skilled birth attendant. These are the indicators that interventions should be focused on. The largest gaps in care for all indicators were in Guatemala and the smallest were in the Plurinational State of Bolivia (Fig. 2).

Although differences in the level of maternal health care coverage between ethnic groups may be due to differences in sociodemographic characteristics,³⁴ reducing inequities between ethnic groups is more complex than simply modifying these characteristics. Only improving living conditions is not enough, because other social and cultural factors also have an influence in indigenous populations.^{35–38} In 2018, a study of inequities in maternal and child health interventions between ethnic groups found that, although they had decreased recently in countries such as Guatemala, Mexico and the Plurinational State of Bolivia, differences were still evident after adjustment for wealth, educational level and place of residence.¹⁵

Discussion

The main advantages of using spoken language as a demographic characteristic are that it is an objective variable and that it is fixed. Moreover, to a certain extent spoken language is independent of the person's view of her- or himself and will, therefore, not change over time. In contrast, other characteristics,

such as a person's self-identification, depend on the person being recognized as indigenous and may be influenced by negative prejudices or cultural empathy.^{19,39} However, the main disadvantage of using language as a proxy for ethnicity is that the use of indigenous languages is gradually decreasing, particularly among the younger generation and urban populations. Therefore, such use will become increasingly difficult to base ethnic identity on spoken language, although such a proxy will still be useful in areas where groups are mainly monolingual.^{17,19,21,39} The gold standard would be to combine several attributes, such as language, self-identification and geographical location, as this would improve accuracy.^{17,21,22} However, this information is not always available.

In both quantitative and qualitative studies, speaking an indigenous language has been identified as one factor that influences coverage of maternal care services. Women who speak an indigenous language are less likely to have an institutional delivery and are more likely to attend fewer than four prenatal visits. Moreover, a smaller proportion of these women use modern contraceptives. In addition, the maternal mortality rate is higher in some areas where a large proportion of the population speaks an indigenous language.^{40–45} These findings are consistent with the low level of coverage of maternal care services observed among indigenous women in the countries we studied.

Using spoken indigenous language as a proxy for ethnicity enabled us to identify ethnic inequities in all countries analysed. Our findings are in line with those recently published, except in the Plurinational State of Bolivia, where those researchers observed greater inequities in maternal health care coverage when the criterion of self-identification was used as a proxy for ethnicity.¹⁵ The contrast between our findings and this previous study highlight two critical factors that should be considered when evaluating ethnic inequities. First, the method used to determine ethnicity can affect the magnitude of the inequity observed. Second, good understanding of the social context in a country is essential for accurately interpreting findings and for selecting the most appropriate proxy for ethnicity in that con-

text. For example, in the Plurinational State of Bolivia, current social attitudes towards the indigenous population may increase people's willingness to identify themselves as indigenous. In contrast, in some situations where discrimination and exclusion are common, people may not want to recognize themselves as indigenous.^{17,19,46,47}

Our findings confirm that indigenous people are vulnerable to inequities in health care. Therefore, efforts should be made both locally and nationally to provide data disaggregated by ethnicity, because the lack of such data could obscure inequities that may lie behind the averages. Historically, the indigenous population in Latin America and the Caribbean has been invisible statistically, because few data from the region have been disaggregated by ethnicity.^{4,17}

Future studies of ethnic inequities in indigenous populations should: (i) investigate the heterogeneity of the indigenous population; (ii) verify study findings using another criterion for identifying ethnicity; (iii) analyse trends in inequities over time; and (iv) evaluate other indicators of coverage across the continuum of maternal health care. Regardless of the criteria used to monitor ethnic inequities, transparency is needed about why the criteria have been used and about how ethnicity has been categorized if we are to understand the context and scope of a study's findings. Moreover, we should be cautious about comparisons with other studies and about generalizing a study's findings, because the observed magnitude of any inequity could be altered using a different criterion to identify ethnicity.

In conclusion, quantifying ethnic inequities in health care is just a starting point. Awareness of these inequities can help policy-makers and other stakeholders justify the need for monitoring and the use of spoken indigenous language as a criterion can be useful. Moreover, monitoring inequities is essential for designing more culturally appropriate programmes and policies that will reduce the risks associated with maternity among indigenous woman. As long as inequities persist, identifying them is an important step towards their elimination. ■

Competing interests: None declared.

ملخص

اللغة الأصلية والرعاية الصحية غير المتصفة للأمة، المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا

لا تزال أمريكا اللاتينية ومنطقة البحر الكاريبي تعاني من ارتفاع معدلات وفيات الأمهات، كما أن الحصول على الرعاية الصحية متفاوت للغاية في بعض الدول. تعاني السيدات من أهل البلاد الأصليين، على وجه الخصوص، من مستويات صحية للأمومة أكثر فقراً من غالبية السكان، كما تقل لديهن احتمالية الاستفادة من خدمات الرعاية الصحية. لذلك، فإن عدم المساواة في صحة الأم بين المجموعات العرقية المختلفة يجب أن تخضع للمراقبة بهدف تعريف العوامل الأساسية التي يمكن أن تحد من تغطية الرعاية الصحية. وفي سبيل اعتماد أهداف التنمية المستدامة في الأمم المتحدة، التزمت الحكومات بتوفير العدالة والتغطية الصحية الشاملة. ولذلك، فإن هذا هو الوقت المناسب لتقييم التفاوتات العرقية في الرعاية الصحية للأمهات. ومع ذلك، فإن العثور على طريقة قياسية لتحديد العرق كانت، ولا تزال صعبة، لأن العرق

الخلاصة

البيرو، بوليفيا (دولة متعددة القوميات)، المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا

البيرو، بوليفيا (دولة متعددة القوميات)، المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا. إنطلاقاً من العديد من الخصائص، مثل اللغة والدين والقبيلة والمنطقة والأصل. تم في هذه الدراسة تم استخدام لغة السكان الأصليين المنطوقة بنجاح كمؤشر للعرق للكشف عن حالات عدم المساواة في تغطية الرعاية الصحية للأمهات، بين السكان الأصليين وغير الأصليين في أربعة بلدان في أمريكا اللاتينية: المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا. على الرغم من أن القياس الكمي للحالات عدم المساواة العرقية في الرعاية الصحية هو مجرد نقطة بداية، فإن هذا القياس الكمي يمكن أن يساعد صانعي السياسات وأصحاب المصلحة الآخرين في تبرر الحاجة إلى مراقبة هذه الحالات. هذا الرصد ضروري لوضع برامج أكثر ملاءمة ثقافياً، وسياسات تحد من المخاطر المرتبطة بالأمومة بين النساء من أهل البلاد الأصليين. طالما استمرت حالات عدم المساواة، فإن تحديدها يعتبر خطوة هامة نحو القضاء عليها.

البيرو، بوليفيا (دولة متعددة القوميات)، المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا. إنطلاقاً من العديد من الخصائص، مثل اللغة والدين والقبيلة والمنطقة والأصل. تم في هذه الدراسة تم استخدام لغة السكان الأصليين المنطوقة بنجاح كمؤشر للعرق للكشف عن حالات عدم المساواة في تغطية الرعاية الصحية للأمهات، بين السكان الأصليين وغير الأصليين في أربعة بلدان في أمريكا اللاتينية: المكسيك، وبوليفيا (دولة متعددة القوميات)، وبيرو، وغواتيمالا. على الرغم من أن القياس الكمي للحالات عدم المساواة العرقية في الرعاية الصحية هو مجرد نقطة بداية، فإن هذا القياس الكمي يمكن أن يساعد صانعي السياسات وأصحاب المصلحة الآخرين في تبرر الحاجة إلى مراقبة هذه الحالات. هذا الرصد ضروري لوضع برامج أكثر ملاءمة ثقافياً، وسياسات تحد من المخاطر المرتبطة بالأمومة بين النساء من أهل البلاد الأصليين. طالما استمرت حالات عدم المساواة، فإن تحديدها يعتبر خطوة هامة نحو القضاء عليها.

Résumé

Langue autochtone et soins de santé maternelle inéquitables dans l'État plurinational de Bolivie, au Guatemala, au Mexique et au Pérou

L'Amérique latine et les Caraïbes continuent d'afficher des taux de mortalité maternelle élevés et dans certains pays, l'accès aux soins de santé est très inégal. Les femmes autochtones, en particulier, sont dans un plus mauvais état de santé maternelle que la majorité de la population et sont moins susceptibles de bénéficier des services de santé. Il convient donc de suivre les inégalités relatives à la santé maternelle entre les différents groupes ethniques pour identifier les facteurs déterminants qui peuvent limiter la couverture sanitaire. En adoptant les objectifs de développement durable des Nations Unies, les gouvernements se sont engagés à fournir une couverture sanitaire équitable et universelle. Il est donc temps d'évaluer les disparités ethniques en matière de soins de santé maternelle. Il s'est néanmoins avéré difficile de trouver une méthode standard permettant de définir l'appartenance ethnique, car cette dernière implique plusieurs caractéristiques, telles que la langue, la religion, la tribu, le territoire et la

race. Dans cette étude, la langue autochtone parlée a été utilisée avec succès en tant qu'indicateur d'appartenance ethnique pour détecter les inégalités concernant la couverture des soins de santé maternelle entre les populations autochtones et non autochtones de quatre pays latino-américains: l'État plurinational de Bolivie, le Guatemala, le Mexique et le Pérou. Bien que la quantification des inégalités ethniques en matière de soins de santé ne soit qu'un point de départ, elle peut aider les responsables politiques et d'autres parties prenantes à justifier la nécessité d'un suivi de ces inégalités. Ce suivi est essentiel pour concevoir des programmes et des politiques mieux adaptés à la culture des populations et réduire ainsi les risques associés à la maternité chez les femmes autochtones. Tant que des inégalités persistent, les identifier est une étape importante vers leur élimination.

Резюме

Языки коренных народов и неравенство в охране здоровья матери в Боливии (многонациональное государство), Гватемале, Мексике и Перу

Уровень материнской смертности в странах Латинской Америки и Карибского бассейна сохраняется высоким, а доступ к медико-санитарным услугам в некоторых странах распределен очень неравномерно. В частности, женщины-представители коренных народов имеют худшие показатели материнского здоровья и исходы материнства, чем большинство населения, и для них вероятность воспользоваться услугами здравоохранения оказывается ниже. Следовательно, неравенство в сфере охраны материнского здоровья в различных этнических группах необходимо отслеживать для выявления критических факторов, которые могут ограничивать охват населения услугами здравоохранения. Внедряя предложенные ООН цели устойчивого развития, правительства берут на себя обязательства обеспечивать всеобщий и равный доступ к услугам здравоохранения. Следовательно, пришло время оценить этническое неравенство в предоставлении услуг по охране материнского здоровья. Однако найти стандартный метод определения этнической принадлежности сложно, так как это понятие включает несколько факторов, таких как

язык, религия, племенная принадлежность, проживание на определенной территории и расовая принадлежность. В данном исследовании язык коренных народов в повседневном общении успешно использовался в качестве замены фактора этнической принадлежности при выявлении неравенства в предоставлении услуг охраны материнского здоровья между коренной и некоренной популяциями стран Латинской Америки: Боливии (многонациональное государство), Гватемалы, Мексики и Перу. Несмотря на то что количественная оценка этнического неравенства в здравоохранении — это всего лишь начальная точка, она может оказаться полезной для лиц, принимающих стратегические решения, и других участников процесса при обосновании необходимости мониторинга такого неравенства. Такой мониторинг крайне важен для разработки программ и стратегий, учитывающих культурные особенности, которые бы снизили связанные с материнством риски для женщин-представителей коренных национальностей. Пока неравенство существует, выявление конкретных случаев — это первый шаг к его устранению.

Resumen

El idioma indígena y la inequitativa atención sanitaria materna en el Estado Plurinacional de Bolivia, Guatemala, México y Perú

América Latina y el Caribe siguen teniendo altas tasas de mortalidad materna y el acceso a la atención sanitaria es muy desigual en algunos países. Las mujeres indígenas, en particular, tienen peores resultados en salud materna que la mayoría de la población y menos probabilidades de beneficiarse de los servicios de atención sanitaria. Por tanto, deben vigilarse las desigualdades en temas de salud materna entre los diferentes grupos étnicos para determinar los factores críticos que podrían limitar la cobertura de la atención sanitaria. Al adoptar los objetivos de desarrollo sostenible de las Naciones Unidas, los gobiernos se han comprometido a proporcionar una cobertura sanitaria equitativa y universal. Por tanto, es el momento adecuado para evaluar las disparidades étnicas en la atención sanitaria materna. Sin embargo, ha sido difícil encontrar un método estándar para identificar la etnia, pues esta tiene varias características, como el idioma, la religión, la tribu, el territorio y la raza.

En este estudio, el idioma indígena hablado se utilizó con éxito como indicador de la etnicidad para detectar las desigualdades en la cobertura de la atención sanitaria materna entre las poblaciones indígenas y no indígenas en cuatro países de América Latina: el Estado Plurinacional de Bolivia, Guatemala, México y Perú. Aunque la cuantificación de las inequidades étnicas en la atención sanitaria es solo un punto de partida, esta cuantificación puede ayudar a los responsables de la formulación de políticas y a otros interesados a justificar la necesidad de monitorizar estas inequidades. Esta monitorización es esencial para diseñar programas y políticas culturalmente más adecuadas que reduzcan los riesgos asociados con la maternidad entre las mujeres indígenas. Mientras persistan las desigualdades, identificarlas es un paso importante hacia su eliminación.

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3.2 How the choice of ethnic indicator influences ethnicity-based inequities in maternal health care in four Latin American countries: Who is indigenous?

Autores: Nancy Armenta Paulino, Adela Castelló, María Sandín Vázquez & Francisco Bolúmar

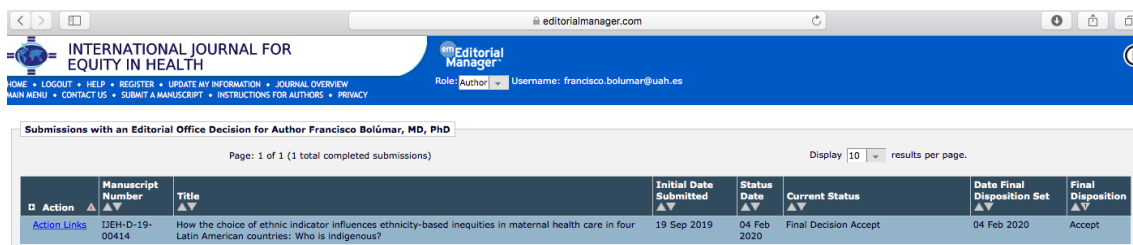
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The screenshot shows the Editorial Manager interface for the International Journal for Equity in Health. The user is logged in as Francisco Bolúmar, MD, PhD. The page displays a table of submissions with one entry:

Action	Manuscript Number	Title	Initial Date Submitted	Status Date	Current Status	Date Final Disposition Set	Final Disposition
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RESEARCH

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1
2 **How the choice of ethnic indicator**
3 **influences ethnicity-based inequities in**
4 **maternal health care in four Latin American**
5 **countries: who is indigenous?**

6 Nancy Armenta-Paulino¹, Adela Castelló^{1,2}, María Sandín Vázquez¹ and Francisco Bolívar^{1,2,3*}

10 **Abstract**

11 **Background:** The current focus on monitoring health inequalities and the complexity around ethnicity requires
12 careful consideration of how ethnic disparities are measured and presented. This paper aims to determine how
13 inequalities in maternal healthcare by ethnicity change according to different criteria used to classify indigenous
populations.

14 **Methods:** Nationally representative demographic surveys from Bolivia, Guatemala, Mexico, and Peru (2008–2016)
15 were used to explore coverage gaps across maternal health care by ethnicity using different criteria. Women were
16 classified as indigenous through self-identification (SI), spoken indigenous language (SIL), or indigenous household
17 (IH). We compared the gaps through measuring coverage ratios (CR) with adjusted Poisson regression models.

18 **Results:** Proportions of indigenous women changed significantly according to the identification criterion (Bolivia:SI-
19 63.1%/SIL-37.7%; Guatemala:SI-49.7%/SIL-28.2%; Peru:SI-34%/SIL-6.3% & Mexico:SI-29.7%/SIL-6.9%). Indigenous in all
20 countries, regardless of their identification, had less coverage. Gaps in care between indigenous and non-
21 indigenous populations changed, for all indicators and countries, depending on the criterion used (e.g., Bolivia CR
22 for contraceptive-use SI = 0.70, SIL = 0.89; Guatemala CR for skilled-birth-attendant SI = 0.77, SIL = 0.59). The
23 heterogeneity persists when the reference groups are modified and compare just to non-indigenous (e.g., Bolivia
24 CR for contraceptive-use under SI = 0.64, SIL = 0.70; Guatemala CR for Skilled-birth-attendant under SI = 0.77, SIL =
0.57).

25 **Conclusions:** The indigenous identification criteria could have an impact on the measurement of inequalities in the
26 coverage of maternal health care. Given the complexity and diversity observed, it is not possible to provide a
27 definitive direction on the best way to define indigenous populations to measure inequalities. In practice, the
28 categorization will depend on the information available. Our results call for greater care in the analysis of ethnicity-
29 based inequalities. A greater understanding on how the indigenous are classified when assessing inequalities by
30 ethnicity can help stakeholders to deliver interventions responsive to the needs of these groups.

31 **Keywords:** Health inequalities, Indigenous, Maternal health care, LAC

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32 Background

33 With the adoption of the 2030 Agenda for Sustainable De-
34 velopment, governments pledged to ensure “no one will
35 be left behind”, and to continue efforts to reduce maternal
36 mortality and inequalities in maternal health. Sustainable
37 Development Goals (SDGs) have called for the production
38 of quality, accessible, timely, and reliable “data disaggre-
39 gated by income, gender, age, ethnicity, disability, and
40 other relevant characteristics,” and subsequently, monitor-
41 ing health inequalities has gained political attention [1, 2].
42 Therefore, now seems to be the time to assess ethnicity-
43 based differences in maternal health care.

44 Unlike other dimensions of inequity, measuring ethnic
45 inequalities is particularly difficult. Studying how ine-
46 equalities in health vary by ethnicity involves dividing
47 the population into appropriate groups, but the main ob-
48 stacles are the identification of ethnicity in a consistent
49 or standardized way, and the lack of disaggregated data
50 [3, 4]. In general, ethnicity is not defined by fixed or eas-
51 ily measurable characteristics [3, 5]. For indigenous pop-
52 ulations in particular, there are four dimensions that
53 should be considered when establishing operational ethn-
54 icity criteria: (i) recognition of identity; (ii) common
55 origin (iii) territoriality; and (iv) the linguistic-cultural di-
56 mension [3, 6].

57 However, the principal criteria used to identify indi-
58 genous people are their self-identification and their
59 spoken language. From a human rights approach, self-
60 identification has been considered as the primary crite-
61 rion, but the inclusion of questions to capture it in sur-
62 veys is recent, and not all countries use it as a quantifier
63 yet. Traditionally, countries have used the criterion of
64 spoken language, which some of them continue to use
65 to show the socioeconomic and health situation of the
66 indigenous people [3, 4, 7].

67 Some studies have shown that the size of the indigen-
68 ous population varies significantly depending on the cri-
69 teria used to identify them. In specific contexts, people
70 would not self-identify as indigenous due to negative
71 prejudices. Moreover, the use of indigenous languages is
72 gradually decreasing among the younger generations and
73 in urban populations, so, under these criteria indigenous
74 population seem to be decreasing or underestimated [3,
75 4, 8]. Therefore, using both self-identification and lan-
76 guage may provide not only a complete picture of the
77 ethnic inequalities but will also avoid undercount of the
78 indigenous population.

79 Recently, several studies have explored the inequalities
80 in maternal, newborn and child health by ethnicity in
81 some countries of Latin America [9–12]. The criteria
82 used to identify the women as indigenous were self-
83 identification (SI), spoken indigenous languages (SIL), or
84 indigenous household (IH) (if the head of the household
85 speaks an indigenous language or self-identifies). All

86 studies agree with the vulnerability of indigenous
87 women, who have less coverage across the continuum of
88 care from before pregnancy, through pregnancy to child-
89 birth [9–11]. Although the results are not directly com-
90 parable, it is possible to observe how the magnitude of
91 the gaps in the coverage level varies according to the cri-
92 terion used to identify ethnicity.

93 For the monitoring of inequalities to be meaningful and
94 useful in reducing ethnic gaps, equal attention should be
95 given to how ethnicity is conceptualized and specified, just
96 as to which is the rationale for reporting ethnic differ-
97 ences. These aspects are essential because without accur-
98 ate and reliable data, there is little capacity to monitor
99 changes in health status, to evaluate access to services and
100 their response to population needs, or to quantify the re-
101 sources expended on health services and programs.

102 To fill these gaps, this study aims to determine how
103 ethnic inequalities in maternal healthcare change ac-
104 cording to the different criteria used to classify the indi-
105 genous populations.

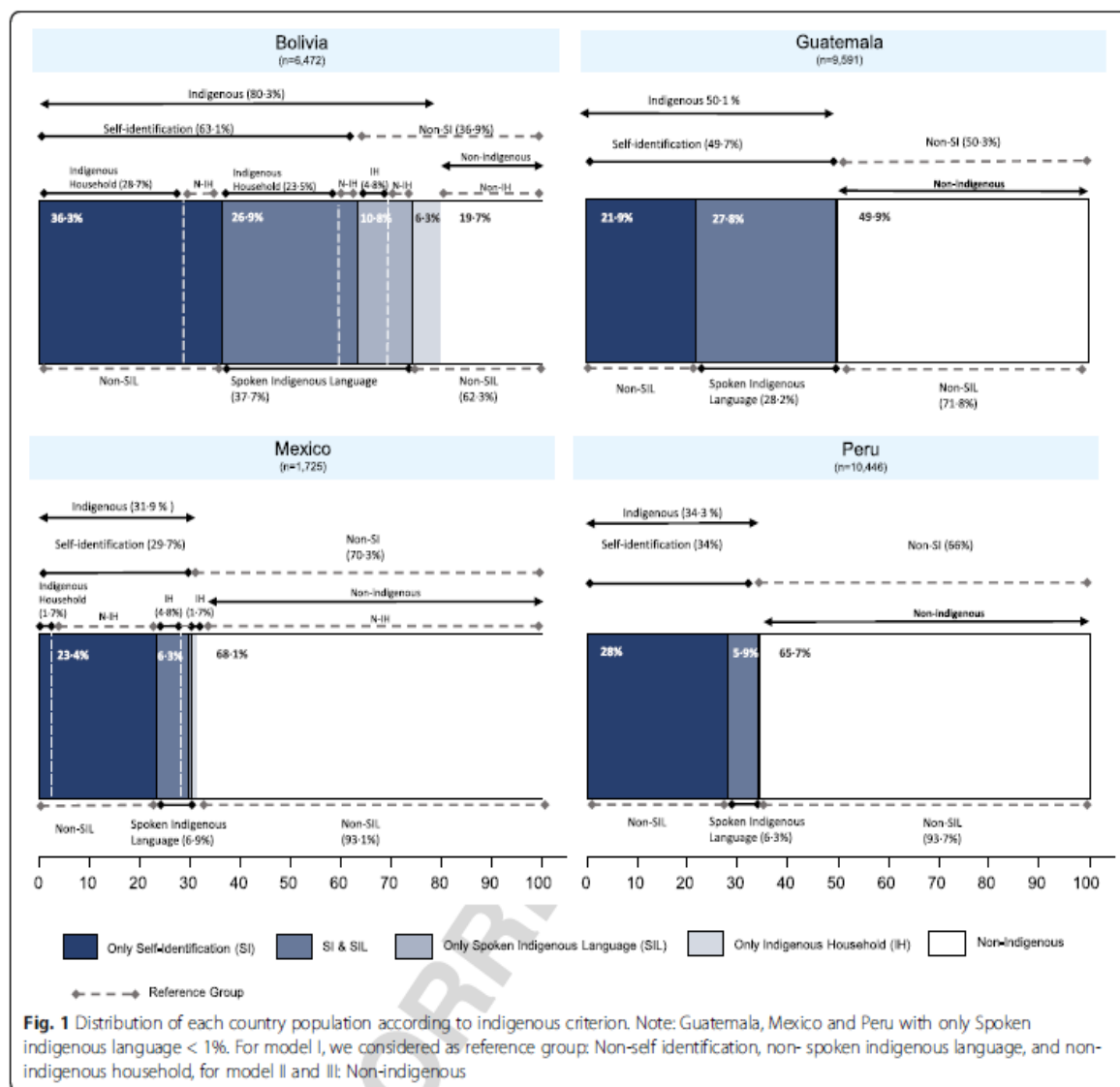
106 Methods

107 Study design and data sources

108 This study is a cross-sectional analysis of the continuum
109 of maternal health care by ethnicity in four Latin Amer-
110 ican countries: Bolivia, Guatemala, Mexico, and Peru.
111 These countries have a substantial proportion of indi-
112 genous population, and a high maternal mortality ratio
113 [13]. The analyses relied on the following publicly avail-
114 able databases: Demographic and Health Surveys and
115 Multiple Indicator Cluster Survey, specifically, Demo-
116 graphic and Health Survey (ENDSA) 2008 (Bolivia), Na-
117 tional Survey on Maternal and Child Health (ENSMI)
118 2014–2015 (Guatemala), National Survey of Children
119 and Women (ENIM) 2015 (Mexico), and Demographic
120 and Family Health Survey (ENDES) 2016 (Peru) [14–16].
121 All surveys collect individual information on ethnicity
122 and maternal health care. Taken together, the 4 surveys
123 included 28, 240 women. The numbers of women in-
124 cluded in the calculation of each indicator are shown in
125 Fig. 1. We used the software Stata 14 for the analysis
126 and graphs.

127 Coverage indicators

128 We assessed six indicators that cover the continuum of
129 care received by women before and during pregnancy as
130 well as childbirth and postpartum: Contraceptive use in
131 women married or living with a partner, antenatal care
132 with a skilled provider, four or more antenatal care
133 visits, first antenatal care visit in the first trimester,
134 skilled birth attendance, and postpartum care (Add-
135 itional file 1 Table S1). From the perspective of the con-
136 tinuum of care, every phase is essential and reducing



[Q5].1
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f1.4

137 mortality depends on both the care coverage and the
138 quality of the services provided [17].

139 The coverages for each indicator were defined as the
140 percentage of women who receive a specific intervention
141 among those who need it. For indicators related to ante-
142 natal care, skilled birth attendance, and postpartum care,
143 women of reproductive age (WRA) of 15–49 years' old
144 who had delivered a child either in the last 2 (Mexico)
145 or 5 (Bolivia, Guatemala, Peru) years at the time of the
146 survey were included. To analyze the use of contracep-
147 tives, we considered WRA currently married or living
148 with a partner.

149 Identification of ethnicity

150 We used the self-identification and language spoken as a
151 proxy for ethnic identity. With respect to self-identification,

the surveys inquired if participants belonged to an indigen-
ous group, or if they considered themselves as indigenous
or of a specific ethnic group. As regards language, surveys
asked whether the woman or the head of the household
spoke an indigenous language, what language was spoken
at home, or which was the most common language spoken
in their home. The questions and criteria used to classify
women as indigenous or non-indigenous in each country
are summarized in Table 1.

We classified women as indigenous through three main
criteria: self-identification (SI), spoken an indigenous
language (SIL), belong to an indigenous household (IH, if the
head of the household reported speaking an indigenous
language). The groups are not mutually exclusive, and
thus, some women could be classified as indigenous using
different criteria, i.e., a woman who spoke an indigenous

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Q6 | **Table 1** Survey questions used to ethnic identification

t1.2 Ethnicity identification Questions		Categorizing	
t1.3		Indigenous	Reference Group
t1.4	Self-identification (SI)	SI	Non-SI
t1.5	Bolivia Do you consider yourself a member of an indigenous people such as quechua, aymara, guarani, or other?	Quechua, aymara, guarani, other	None
t1.6	Do you consider yourself as indigenous or non-indigenous?	Indigenous	Non-indigenous
t1.7	Guatemala		
t1.8	Do you consider yourself: maya, ladina/mestiza, garifuna,	Maya, xinca or other ethnias	Ladina/mestiza, garifuna
t1.9	xinca, or other ethnias?		
t1.10	Mexico According to your culture, do you consider yourself as indigenous?	Yes	No
t1.11	Peru According to your ancestors and traditions, do you consider yourself as: Quechua?, Aymara?, Native or Amazonia's indigenous?, Black, mulatto, afro Peruvian?, White?, Mestizo?, other?	Quechua, aymara, native or Amazonia's indigenous	Black, mulatto, afro peruvian, White, Mestizo
t1.12	Spoken indigenous language (SIL)	SIL	Non-SIL
t1.13	Bolivia What languages do you speak?	Quechua, Aymara, Guarani, another native	Spanish, foreign language
t1.14	Usually, what language do you speak at home?	Kaqchiquel, Q'eqchi, K'iche, Mam, Poqomchi', Tzu'utujil, Q'anjob'al, Ch'orti', Pocomam, Achi, Akateko, Awakateko, Chalchiteko, Chuj, Itza', Ixil, Jakatelteko (Popti'), Mopan, Sakapulteko, Sipakapense, Tektiteko, Usapanteko	Spanish
t1.15	Guatemala		
t1.16	Mexico Do you speak any indigenous language?	Yes	No
t1.17	Peru Usually, what language or dialect do you speak at home?	Quechua, Aymara, another native	Spanish, foreign language
t1.18	Indigenous household (IH)	IH	Non-IH
t1.19	Bolivia If the head of household said to speak an indigenous language	Indigenous household: Quechua, Aymara, Guarani, another native	Non-indigenous household: Spanish, foreign language
t1.20	Mexico If the head of household said to speak an indigenous language	Indigenous household: Yes	Non-indigenous household: No
t1.21	Note: Spanish questions are available in Additional file 1 Table S2		

168 language and self-identified as indigenous was included in
 169 SIL and SI group. Because of the way the data are col-
 170 lected, it was only possible to use the IH criterion in
 171 Bolivia and Mexico. In Guatemala, the couples (husband-
 172 wife) dataset could not be generated, and in Peru data
 173 about indigenous language was only available for women.

174 Statistical analysis

175 *Measurement of maternal health care inequalities*

176 We estimated the proportion of indigenous women on the
 177 sample by ethnic identification criteria and analyzed the
 178 distribution of the continuum of maternal healthcare cover-
 179 age for each of them. Also, we did an Equiplot to show the
 180 level of coverage of each criterion and the distance in
 181 coverage between indigenous and non-indigenous people,
 182 which represents absolute inequality [18].

183 We measured a relative inequality by ethnicity through
 184 the estimation of adjusted coverage ratios (CR). For each
 185 outcome a CR is calculated by dividing the proportion of
 186 health care achieved in indigenous versus non-indigenous

187 populations and thus can be interpreted as prevalence ratios 187
 188 (i.e. a CR = 1 means that the coverage is equal be- 188
 189 tween indigenous and non-indigenous). Using a Poisson 189
 190 regression model for outcomes defined as binary variables 190
 191 (Additional file 1 S1 and S3), the adjusted CRs were esti- 191
 192 mated as a ratio of functions having in the numerator the 192
 193 equation for the category of exposure considered (indigen- 193
 194 ous) and in the denominator the equation corresponding 194
 195 to the reference group (non-indigenous).

$$CR_{X_1} = \frac{C_{indigenous}(X_1=1)}{C_{non-indigenous}(X_1=0)} = \frac{e^{\beta_0} e^{\beta_1(X_1=1)} e^{\beta_2 X_2} e^{\beta_3 X_3} \dots e^{\beta_k X_k}}{e^{\beta_0} e^{\beta_1(X_1=0)} e^{\beta_2 X_2} e^{\beta_3 X_3} \dots e^{\beta_k X_k}} = e^{\beta_1}$$

196 Where, X_1 adopts the value of zero "0" in the unex- 196
 197 posed group (non-indigenous) and the value of 1 in the 197
 198 exposed group (indigenous). 198

199 When the Poisson regression is applied to binomial 199
 200 data, the association between exposure and outcome is 200
 201 directly estimated by means of prevalence ratios (in our 201
 202 case coverage ratios), which are more intuitive and easily 202

203 interpreted than other association measures such as the
204 odds ratios from logistic regression [19–21].

205 The Poisson models were adjusted by age, education,
206 socioeconomic level, area of residence, affiliation to
207 some health insurance, and whether women were benefi-
208 ciary of a social program related to maternal care [3, 4,
209 22, 23].

210 *Differences in the inequalities by ethnic identification* 211 *criterion used*

212 We compared how ethnic-based inequalities change by in-
213 digenous identification criteria through three approaches
T2 214 (Table 2). In the first, we estimated the CR comparing
215 with the direct reference group by each criterion: SI vs
216 Non-SI, SIL vs Non-SIL and IH vs Non-IH. In the second,
217 we considered an adjusted comparison group, i.e., we only
218 included in the reference group women who did not re-
219 port any of the attributes of ethnic identification: SI vs
220 Non-Indigenous, SIL vs Non-Indigenous and HI vs Non-
221 Indigenous. Finally, in the third, with the same compari-
222 son group, we evaluated the CR by ethnicity considering
223 as indigenous women those who reported any of the eth-
224 nic identification criteria (SI or SIL or IH).
225 We summarized the CRs estimated through these
226 three approaches in a Forest plot to visually inspect the
227 heterogeneity of gaps obtained under different ethnic
228 identification criteria and checked the overlapping of
229 confidence intervals.

230 Results

231 Indigenous women

232 There is a certain degree of heterogeneity in the ques-
233 tions used to classify women as indigenous or non-
234 indigenous, with some semantic differences between the
235 countries. Both in the self-identification or language cri-
236 teria, the questions refer to specific ethnic groups in

237 some cases, and in others, it is asked in a general way
238 (whether it is considered indigenous or not). Some
239 countries ask the question by referring to their culture
240 or with their ancestors (Table 1).

241 Figure 1 shows that the proportion of indigenous
242 women changes significantly according to the indigenous
243 identification criterion used. In all countries, the per-
244 centage of women that self-identify as indigenous (63.2%
245 in Bolivia, 49.7% in Guatemala, 33.9% in Peru and 29.7%
246 in Mexico) is higher than women who said they speak
247 an indigenous language (37.7% in Bolivia, 28.2% in
248 Guatemala, 6.3% in Peru and 6.9% in Mexico). Almost
249 all women in the SIL category are also in the SI category,
250 except in Bolivia where 10.9% of women categorized as
251 SIL are not in the SI category.

252 Inequalities in the continuum of care for maternal health

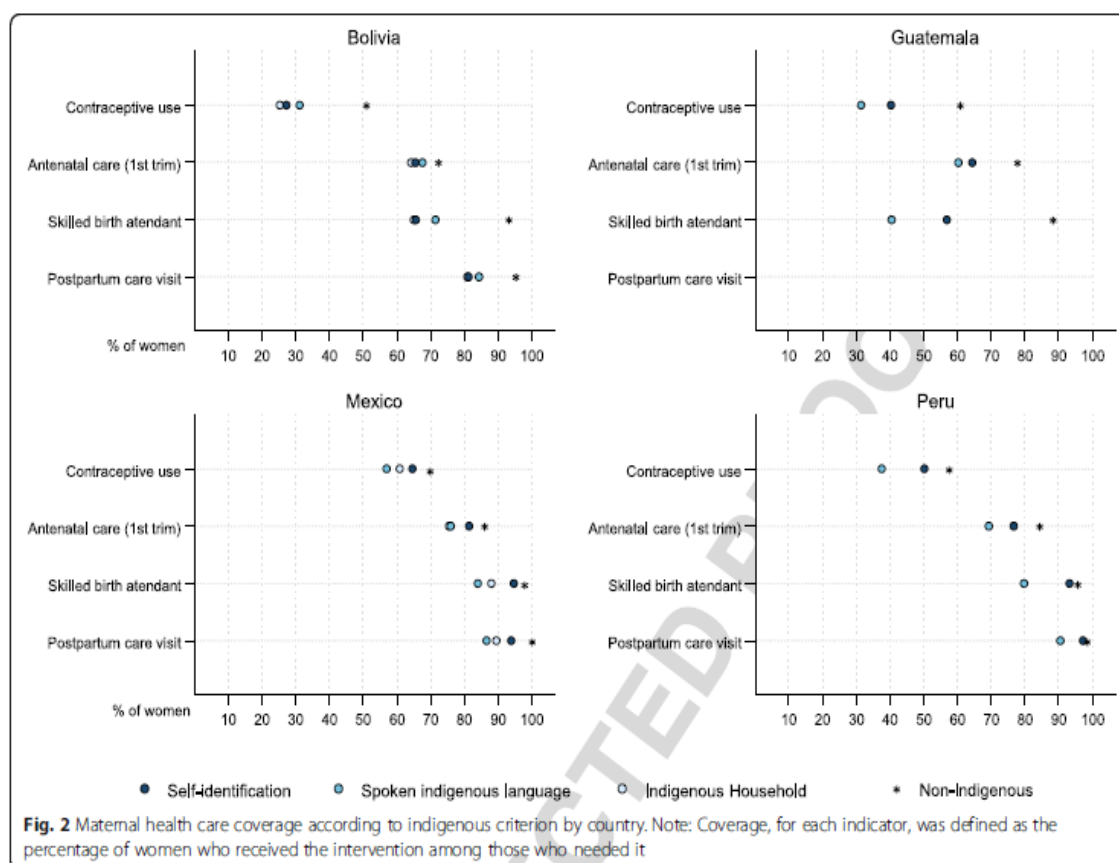
253 Figure 2 shows the maternal health care coverage for each
254 ethnic criterion and the distance between indigenous and
255 non-indigenous in the four countries. We observed that
256 indigenous women in all four countries, regardless of how
257 they were identified, had less coverage in the continuum
258 of maternal health. Contraceptive use and skilled birth at-
259 tendant are the components in the continuum of care for
260 maternal health for which the most significant inequalities
261 are observed, mainly for Bolivia and Guatemala. Peru and
262 Mexico appear to be the countries with the smallest gaps
263 throughout the care continuum and Guatemala with the
264 largest care (Additional file 1: Table S4). Regarding socio-
265 economic characteristics, indigenous women have less
266 education, wealth and access to medical care (Additional
267 file 1: Table S4).

268 These gaps persist after adjusting the CRs by age, edu-
269 cation, socioeconomic level, area of residence, affiliation
270 to some health insurance, and whether women were
271 beneficiary of a social program related to maternal care.

t2.1 **Table 2** Approaches used to analyze ethnic-based inequalities

t2.2	Approach	Comparison groups	Specifications
t2.3	A1. Direct references	Indigenous vs Non-Indigenous	• The simplest way to measure gaps by ethnicity. We identify as indigenous those who report the specific ethnic criterion and non-indigenous as who do not report it
t2.4		SI Non-SI	• Otherwise, if women did not meet these criteria, they were considered as non-indigenous. A woman who self-identified as indigenous but does not speak an indigenous language would be classified as non-indigenous under the SIL criterion.
t2.5		SIL Non-SIL	
t2.6		IH Non-IH	• This could be a unique way to measure inequalities when you only have information on any of the ethnic identification criteria.
t2.7	A2. Adjusted reference groups	Indigenous	• We only included in the reference group women who did not report any of the attributes of ethnic identification (self-identification, language or living in an indigenous household)
t2.8		SI	• Under this approach, we avoid including in the reference group women with similar sociocultural factors because under other criteria they are identified as indigenous.
		SIL vs Non-Indigenous	
		IH	
t2.9	A3. Integrate indigenous population	Indigenous vs Non-Indigenous	• We identified as indigenous women those who reported any of the ethnic identification criteria.
t2.10		if: SI or SIL or IH	• Under this strategy, we can identify a higher number of women as indigenous. • We considered that women identified through any of the different criteria could share with the rest some cultural factors related to motherhood or suffer discrimination and have language barriers, all of which may affect maternal health care.

t2.11 Notes: SI Self-identification, SIL Spoken indigenous language, IH: Indigenous household

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272 In Bolivia, Guatemala and Mexico, the contraceptive use
 273 and skilled birth attendant have the furthest CR from 1,
 274 which means the greater inequalities happen in these
 275 phases of the continuum of care, independently of other
 276 socioeconomic factors. Also, Guatemala remains the
 277 country where the higher inequalities by ethnicity are
 3 T3 278 observed (Table 3 & Fig. 3).

279 *Differences among the inequalities by ethnic identification* 280 *criteria*

281 We observed heterogeneity by the ethnic criterion used
 282 for all coverage indicators and countries. The Equiplot
 283 (Fig. 2) shows that in almost all countries under the SI
 284 criterion the coverage is greater and therefore closer to
 285 those of non-indigenous, except for Bolivia, where this
 286 happens under the SIL criterion. For example, in
 287 Mexico, skilled birth attendance ranges from 84% associ-
 288 ated with SIL, 88% with IH, to 95% among SI. The same
 289 applies to the sociodemographic characteristics, where
 290 some differences by indigenous identification criterion
 291 are observed (Additional file 1: Table S4).

292 Under the first approach (direct references), we obser-
 293 ved that among ethnic criteria in Bolivia, when using
 294 SIL to identify the women as indigenous and measure

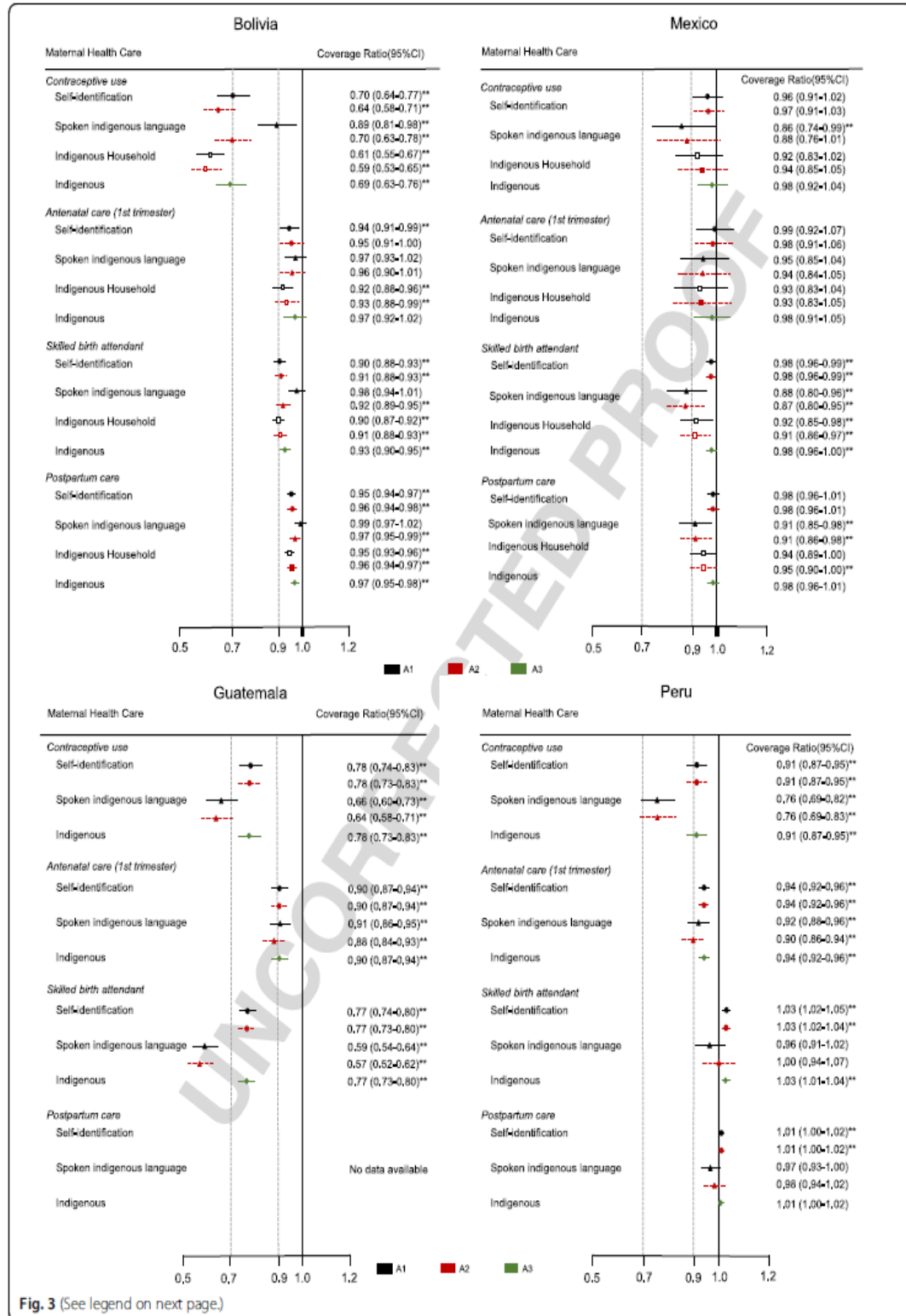
the relative inequalities to non-indigenous (non-SIL) the
 CR is closer to one, i.e., there are fewer inequalities be-
 tween indigenous and non-indigenous under this crite-
 rion. However, if women are identified as indigenous
 with SI criterion, the CR is far from one, so, under this
 criterion, the inequalities between indigenous and non-
 indigenous are greater. For example, the CR for contra-
 ceptive use in Bolivia is 30% lower for SI women when
 compared to non-SI, while there is only an 11% differ-
 ence between SIL and non SIL women, and the CR is
 39% lower among IH women compared to non-IH
 women (Fig. 3). By contrast, for other countries, the
 highest CR were observed when the SI criterion was
 used and was close to 1 in Mexico and Peru. That is,
 there is a smaller difference in coverage between indi-
 genous and non-indigenous when considered women
 who are SI and non-SI (Table 3 & Fig. 3).

For the second approach (adjusted reference groups),
 the heterogeneity of gaps by indigenous identification
 criterion persisted. The greatest CRs were observed
 under SIL criterion for Bolivia and under the SI crite-
 rion for Guatemala, México and Perú. We observed, only for
 Bolivia, that the differences in inequalities between SIL
 and non SIL decrease with respect to the first approach,

Table 3 Adjusted coverage ratios (95%CI, *p*-value) in indigenous women compared to the reference category, by approach and country

A							
Bolivia							
Ethnicity/identification criteria	Approach						
	A1. Direct references			A2. Adjusted reference groups			A3. Integrate indigenous population
Coverage Prevalence Rate	SI vs Non-SI	SIL vs Non-SIL	IH vs Non-IH	SI vs Non-Indigenous	SIL vs Non-Indigenous	IH vs Non-Indigenous	SI or SIL or IH vs Non-Indigenous
Before and during pregnancy							
Contraceptive use	0.70 (0.64,0.77)	0.80 (0.82,0.98)	0.83 (0.55,0.87)	0.64 (0.58,0.72)	0.55 (0.52,0.67)	0.55 (0.55,0.85)	0.89 (0.63,0.76)
Antenatal care (skilled provider)	0.97 (0.95,0.98)	0.96 (0.96,1.01)	0.96 (0.95,0.98)	0.97 (0.95,0.98)	0.97 (0.95,0.99)	0.96 (0.95,0.98)	0.97 (0.96,0.99)
First antenatal care visit in 1st trimester	0.95 (0.91,0.99)	0.98 (0.98,1.04)	0.92 (0.87,0.96)	0.94 (0.91,1.01)	0.94 (0.88,1.00)	0.94 (0.89,0.99)	0.97 (0.91,1.01)
Four or more antenatal care visits	0.90 (0.87,0.93)	1.00 (0.96,1.04)	0.90 (0.87,0.93)	0.90 (0.87,0.94)	0.91 (0.87,0.95)	0.90 (0.87,0.94)	0.97 (0.89,0.98)
Birth and postpartum period							
Skilled birth attendant	0.90 (0.88,0.95)	0.95 (0.94,1.01)	0.90 (0.87,0.92)	0.91 (0.88,0.93)	0.89 (0.86,0.93)	0.91 (0.88,0.93)	0.99 (0.90,0.99)
Postpartum care visit	0.95 (0.84,0.97)	0.96 (0.93,1.02)	0.95 (0.89,0.96)	0.84 (0.84,0.98)	0.85 (0.88,0.96)	0.85 (0.94,0.97)	0.97 (0.91,0.98)
Mexico							
Ethnicity/identification criteria	Approach						
	A1. Direct references			A2. Adjusted reference groups			A3. Integrate indigenous population
Coverage Prevalence Rate	SI vs Non-SI	SIL vs Non-SIL	IH vs Non-IH	SI vs Non-Indigenous	SIL vs Non-Indigenous	IH vs Non-Indigenous	SI or SIL or IH vs Non-Indigenous
Before and during pregnancy							
Contraceptive use	0.96 (0.91,1.02)	0.85 (0.74,0.95)	0.92 (0.83,1.02)	0.97 (0.91,1.03)	0.88 (0.74,1.01)	0.84 (0.81,1.00)	0.88 (0.82,1.04)
Antenatal care (skilled provider)	0.98 (0.96,1.00)	0.94 (0.88,1.01)	0.95 (0.91,1.01)	0.98 (0.96,1.00)	0.99 (0.88,1.00)	0.95 (0.92,1.00)	0.98 (0.96,1.01)
First antenatal care visit in 1st trimester	0.94 (0.92,1.07)	0.98 (0.86,1.05)	0.89 (0.81,1.03)	0.96 (0.92,1.06)	0.98 (0.87,1.09)	0.94 (0.87,1.06)	0.97 (0.91,1.06)
Four or more antenatal care visits	0.89 (0.89,1.01)	0.86 (0.77,0.95)	0.89 (0.81,0.96)	0.87 (0.84,1.00)	0.85 (0.77,0.93)	0.88 (0.82,0.96)	0.97 (0.94,1.00)
Birth and postpartum period							
Skilled birth attendant	0.98 (0.96,0.99)	0.88 (0.82,0.94)	0.92 (0.81,0.98)	0.88 (0.86,0.99)	0.87 (0.82,0.95)	0.91 (0.85,0.97)	0.98 (0.96,1.00)
Postpartum care visit	0.98 (0.96,1.02)	0.86 (0.85,0.98)	0.95 (0.82,1.00)	0.95 (0.96,1.01)	0.95 (0.88,0.96)	0.85 (0.92,1.00)	0.99 (0.96,1.01)
B							
Guatemala							
Ethnicity/identification criteria	Approach						
	A1. Direct references			A2. Adjusted reference groups			A3. Integrate indigenous population
Coverage Prevalence Rate	SI vs Non-SI	SIL vs Non-SIL	IH vs Non-IH	SI vs Non-Indigenous	SIL vs Non-Indigenous	IH vs Non-Indigenous	SI or SIL or IH vs Non-Indigenous
Before and during pregnancy							
Contraceptive use	0.78 (0.74,0.89)	0.65 (0.40,0.79)	0.76 (0.70,0.88)	0.64 (0.58,0.71)	0.64 (0.58,0.71)	0.76 (0.70,0.88)	0.76 (0.70,0.88)
Antenatal care (skilled provider)	0.98 (0.96,1.00)	0.97 (0.96,1.00)	0.96 (0.96,1.00)	0.96 (0.96,1.00)	0.96 (0.96,1.00)	0.96 (0.96,1.00)	0.96 (0.96,1.00)
First antenatal care visit in 1st trimester	0.92 (0.91,0.97)	0.91 (0.87,0.96)	0.91 (0.87,0.94)	0.91 (0.87,0.94)	0.89 (0.84,0.93)	0.91 (0.87,0.94)	0.91 (0.87,0.94)
Four or more antenatal care visits	0.90 (0.88,1.00)	0.90 (0.89,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)
Birth and postpartum period							
Skilled birth attendant	0.77 (0.74,0.80)	0.59 (0.54,0.64)	0.77 (0.71,0.84)	0.57 (0.53,0.62)	0.57 (0.53,0.62)	0.76 (0.71,0.84)	0.76 (0.71,0.84)
Postpartum care visit	0.90 (0.88,1.00)	0.90 (0.89,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)	0.90 (0.86,1.00)
Peru							
Ethnicity/identification criteria	Approach						
	A1. Direct references			A2. Adjusted reference groups			A3. Integrate indigenous population
Coverage Prevalence Rate	SI vs Non-SI	SIL vs Non-SIL	IH vs Non-IH	SI vs Non-Indigenous	SIL vs Non-Indigenous	IH vs Non-Indigenous	SI or SIL or IH vs Non-Indigenous
Before and during pregnancy							
Contraceptive use	0.91 (0.87,0.96)	0.76 (0.70,0.83)	0.91 (0.87,0.95)	0.76 (0.69,0.85)	0.76 (0.69,0.85)	0.91 (0.87,0.95)	0.91 (0.87,0.95)
Antenatal care (skilled provider)	0.99 (0.98,1.00)	0.94 (0.90,0.98)	0.94 (0.91,1.01)	0.98 (0.95,1.00)	0.98 (0.95,1.00)	0.98 (0.95,1.00)	0.98 (0.95,1.00)
First antenatal care visit in 1st trimester	0.97 (0.94,0.99)	0.91 (0.87,0.96)	0.91 (0.87,0.94)	0.91 (0.87,0.94)	0.89 (0.84,0.93)	0.91 (0.87,0.94)	0.91 (0.87,0.94)
Four or more antenatal care visits	0.99 (0.98,1.00)	0.96 (0.94,0.98)	0.99 (0.97,1.00)	0.99 (0.97,1.00)	0.99 (0.97,1.00)	0.99 (0.97,1.00)	0.99 (0.97,1.00)
Birth and postpartum period							
Skilled birth attendant	1.00 (0.99,1.00)	0.97 (0.91,1.00)	1.00 (0.91,1.00)	1.00 (0.94,1.07)	1.00 (0.94,1.07)	1.00 (0.91,1.00)	1.00 (0.91,1.00)
Postpartum care visit	0.99 (0.98,1.00)	0.97 (0.91,1.00)	0.99 (0.97,1.00)	0.99 (0.94,1.07)	0.99 (0.94,1.07)	0.99 (0.91,1.00)	0.99 (0.91,1.00)

t3.2 Notes: All models were adjusted by age, education, socioeconomic level, place of residence, marital status, health insurance and social programs related to
t3.3 maternity. SI: Self-identification, SIL: Spoken indigenous language, IH: Indigenous household



f3.3
f3.4
f3.5

Fig. 3 (See legend on next page.)

f3.6 (See figure on previous page.)

f3.7 **Fig. 3** Coverage ratios for the continuum of care for maternal health according to indigenous criterion. Notes: i) Approaches: A1. Direct references:
 f3.8 Self-identification (SI) vs Non-SI, Spoken indigenous language (SIL) vs Non-SIL, Indigenous Household (IH) vs Non-IH; A2. Adjusted reference
 f3.9 groups: SI vs Non-indigenous, SIL vs Non-Indigenous, IH vs Non-Indigenous. A3. Integrate indigenous population: Indigenous (women who SI or
 f3.10 SIL or IH) vs Non-Indigenous. ii) Models adjusted by age, education, marital status, socioeconomic level, area of residence, affiliation to some
 f3.13 health insurance, and whether women were beneficiary of a social program related to maternal care. iii) ** $p < 0.05$
 f3.14

319 suggesting larger gaps with respect to non-indigenous
 320 women, especially for contraceptive use (CR from 0.89
 321 to 0.70 using the new reference group) and skilled birth
 322 attendant (CR from 0.98 to 0.92) (Table 3).

323 For the rest of the countries, the disparities were also
 324 slightly reduced for almost all indicators, specially under
 325 the SIL criterion in most cases. In Mexico, except for
 326 contraceptive use, under the SI or SIL the CR remained
 327 almost the same. In Peru, the CR remained the same
 328 under the SI criterion and under SIL criterion the CR
 329 for skilled birth attendant increased in such a way that
 330 the gap disappeared. In contrast, in Guatemala, the dif-
 331 ferences in inequalities between the SI and SIL criteria
 332 slightly increased for most indicators. Considering the
 333 SIL criteria, the differences concerning non-indigenous
 334 women are slightly higher (Table 3 & Fig. 3).

335 Figure 3 also shows that when considering as indigen-
 336 ous all women who reported SI, SIL, or IH (third ap-
 337 proach), the CR are slightly larger and similar to those
 338 in the group with higher CRs. In the case of Bolivia, the
 339 CRs are like those observed for women who identified as
 340 SIL and for the rest of the countries to those of women
 341 who identified as SI.

342 For all countries, we observed overlapping confidence
 343 intervals of CRs in almost all indicators to under any cri-
 344 teria or approach. Under the first and second ap-
 345 proaches, in Bolivia, Guatemala, and Peru we observed
 346 that there is a greater difference between the CRs esti-
 347 mated under SI and SIL criteria and the confidence in-
 348 tervals do not overlap. A similar situation happens in the
 349 skilled birth attendant in Guatemala and Mexico (Fig. 3).

350 Discussion

351 Our results show that the choice of the indigenous iden-
 352 tification criterion and the reference groups used to esti-
 353 mate inequalities by ethnicity have an impact on the
 354 sizes and interpretation of the health care coverage gaps
 355 identified between indigenous and non-indigenous pop-
 356 ulations. The greatest coverage inequalities were ob-
 357 served for indigenous women classified according to the
 358 IH criterion in Bolivia and for those classified under the
 359 SIL criterion in Mexico, Guatemala and Peru, especially
 360 for contraceptive use and, for all except Peru, for skilled
 361 birth attendance. The country showing the higher gaps
 362 between indigenous and non-indigenous women for
 363 these two indicators was Guatemala, closely followed by
 364 Bolivia and to a lesser extent by Mexico and Peru.

365 Measuring inequalities by ethnicity is not an easy task. 365
 366 The main issue is classifying a study population into ap- 366
 367 propriate groups. Our study, like previous studies [3, 4, 367
 368 8], also shows that the proportion of indigenous women 368
 369 varies and depends fundamentally on how ethnicity is 369
 370 defined and measured. Unlike other variables, for ethni- 370
 371 city, there is no gold standard on how to define indigen- 371
 372 ous populations. 372

373 From a human rights perspective, self-identification 373
 374 should be considered as the most appropriate criterion 374
 375 [3]. According to our study, this criterion identifies a 375
 376 greater proportion of indigenous women, with the ex- 376
 377 ception of Bolivia, where there are women who, even 377
 378 with other ethnic attributes such as language or living in 378
 379 an indigenous home, do not recognize themselves as ind- 379
 380 igenous. This finding is consistent with what was re- 380
 381 cently discussed about the decrease in the proportion of 381
 382 the population that identifies itself as indigenous in 382
 383 Bolivia after the results of the 2012 census [3, 24, 25]. 383

384 About ethnic inequalities, our results show that, re- 384
 385 gardless of the criteria used to identify indigenous 385
 386 women, this group of women has lower levels of health- 386
 387 care coverage before and during pregnancy, childbirth 387
 388 and puerperium compared to other population groups. 388
 389 This is consistent with findings from previous studies 389
 390 and supports estimating inequalities in the continuum of 390
 391 maternal health care disaggregated by ethnicity [9–11]. 391

392 Our findings also show that contraceptive use and 392
 393 skilled birth attendant are the indicators with the great- 393
 394 est differences by ethnicity, even despite adjustment, 394
 395 which is in alignment with some previous studies [10, 395
 396 11, 26, 27]. Improving indigenous living conditions could 396
 397 not be enough because other socio-cultural factors are 397
 398 also involved. Usually, indigenous women take care of 398
 399 their pregnancy and childbirth with midwives because of 399
 400 cultural and geographic proximity, they have the recov- 400
 401 ery of childbirth at home and the decisions about their 401
 402 care involve their partner or another family member 402
 403 [27–31]. 403

404 The differences identified, with the exception of Bolivia, 404
 405 were most evident when we use the SIL criterion. This find- 405
 406 ing is consistent with the premise that language is a strong 406
 407 determinant of access to health care [4, 11]. The language 407
 408 is an important element of their cultural attachment [32], 408
 409 so, these women could also have strong rooting for mater- 409
 410 nal care according to their cultural beliefs. Likewise, the 410
 411 language has been closely linked to the limited access to 411

412 health care that results from being unable to communicate
413 with health-care personnel [31, 33].

414 Guatemala is the country with the smaller coverage
415 and the biggest gaps between indigenous and non-
416 indigenous. In this country, the highest maternal mortal-
417 ity and the lower healthcare coverage have been related
418 to socioeconomic factors and weakened national infra-
419 structure derived from a 36-year civil war [27, 34]. How-
420 ever, recently, it has been suggested that conflicting
421 political agendas have contributed to a lack of progress
422 in improving maternal health among indigenous women.
423 The international policies have promoted skilled birth
424 attendance while the domestic policies have sought to
425 strengthen intercultural care provided by traditional
426 birth attendants [34].

427 Hence, another relevant aspect to consider when dis-
428 cussing our results, is the context in which indigenous
429 populations live in each country. In our study, we ob-
430 served differences in the socioeconomic characteristics
431 and coverage of care by indigenous identification crite-
432 rion. The differences observed could be linked to social
433 or cultural factors such as national programs or policies,
434 discrimination, acculturation, maternity habits or gender
435 roles that could affect both the ethnic identification and
436 the use of health services [3, 28, 35–37]. Since know-
437 ledge of those factors may be crucial in determining the
438 most appropriate criterion to use as well as an explan-
439 ation of the inequalities found, more research is required
440 in this regard.

441 The disparities observed on the proportion of indigen-
442 ous women identified by the different indigenous identi-
443 fication criterion, translate into differences in the
444 inequalities of health care coverage, that for each coun-
445 try can be larger or smaller depending on how ethnicity
446 is defined.

447 In view of our results, we consider that when informa-
448 tion related to different criteria is available, it would be
449 advisable to analyze the inequalities through each of
450 them in order to determine the most appropriate meas-
451 ure according to the context and objectives in each
452 population. In cases where there are only data based on
453 a single criterion, the potential sensitivity of the possible
454 findings should be recognized. In all cases, researchers
455 or technicians must be explicit about how the indigen-
456 ous population is defined and categorized, as well as the
457 associated limitations. Reporting these details will be
458 crucial in helping decision makers make informed deci-
459 sions to reduce the inequalities in maternal health care
460 faced by indigenous women [38–40].

461 With respect to limitations of our study, we did not
462 use information from the last survey in Bolivia (2016)
463 because its dataset did not provide standardized defini-
464 tions of the indicators. In addition, the socioeconomic
465 level variable was not available, and this would have

prevented adjustment in the models. In Guatemala, we
could not use data for postpartum indicators because
the sample size would decrease notably due to missing
data that was not documented in the survey question-
naire or in the report. Also, we were not able to analyze
the temporal trend of the coverages due to the discrep-
ancies over time in the collection of information on the
ethnicity of the population within and between
countries.

Given the complexity observed in our analysis, it is not
possible to provide a definitive direction on the best way
to define indigenous populations for the purpose of
measuring inequalities. In fact, in practice, the choice of
criterion and the categorization of the population will al-
ways depend on the information available. However, due
to the differences found in the inequalities by indigenous
identification criterion, our results call for greater care
in the analysis of health-related inequalities by ethnicity
and transparency in reporting the measurement ap-
proaches taken.

Supplementary information

Supplementary information accompanies this paper at <https://doi.org/10.1186/s12939-020-1136-6>.

Additional file 1 Table S1. Definition of indicators. **Table S2** Spanish survey questions used to ethnic identification. **S3.** Poisson regression model. **Table S4.** Maternal health care coverage and sociodemographic characteristics (95%IC) according indigenous identification criterion by country

Abbreviations

CR: Coverage ratios; IH: Indigenous household; LAC: Latin America and the Caribbean; SDGs: Sustainable Development Goals; SI: Self-identification as indigenous; SIL: Spoken indigenous language; WRA: Women of reproductive age

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Not applicable

Authors' contributions

NA-P and FB conceived and designed the article. NA-P carried out data cur-
ation and analysis. NA-P, AC and FB defined the methodological approach.
NA-P, AC, MSV and FB participated in the interpretation and critical discuss
of the results. NA-P prepared the initial draft, which was then revised, edited
and approved by all authors.

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Availability of data and materials

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• Multiple indicator cluster surveys (MICS); Available at: <http://mics.unicef.org/surveys>
• National Institute of Statistics, and Informatics in Peru; Available at: <http://inecinec.gob.pe/microdatos/>

- 518 **Ethics approval and consent to participate**
 519 This paper is based solely on publicly available data from Demographic and
 520 Health Surveys and Multiple Indicator Cluster Survey. Ethical clearance was
 521 obtained by the institutions that conducted the surveys in each country.
- 522 **Consent for publication**
 523 Not applicable
- 524 **Competing interests**
 525 The authors declare that they have no competing interests.
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3.3 Obstacles and opportunities for monitoring ethnicity-based inequalities in maternal health care: Lessons from Mexico

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The image is a screenshot of a web browser displaying the PLOS ONE article page. The browser's address bar shows the URL: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0217557>. The PLOS ONE logo is prominently displayed in the top left, with navigation links for PUBLISH, ABOUT, and BROWSE to its right. Below the logo, the text 'OPEN ACCESS' and 'PEER-REVIEWED' is visible, followed by 'RESEARCH ARTICLE'. The main title of the article, 'Obstacles and opportunities for monitoring ethnicity-based inequalities in maternal health care: Lessons from Mexico', is centered. Below the title, the authors' names 'Nancy Armenta-Paulino, María Sandín Vázquez', and 'Francisco Bolúmar' are listed. The publication date 'Published: May 31, 2019' and the DOI link 'https://doi.org/10.1371/journal.pone.0217557' are also present. At the bottom, there is a horizontal navigation bar with five tabs: 'Article' (highlighted in yellow), 'Authors', 'Metrics', 'Comments', and 'Media Coverage'.

RESEARCH ARTICLE

Obstacles and opportunities for monitoring ethnicity-based inequalities in maternal health care: Lessons from Mexico

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Abstract

Background

Monitoring and reducing inequalities in health care has become more relevant since the adoption of the Sustainable Development Goals (SDGs). The SDGs bring an opportunity to put the assessment of inequalities by ethnicity on the agenda of decision-makers. The objective of this qualitative study is to know how current monitoring is carried out and to identify what factors influence the process in order to incorporate indicators that allow the evaluation of inequalities by ethnicity.

Methods

We conducted 17 semi-structured interviews with key informants from the health ministry, monitoring observatories, research centers, and international organizations, involved in maternal health care monitoring in Mexico. Our analysis was interpretative-phenomenological and focused on examining experiences about monitoring maternal health care in order to achieve a full picture of the current context in which it takes place and the factors that influence it.

Results

The obstacles and opportunities pointed out from the participants emerge from the limitations or advantages associated with the accuracy of evaluation, availability of information and resources, and effective management and decision-making. Technicians, coordinators, researchers or decision-makers are not only aware of the inequalities but also of its importance. However, this does not lead to political decisions permitting an indicator to be developed for monitoring it. As for opportunities, the role of international organizations and their links with the countries is crucial to carry out monitoring, due to political and technical support.

Conclusions

The success of a monitoring system to help decision-makers reduce inequalities in health care depends not only on accurate evaluations but also on the context in which it is

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implemented. Understanding the operation, obstacles and opportunities for monitoring could be a key issue if the countries want to advance towards assessing inequalities and reducing health inequities with the aid of concrete policies and initiatives.

Introduction

Indigenous women are among the most vulnerable groups in Latin America. They live in contexts where different social determinants such as poverty, low education, gender roles and cultural factors are combined. [1] Indigenous women experience significantly worse maternal health outcomes (including high risk of maternal mortality) and have more limited access to health services than majority populations. [2] Besides, historically, indigenous populations have not been made visible in the statistics, which could hide deep inequalities concerning other populations groups that would require a prompt response from governments and health systems. [3]

In this context, the monitoring of inequalities by ethnicity is useful and necessary to identify where there are differences. Regular health inequality monitoring can help to determine the impact of policies, programs, and practices, and to inform changes required to reduce inequality. The Government, the Ministry of Health and other stakeholders, could focus research in these areas to determine the cause of the problems and improve the health situation in these populations. [4,5]

Since the Sustainable Development Goals (SDGs) were established, monitoring health inequalities is gaining attention as a political priority. The SDGs agenda provides a major impetus for establishing or strengthening systems for monitoring health inequalities and calls for the production of disaggregate data. Further, SDGs call to continue the efforts to reduce maternal mortality and inequalities within and between countries. [6–8] Therefore, now is the time to assess ethnicity-based differences.

Some research has already shown how to estimate ethnicity-based inequalities in maternal health care. These studies give information about indicators and approaches for identifying the indigenous population using data obtained from national surveys. [9–13] In addition, international agencies or initiatives have published manuals and given technical assistance to support countries in building capacity for integrating health inequality monitoring into their health information systems. [4,5]

Nevertheless, is that enough to allow the monitoring of inequalities by ethnicity? The answer is not so easy, because it is not carried out in isolation and goes beyond the estimation of indicators. Monitoring involves the cooperation and interaction of various actors if it is to be done efficiently and be of use in decision-making. It is a process which takes place in a social, political and scientific context which brings together numerous institutions and individuals, all with their interests which impact on issues like indicator selection, data sources, methods, and leadership. [12,14]

Therefore, now is the time to take a hard look at the political and technical obstacles that might be forthcoming if we want to move forward to monitoring health inequalities. For this purpose, we need to fully understand the current operation of the maternal health care monitoring and the factors that impinge on it, from the perspective of the actors involved in it.

The main objective of the study is to describe how the monitoring of maternal health care is carried out in Mexico. Through the perspective of key professionals involved in the

monitoring from, we seek to discover what factors influence the monitoring process and to explore the feasibility of incorporating an indicator that measures inequalities by ethnicity.

Methods

Sample and participants

In the process of maternal health care monitoring different types of professionals are involved with specific activities. Some are familiar with information aspects while others with how to use the results. Therefore, we used stratified purposive sampling to include this diverse kind of informants that could provide detailed and relevant information about maternal health care monitoring in Mexico. [15–17] We considered different interest profiles with specific discourses such as decision-makers, coordinators, technicians, and researchers from the Health Ministry, monitoring observatories, research centers, and international organizations. The purpose of using this sampling was to reflect the diversity within a population rather than looking for statistical representativeness or generalizability. [18]

We began contacting and recruiting participants through a systematic document search to identify the main actors involved in monitoring. We identified the key informants within each institution or area, explained to them the study aims and invited them to participate. Finally, we applied the snowball strategy, and the participants were asked to indicate other institution or actors who might also be associated with the monitoring (Fig 1). [16,17]

The resulting sample consisted of 17 participants from different institutions and profiles as described in Table 1.

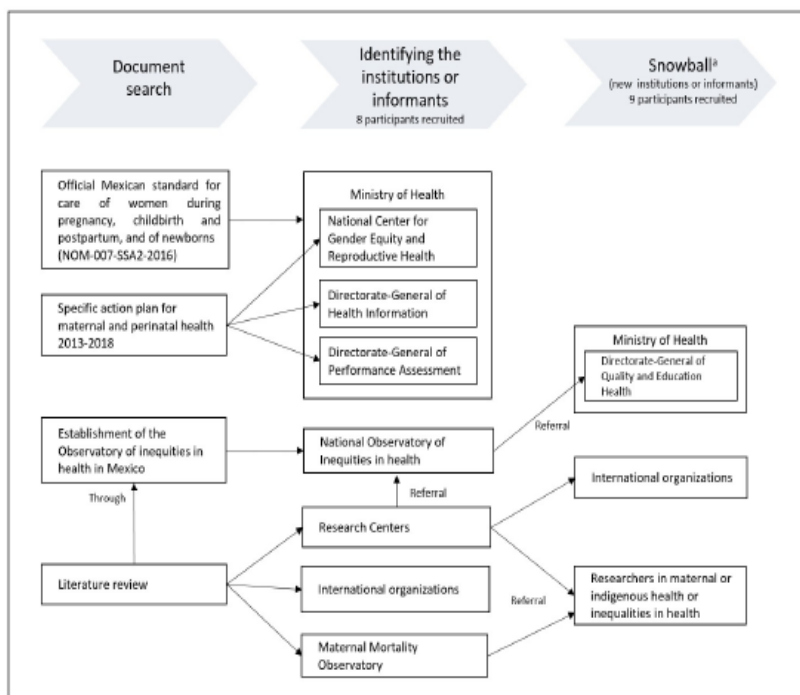


Fig 1. Sampling procedure and main institutions involved in the monitoring of maternal health in Mexico. Source: Own elaboration using information from the author's analysis of systematic document search. Through this strategy, we also identified new areas or informants in the same organizations.

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Table 1. Main actors and participant's profiles.

Actors	
Sector or institution	Responsibilities and activities [11,19–25]
Ministry of Health	It has primary responsibility for monitoring the indicators, within it, the departments involved include those entrusted with data collection, health services performance assessment, and policy-making in the fields of sexual and reproductive health
National organizations	The Maternal Mortality Observatory is responsible for measuring and monitoring mortality at the national or regional level, and public policies aimed at reducing it. The National Observatory of Inequalities in Health focuses on identifying inequalities in health care to reorient public policies to reduce disparities.
Research field	Various groups of research tackle issues of maternal health from multidisciplinary perspectives and have measured inequalities across different population groups, taking some account of ethnicity in the process. Some researchers collaborate or form part of the monitoring observatories
International Organizations	In the sphere of international cooperation, different agencies and initiatives are at work in Mexico, where they are developing a variety of tools to carry out monitoring or assess inequalities. They, also, do advocacy to implement the monitoring of disparities. Some collaborate at the national level with the health ministry, others with local health service providers; they are also linked to research teams and monitoring observatories
Participants^{ab}	
Profile	Description
Technicians (n = 4)	Responsible for estimating indicators or generating information for monitoring
Coordinators (n = 4)	Area directors, regional or local coordinators responsible for information management or monitoring indicators. They are the link between the technicians and the decision-makers and coordinate the activities of estimation or generation of data and deliver the results to the final users
Decision-makers (n = 5)	General management or representatives of initiatives or projects. They could be the final users who analyze the results of the estimates and share it or report it to other political actors
Researchers (n = 4)	Researchers with experience in methodologies for data analysis in maternal or indigenous health or its inequalities

Sources: Own elaboration using information from the author's analysis of systematic document search.

^a The sample includes at least one member of the first three profiles from the health ministry, national and international organizations. The researchers are linked to an academic institution, and some of them collaborate with the monitoring observatories.

^b Other participants characteristics are available in [S1 Table](#).

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The sample size was determined considering theoretical saturation and the relevance and novelty of the findings. [15,17] Concerning the first, the information gathered was regarded as sufficient when there was no longer any variety of ideas or new elements that enriched or took the subject of study any further. Priority was also given to information that contributed to the goals of our research or had something new to lend to the discussion.

Data collection procedure

Semi-structured interviews were conducted with a scheme covering: the respondent's experience and role in the process, monitoring indicators or estimates used, information sources, monitoring problems and needs, interest groups and vulnerable groups, and aspects of strategic management.

We conducted the interviews between January and March 2018. Each interview was recorded and lasted an average of 60 minutes. We transcribed and coded the audios to preserve the respondents' anonymity. All participants were informed of the purpose of the study,

and once they agreed to participate, they completed written consent forms. The University of Alcalá's Ethics Committee approved the study's procedures (resolution no. CEID/HU/2018/38).

Methodological approach and analysis

We chose a qualitative approach to explore the key professional perceptions of maternal health care monitoring. The qualitative research enables an understanding from the perspective of the professionals involved on how the current monitoring happens or which factors affect it. [26]

The main approach of the study is descriptive. However, we considered the interpretative-phenomenological analysis (IPA) as an adequate complement to exploring in detail how participants experience their work in the monitoring. IPA builds a detailed case by case interpretation of the phenomena in question, allowing us to take account of the individual differences in experiences as well as what is shared by all participants. Our study included different types of professionals (researchers, technicians, coordinators or decision-makers) because they would have different versions of the same event (maternal health care monitoring). Hence, the IPA was used to understand the content and meaning of the information collected from the perspective of the participants. [26,27,28]

Our analysis was based upon a detailed case exploration, and we reviewed individually every transcript before moving to the next case. Each transcript was read again and again to select the most significant aspects mentioned by the participants in their responses and to identify similarities, contradictions, differences or additional input. We highlighted phrases and paragraphs of interest and annotated all possible relevant topics. Subsequently, the initial coding was transformed into emerging themes and looked for possible connections between them. Themes were clustered together, and some emerged as superordinate concepts. The first case' themes were used as a reference to the analysis of the following cases, but also incorporated the new emerging themes found through the other transcripts. [28] Two researchers defined the general issues and the main themes as a mean to ensure the quality and rigor of the analysis of responses.

Tables 2 and 3 show the final list of themes and subthemes that arose as a function of the study's goals, the wealth and quality of the information it provided, and their contribution to understanding and exploring more deeply the subject in hand. Five themes were identified in relation to obstacles and opportunities for maternal health care monitoring. These concern evaluation, information, resources, management, and decision-making.

Results

Monitoring activities

According to the respondents, the monitoring of maternal health care is performed by measuring or monitoring indicators related to service coverage or quality. Impact measures such as maternal mortality or public policies aiming at its reduction are evaluated (Fig 2).

At all levels (health sector, research, national and international bodies) efforts are made to carry out monitoring, but they are poorly structured and coordinated. Although there are some collaborations between different actors, it is mainly about obtaining information, but in the end, they all work in isolation. The findings or recommendations of national or international research organizations are not considered to improve ministry monitoring. Bureaucracy and lack of communication are the main limitations.

The activities mentioned by the respondents are consistent with the field of action in which they are performed. The health sector gathers data about care through its information systems.

Table 2. Themes and sub-themes identified as obstacles to monitoring maternal health care.

Themes	Sub-themes	Description and example quote
Evaluation	Information systems	Subgroups cannot be analyzed. "You have the information and you can calculate the indicator, but if you're interested in a particular group, you can't always evaluate it. . . ." [Health sector technician]
	Methodological approach	Processes involve many elements; it is difficult to determine the denominators in the indicators, or the evaluations cannot be reproduced. "The point about the data the services generate is that you have to look carefully at the denominators they use. Because they usually correspond to the response that the system can give and not necessarily to the whole population it should coverage" [Decision-maker, international body]
Information	Quality information system	Low quality; inconsistent and deficient capture at irregular intervals. "When you use administrative sources there are great challenges in terms of standardizing the capture of these data. Because you go to the health departments where this kind of information is captured and the person who collects it is not necessarily as qualified in one place as in another" [Researcher]
	Delays information system	The data supplied by the system are delayed, chiefly on account of the installation of a new system. "I filled in a form asking for an update on over 24 results indicators and have received no reply. I've already filled in three more making the same request." [Health sector coordinator]
	Surveys	Unrepresentative at local level or for certain groups. No guarantee that they will be carried out once again. "Only one round of this survey included these questions because they're always making small changes to the surveys. We could only measure it using this round." [Researcher]
Resources	Budget/Funding	Difficult to obtain funding for this kind of project or no budget allocated to carry it out. "We've looked for funding for this kind of analysis, but there has been no interest. I think they're under the mistaken impression that [health inequity monitoring] is all very obvious and that there's no need for resources to do it" [Researcher]
	Time	Overwork limits the time available for monitoring. "I have to monitor the indicators, I have to represent [to the sector and my area] at different committees, collaborate in audits, etc. So yes, the workload is a bit of a strain." [Health sector coordinator]
	Human resources	Shortage of staff or collaborators to perform monitoring. "All the monitoring was my work because in [the institution] we were a very small group of three or four and each one was centered on his or her project" [Observatory technician]
Management	Bureaucracy	The bureaucratic system hampers decision-making or the paper-work for performing monitoring. "There are challenges regarding working with [the local health sector] because of the bureaucratic system, which is what it is and we cannot change it. Some people want to shake things up, others don't" [Researcher]
	Requesting (gathering) information	Access is limited, permission has to be requested, and there are delays or failures to reply. Collecting data in the health services requires a lot of management time. "We would have liked to automate it all [the monitoring]. We asked the [national health sector] for permission to link up directly with some of its systems, but this never happened." [Coordinator, international body]
	Ministry staff rotation	Changes in Ministry staff entail loss of learning from monitoring or the need to go through the same procedures again. "In the end we managed to do all the red-tape, but if there's a change of government [you have to do] everything over again, so it's not efficient" [Researcher]
Decision-making	Implementation	Maternal health care inequalities are not monitored. "No doubt this [health care inequities] is a major issue, but we haven't decided how to measure it using any specific indicator" [Observatory coordinator]
	Monitoring culture	The data are only taken into account for drafting reports; they are not analyzed or used for decision-making. "The data are used more for reports, less for action. This is a serious problem because huge quantities of data are generated which are used only for report writing" [Technician, international body]
	Relations with research	Discrepancies between the time researchers need to generate evidence and the time decision-makers need to make decisions. "The thing about the decision-makers is that their time-cycles are very short, whereas in research we can spend two years looking for resources and then three more carrying it out, but no politician is interested in five years" [Researcher]

Source: Authors' analysis of responses to semi-structured interview questions with key informants involved in the monitoring of maternal health care in Mexico, 2018.

<https://doi.org/10.1371/journal.pone.0217557.t002>

Service coverage for pre-natal care, childbirth and use of contraception is measured and monitored. Researchers suggest new ways of monitoring care, analyze gaps between different groups and look for approaches to evaluating service quality. Their principal sources of information are surveys or field work in health services.

Table 3. Themes and sub-themes identified as opportunities for maternal health care monitoring.

Themes	Sub-themes	Description and example quote
Evaluation	Continuous care perspective	Analyzing continuity of care from pregnancy to postpartum allows the biggest coverage-related challenges to be identified. <i>"This perspective has been of great use to us for identifying the main challenges for the health service in terms of enhancing coverage"</i> [Researcher]
	Improve existing indicators	Improving indicators assessed by health systems. Creating tools to facilitate their evaluation and monitoring. <i>"Some of those indicators already existed in the national systems and some monitoring was performed. What we did was to verify the way they were being built, if it was appropriate, and also generate a way to make it easier to use and analyze a particular item."</i> [Coordinator, international body]
Information	Diversity of data	A great amount of information is gathered with the aid of information systems and surveys <i>"Unlike Latin America, Mexico has impressive, open-access data bases. We have data bases for maternal mortality, hospital discharges, [which may be] good, bad or indifferent, but many countries don't have this"</i> [Researcher]
	Collection	Researcher participation in field work improves data quality. Counting on personnel who visit the services on a regular basis facilitates information gathering. <i>"Our monitoring was of a very high quality because the researchers did the field work themselves. When you delegate or outsource this, it's a disaster."</i> [Researcher]
Resources	Adequate task force	Including competent collaborators or people involved in the matter helps in performing monitoring. <i>"Forming a cohesive team uniting the different strengths of each member of the research group enables progress to be made. No extraordinary abilities are needed, just an interest in the subject"</i> [Researcher]
Management	Building trust	Building relationships of trust with authorities, decision-makers or peers makes work easier. <i>"Thanks to [the institution's] own efforts, it has gained a reputation as an institution which people respect for the information it generates. So the work itself makes doors open, because when your work is being recognized you are granted the confidence to do things."</i> [Technician, observatory]
Decision-making	Quality indicators	Evaluating quality indicators allows initiatives to be introduced to improve care. <i>"The ministry has found the quality indicators to be of great use. For example, they can see which medicaments were lacking or which procedures were followed and which were not"</i> [Technician, international body]
	Political will	The support and commitment of certain decision-makers facilitates the monitoring of activities or the creation of dedicated organizations. <i>"A key factor has been the interest shown by the various institutions; being able to rely on the active participation of the institutions not out of any sense of obligation but because they are convinced that this is a priority issue for the country has been fundamental"</i> [Coordinator, observatory]
	International agenda	Extra impetus is given to the introduction of monitoring systems by the common agenda of international bodies and the health sector. <i>"It was as part of a cooperative effort between [the international body] and Mexico, one of the issues or lines of action was the equity issue"</i> [Coordinator, observatory]

Source: Authors' analysis of responses to semi-structured interview questions with key informants involved in the monitoring of maternal health care in Mexico, 2018

<https://doi.org/10.1371/journal.pone.0217557.t003>

Some international organizations work to support the health sector institutions by providing technical assistance to analyze inequalities in health. They have also been designed strategies to implement inequality's monitoring, but none has yet been implemented in Mexico. Others conduct local fact-finding missions about service quality and measured relevant indicators to monitoring maternal health.

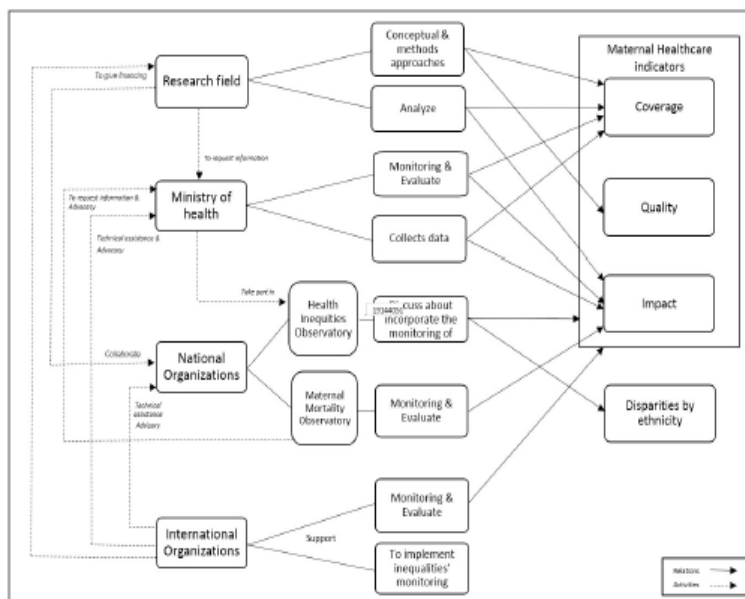


Fig 2. Monitoring of maternal health in Mexico. Source: Analysis of the authors of the documentary review and the responses of the semi-structured interviews questions to key actors.

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The observatories are directly related to the health sector or have established ties with it; they also collaborate with researchers and international organizations. Their activities are mainly centered on maternal health and health equity, and they attempt to use their evaluations to influence policy-making in their fields of competence. At the time of our study, none of the observatories monitored any indicator related to inequalities in maternal health care.

Obstacles and opportunities

Evaluation obstacles: Aggregate data and complex methods. One limitation pointed out mainly by researchers is the impossibility of carrying out the analysis by subgroups since the data in health sector information systems are generally aggregate. In addition, the system does not organize the records by name, as one researcher remarked: *“there is no way of monitoring these women given the fragmented state of the system. If the goal of pre-natal care is to improve health outcomes for mother and child at birth, then we need to link the information from the two sources, but it can’t be done with the administrative data.”*

Researchers, health sector and international organizations mentioned that the methodological approach is a complex task, due in part to the information available, but also to the care-related processes. *“To measure family planning or in-hospital childbirth coverage there are some proxies which let you get a rough idea of what you want to know, but sometimes you get a good picture, sometimes you don’t,”* commented one coordinator.

Information obstacles: Poor data quality, representativeness and updating. The main difficulties identified by the respondents regardless of their profile or area of activity are related to data sources. Regarding the information generated by the health sector, as one technician mentioned: *“The problem is data quality. When looking for data, I come across all kinds of error, although it’s not so frequent now.”* Shortcomings were also mentioned related to data collection and irregular reporting intervals. In connection with surveys, researchers pointed out that they are not usually representative locally or for specific groups like the indigenous

population. Moreover, there are no guarantees that the information collected in each round will always be the same or that some will not cease to be collected.

Respondents from the health sector and international organizations mentioned that evaluations were not updated due to a delay in the availability of data from the information systems. This fact might be related to the difficulties encountered in implementing a new information system since, as one coordinator commented: *“Not all regions have started using the new system, [so] we only have a quarter of the target group.”* Respondents showed some dissatisfaction with the lack of up-to-date data, as well as with the new system and how it might modify future evaluations.

Resource obstacles: Insufficient funding and personnel for monitoring. Lack of funding is one limitation mentioned by researchers and observatories alike. Researchers point out how difficult it is to obtain funds for projects related to new methods for health care or equity evaluation. As the observatories are not budgeted, they depend on the financing that their members can obtain or on the collaborative work of their participants. As one coordinator put it: *“The collaboration of the institutions is very important, we have no budget or staff allocated specifically for the [body’s] activities. If support from the various institutions cannot be relied on, it’s difficult to get results.”* This situation could also be related to the shortage of staff or collaborators to perform monitoring. The health sector and international organizations also refer to staff shortages. Another issue identified in the health sector is overwork since other activities have to be attended to as well as measuring or monitoring the indicators.

Management obstacles: Too much bureaucracy, difficult data access and frequent turnover of ministry of health staff. International organizations, observatories, and researchers agree that the bureaucracy hampers decision-making or slows down procedures for doing the work of monitoring. One decision-maker commented: *“There’s been more interest in looking at the bureaucratic aspects [regarding the composition of this body] than in just what is going to be evaluated.”*

At all levels and sectors, the respondents agree that access to some of the data held on information systems is limited. Permission has to be requested, or some personal contact in the relevant unit is needed to facilitate access. Other difficulties cited include delays in receiving the information or failure to reply. Researchers pointed out that a good deal of time is spent dealing with the authorities before information can be collected in the health services.

Directly and indirectly, staff turnover at the Ministry of Health is mentioned and how this affects the continuity of the monitoring process. One technician remarked: *“The high rate of staff rotation at all levels affects us. A person learns how to use the data and to make decisions with them, but then leaves the institution or is moved to another position, and it’s a great loss”.*

Decision-making obstacles: Lack of commitment and little familiarity with the use of monitoring. Observatories, international organizations, and researchers acknowledged that the health sector had shown interest in improving monitoring of maternal health care or in measuring its inequalities, but it has not been implemented. One technician said: *“I showed the document and there were some positive comments, but nothing came of it”.* Along the same lines a researcher observed: *“We showed it once or twice, and the manager was delighted, but it got no further. It hasn’t had the impact necessary for one of these indicators to be used for the monitoring.”*

International organizations mention that they have noticed little appreciation of the utility of monitoring. The data are usually only taken into account for writing reports, while sometimes they are not analyzed or employed for decision-making purposes.

Another challenge is the discrepancy between the time needed to generate research evidence and the time taken by decision-makers to generate actions; also, achieving fruitful communication between researchers and decision-makers.

Evaluation opportunities: Using the continuum of care perspective and improving the indicators. Researchers recommend looking at care as a continuum from pregnancy to postpartum: *“This perspective has been of great use to us for identifying the main challenges for the health service in terms of enhancing coverage.”* International organizations point out another opportunity, namely, to turn again to the indicators the health services already generate to improve them or to create tools to facilitate their evaluation and monitoring.

Information opportunities: The great amount of data, involvement in collection, and resource optimization. Researchers believe that despite the limitations regarding quality and opportunity, a considerable amount of data are collected in Mexico: *“Obviously, the data aren’t ideal, but we have much information which allows us to carry out the analyses.”* In the event of having to collect information themselves, their participation in the fieldwork leads to improved data quality.

On the other hand, international organizations rely on the supervisory teams that regularly visit health services when they want to collect information about the quality of care.

Resource opportunities: The need to involve appropriate task forces. Researchers and international organizations acknowledge that being able to count on a team with appropriate training and skills or already involved in the issue allows the research and the monitoring to get done and actions to be generated. One decision-maker remarked: *“We asked the ministries to take on people from various fields, not only from maternal and child care, [and] we aim to include everyone involved in delivering services with a view to achieving a more systemic view.”*

Management opportunities: Building stable, inter-sectorial relationships of trust. Health sector and national and international organizations state that building relationships of trust, whether with the authorities, decision-makers or peers within the same institution, improves proceedings at the different stages of monitoring. *“What has helped us to unclog issues of information or red-tape are public relations, they’re so helpful,”* one coordinator remarked.

Decision-making opportunities: To have quality indicators, political decision-making, and support from the international agenda. One important finding to emerge from international organizations is that the health ministry *“has been finding the quality indicators to be of great use. For example, they can see which medicaments were lacking or which procedures were followed and which not,”* as one technician noted. So, including quality indicators in monitoring has allowed generating actions to improve maternal health care.

Most respondents agreed that being able to count on the support and commitment of decision-makers allows monitoring to be done correctly or to set up bodies designed to do it. It was possible to use the interviews to confirm that the agenda drawn up between international organizations and the health sector gives added drive to monitoring. Some coordinators commented: *“At the start, it was an initiative of an [international body], the health sector and civilian society,”* *“it was as part of a cooperation scheme between the [international body] and Mexico, and that’s how it started.”*

Discussion

Main findings

This study shows an overview of how the monitoring of maternal health care is carried out in Mexico and the factors that influence the process. Our findings identify the elements that may interfere or facilitate the implementation of the monitoring of inequalities, particularly, by ethnicity.

Our study shows that, in Mexico, although there is particular sensitivity about the importance of measuring inequalities (it has institutions and personnel with experience in

monitoring, technical and political support from international organizations) in practice, maternal care inequalities are not measured. We observed that, currently, none of the actors is sufficiently coordinated to do it effectively. There is a lack of commitment and leadership resulting in a set of isolated efforts.

The study unveiled five main categories of obstacles and opportunities related to evaluation, information, resources, management, and decision-making. The main obstacles are related to complex methodological approach, the low quality's system information, lack of resources and making decisions. Political and technical support from the international agencies to the health sector were the main facilitators.

Recently, in the framework of the SDGs, there has been a discussion of which factors might restrict the performance of health inequality monitoring. The barriers identified emerge from limitations in health sector information systems as well as with political, financial, social and cultural factors. While the key opportunities that countries should move forward include robust data collection infrastructure supported by national institutions, development of technical capacity for equity analysis and communication, and find effective ways to use the results of health inequality monitoring. [7,29] Some of these factors coincide with those found in our study from the participants' own experience in the monitoring.

The main challenges identified by those who responded referred to information, which has problems of limited access, data quality or inadequate representativeness of surveys in respect of particular interest groups. However, these obstacles are not new for Mexico or for other countries, where for many years it has been pointed out that the information systems are poorly structured, poor data quality due to an inadequate collection, and lack of resources to conduct more extensive or specific surveys. [30–32] Address these problems are essential in order to obtain better evaluations to better guidance for decision-making.

In recent years, health inequalities monitoring has gained ground in the political attention of the countries [7,33–35] Our results show that key professional at different levels such as technicians, coordinators, researchers or decision-makers are not only aware of the issue but also of its importance. However, this does not lead to political decisions to develop any measure for monitoring maternal health care inequalities in Mexico. This fact could be related to the lack of familiarity with the use of monitoring for decision making. [7,30,35] Therefore, we thought that it is essential to stress the need to establish some institutional link between the results of monitoring and concrete actions that might reduce the inequalities revealed in the monitoring.

As for opportunities, our findings suggest that the role of international organizations and their links with the countries is crucial to carry out monitoring. In this connection, given the international commitment “not to leave anyone behind,” many international organizations and initiatives are providing technical support in metric generation, enhancing monitoring systems and strengthening capacities to analyze results and put them to good use. [7,33,34] Provided that full advantage is taken of the support, cooperation and political influence of this types of organizations or initiatives, progress will be made in implementing health inequality monitoring.

Policy implications

Nobody doubts the need for ethnicity-based monitoring of maternal health care inequities if it is to be reduced. Monitoring would enable differences concerning other groups to be identified, as well as the critical points of care coverage. [36,37] However, our study shows that although there is some sensitivity towards measuring inequalities, in practice, there is still no indicator to monitor maternal health disparities.

Monitoring could play a strategic role by making decision-making more efficient and effective through the provision of information about whether policies, schemes or activities are accomplishing the purpose for which they were set up or designed. [5,12] The government, the health ministry, and other decision-makers could focus research on those areas in order to determine the cause of the problems and improve the state of maternal health among the indigenous populations.

Given our findings, we believe that in the short-term surveys might be used as the most feasible source of information, due to the poor quality, delays or lack of data available in the health sector information system. In the future, once the Mexican system is fully operational, it could be reconsidered as a possible resource.

As for evaluations, the evidence generated from researchers or deriving from the experiences of international organizations should be reviewed and analyzed to identify the most feasible and useful indicators for decision-making at the national and regional levels. According to our study, there are enough proposals that could be taken up by the observatories or the ministry of health.

Overcoming the challenges related to management and decision making for the implementation of monitoring by ethnicity requires that some of the actors involved take the commitment and leadership. The institution or area concerned should articulate and coordinate the efforts being made from different institutions. In the case of Mexico, we thought that the collaboration of the observatories could be essential to propose the implementation of monitoring inequalities in maternal healthcare. They would exchange their knowledge and experience in monitoring maternal health and how to measure disparities in health.

The political and technical support being lent currently to this issue by international organizations is an opportunity for placing ethnicity-based monitoring of maternal health care on the decision-makers' agendas. In the past, Mexico has taken advantage of this drive to advance in health monitoring, for example, with the setting up of monitoring organizations. However, care must be taken that monitoring is continuous and mechanisms need to be defined to guarantee its future regardless of international support or changes in the administration.

Limitations

Our use of a qualitative method means that our findings derive from our respondents' experiences and cannot, therefore, be generalized. One of the main limitations is that only one of the public health service providers was included in the study, albeit the main provider of services to groups at risk of suffering inequalities in health care as well as the provider responsible for the Mexican health sector. It is, therefore, possible that the obstacles and opportunities for other institutions may differ from those that emerge in this study; that said, having achieved discursive saturation; we have obtained the most significant opinions in this field of activity.

Conclusion

As we have argued, the success of a monitoring system to help decision-making aimed at reducing maternal health inequalities seems to depend not only on accurate evaluation but also on the context in which it is carried out and the actors involved, which is why it is fundamental to take their perspectives into account.

Our study has permitted us to analyze the case of maternal health care in Mexico as it relates to the implementation of ethnicity-based inequality monitoring. Nevertheless, actors from other countries may identify themselves with the views of our respondents and find in them a precedent demonstrating the need to understand the workings, obstacles, and opportunities for monitoring as they currently perform it; thus, progress may be made towards assessing

inequalities and thereby reducing health inequities with the aid of concrete policies and initiatives.

Supporting information

S1 Table. Participants' characteristics. ^aMean; ^bExperience in general monitoring activities not necessarily in maternal health. Note: All actors of the Ministry interviewed was from the national level. Sources: Own elaboration using information from the questionnaire applied to participants.

(PDF)

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Validation: Nancy Armenta-Paulino.

Writing – original draft: Nancy Armenta-Paulino.

Writing – review & editing: Nancy Armenta-Paulino, María Sandín Vázquez, Francisco Bolívar.

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CAPÍTULO IV. CONSIDERACIONES FINALES

4.1 Discusión

4.1.1 Población indígena: Identificación y cuantificación

Estimar cómo las coberturas de la atención materna varían si se es indígena o no, implica dividir a la población en grupos adecuados.³² Pero a diferencia de otros estratificadores, la etnicidad no está definida por características fijas o fácilmente medibles.^{34,35} Existen al menos cuatro dimensiones a partir de las cuales pueden definirse identificadores étnicos para las poblaciones indígenas y que son: el reconocimiento de la identidad, el origen común, la territorialidad y el aspecto lingüístico-cultural.³⁶

En el análisis realizado se observan diferencias significativas en el tamaño de la población indígena al considerar distintos criterios de identificación étnica, similar a lo encontrado en otros estudios.^{27,37-39} Al clasificar como indígenas a las mujeres que se autoidentifican como tal, observamos que en México la proporción de mujeres indígenas es casi cuatro veces más que si se considera solo aquellas que hablan una lengua indígena. Lo cual es similar a las estimaciones obtenidas en la última encuesta intercensal de 2015.⁴⁰

Históricamente, el hablar una lengua indígena se ha utilizado en México y en LAC como un criterio de identificación étnica por ser un elemento de apego cultural y distintivo de cada grupo étnico.^{34,37,41} Sin embargo, en las generaciones más jóvenes ha decrecido la preservación de la lengua debido a la migración y los procesos de aculturización que han vivido las comunidades indígenas. Por lo cual, el criterio del lenguaje parece no ser suficiente para identificar a la población indígena en su totalidad, pero puede resultar útil en poblaciones monolingües además de que las barreras del lenguaje pueden ser un determinante en el acceso a los servicios de salud.^{34,41}

De acuerdo con las recomendaciones regionales e internacionales se debe reconocer el derecho de los pueblos indígenas a autoreconocerse. Por lo que el criterio de autoidentificación debiera primar para la cuantificación de la población indígena.³⁷ En las últimas dos décadas en México se ha recolectado información sobre autoidentificación étnica en los censos y algunas encuestas nacionales, lo

cual permite clasificar a la población conforme a este criterio. Aunque el nivel de autoreconocimiento puede variar en contextos de discriminación o de mayor afinidad social, acorde con los resultados obtenidos existe un cierto sentido de pertenencia que permite identificar aun mayor número de personas como indígenas.

Por su parte, el análisis cualitativo reveló que con los datos disponibles en los registros sanitarios no es posible desagregar este tipo de indicadores por subgrupos, como los indígenas. Desde finales de 2016, se está implementando un nuevo sistema de información en salud, pero aún no es posible saber si podrá estratificar los indicadores por condición étnica.

4.1.2 Medición de las desigualdades: Diferencias según el criterio de identificación

A pesar de las diferencias observadas en la cuantificación de la población indígena, al momento de esta investigación, no había estudios previos que exploraran cómo las diferencias en la identificación étnica incidían en la estimación de las desigualdades. Los hallazgos del estudio muestran que las brechas entre indígenas y no indígenas son mayores o menores dependiendo del criterio de identificación étnica considerado.

Se esperaba que al utilizar distintos proxies obtuviéramos niveles distintos de cobertura. De acuerdo con Schkolnik y Del Popolo, es relevante considerar que la variedad de criterios de identificación étnica pueden dar estimaciones diferentes y no comparables entre sí, dado que son características que refieren a diferentes dimensiones de la identidad.³⁹ En la atención del parto por personal calificado las diferencias resultan relevantes y se traducen a que las desigualdades por etnicidad sean mayores si la mujer habla una lengua indígena.

Aunque ha sido casi inexplorado cómo la definición del estratificador impacta en la medición de las desigualdades nuestras conclusiones son similares a las obtenidas por Lindelow. Los resultados de su trabajo muestran que la elección del indicador del nivel socioeconómico tienen un impacto significativo en la medición de las desigualdades en la utilización de los servicios de salud.⁴²

Las mayores diferencias en la cobertura entre indígenas y no indígenas suceden bajo el criterio del lenguaje tanto para México como para Guatemala y Perú. Este resultado es consistente con el papel que juega el lenguaje como un determinante en la atención de la salud. El lenguaje es un medio para acceder a los servicios de salud, expresar síntomas, comunicarse con los cuidadores o profesionales de la salud, así como para comprender la información de salud o el consejo médico. En el caso de las poblaciones indígenas las diferencias del lenguaje no es solo una cuestión de traducción sino involucra también concepciones culturales relacionadas con la salud.^{27,43}

4.1.3 Desigualdades en el CASM

Independientemente del criterio de identificación étnica utilizado, nuestros resultados coinciden con otras investigaciones al observar menores niveles de cobertura en la atención de la salud materna para las mujeres indígenas.^{23,24} Al igual que en los otros países latinoamericanos analizados, en México las mayores brechas se observan el uso de anticonceptivos modernos y la atención del parto por personal calificado. Aunque, considerando el criterio del lenguaje, a diferencia de los otros países, se observa una brecha significativa en tener al menos cuatro consultas prenatales y recibir alguna revisión en el puerperio.

Las diferencias observadas se atenúan, pero persisten al ajustar por variables socioeconómicas y demográficas, por lo que no pueden explicarse solo por diferencias relacionadas con estos factores. Lo que hace preciso considerar que en las poblaciones indígenas también existen factores sociales o culturales relacionados con la maternidad que podrían estar incidiendo.^{25,26}

En relación con la atención del parto y puerperio, algunos estudios han documentado que las mujeres indígenas prefieren atenderse con parteras tradicionales por su cercanía geográfica y cultural. Además de que estas suelen respetar sus preferencias durante el parto (alimentación, posición, manejo de la placenta).^{26,44,45} En las comunidades indígenas el embarazo y parto suelen ser asuntos de familia, suele ser la madre, el esposo o la suegra de la mujer embarazada quienes toman las decisiones sobre el lugar del parto. Las mujeres suelen tener poca influencia en las decisiones relacionadas con su propia salud.⁴⁶

La atención prenatal fue la menos inequitativa, la cobertura de la atención por personal calificado es superior al 90%, y es similar entre indígenas y no indígenas. Aunque las brechas parecen acortarse de acuerdo con lo reportado en los últimos años, no sabemos cómo es la calidad de los servicios y si esta influye para que estos niveles de cobertura no se mantengan en las otras fases del continuo de la atención.

Es necesaria mayor investigación cuantitativa y cualitativa para plantear indicadores que evalúen la calidad de la atención de los servicios, así como conocer la percepción de las mujeres sobre la atención recibida. Esto permitiría analizar si la calidad recibida durante la atención prenatal influye en la cobertura del parto institucional por personal calificado.

La calidad de la atención es un tema que también fue resaltado por parte algunos de los actores involucrados con el monitoreo de la salud materna. En su opinión, más allá de solo medir las coberturas de los servicios también es preciso evaluar indicadores de calidad. La medición de la calidad permitiría generar acciones que mejoren la atención que reciben las mujeres. Esto coincide con los hallazgos de Kendall & Langer, al consultar a investigadores internacionales de salud materna sobre las prioridades para la generación de conocimiento que mejore la salud materna.⁴⁷

Al analizar la cobertura total del CASM, el ICC mostró marcadas diferencias entre la población indígena y no indígena en México, mayores incluso que las observadas en Bolivia o Perú. El único antecedente de la estimación de una medida resumen por etnicidad fue el realizado en mujeres que habitan un hogar indígena en México con datos de 2012 y cuyos resultados fueron similares.²³ A diferencia de nuestro estudio en este no fue posible incluir indicador relacionado con el puerperio, pues esta información ha empezado a recolectar recientemente por las encuestas de salud.

Evaluar una medida resumen permite obtener un panorama global de la cobertura alcanzada y en donde cada fase de la atención es esencial. Así mismo, los investigadores entrevistados en el estudio cualitativo mencionaron que considerar la perspectiva del CASM es útil para identificar los cuellos de botella en donde los sistemas deberían incidir más para incrementar la cobertura.

Al analizar a cuatro países de LAC observamos que es complejo estimar una medida regional no sólo por la disponibilidad de la información sino por la elevada heterogeneidad en las preguntas utilizadas para identificar a las poblaciones indígenas. Existen variaciones semánticas entre los países, algunos plantean las preguntas haciendo referencias a su propia cultura y otras sobre sus ancestros. Las posibles respuestas en algunos casos hacen referencia a distintos grupos étnicos y en otros son binarias (sí/no).

4.1.4 Monitoreo actual, desafíos y oportunidades

A través el componente cualitativo se identificó que, aunque se reconoce la importancia de la medición de las desigualdades, actualmente no se monitorea ningún indicador desagregado por etnicidad relacionado con la salud o atención materna. Observamos que existen varios actores involucrados el monitoreo de la atención materna, pero que no están lo suficientemente coordinados lo que resulta en un conjunto de esfuerzos aislados.

De acuerdo con la Organización Mundial de la Salud, un sistema nacional de monitoreo de las desigualdades en salud debería contar con: 1) datos relevantes y de calidad sobre los indicadores de salud y las desigualdades de interés, 2) conocimientos técnicos y recursos para realizar el análisis, así como 3) la capacidad de interpretar y comunicar efectivamente los resultados, además de la 4) incidencia necesaria para implementar los cambios que se requieran.¹⁴

Los hallazgos encontrados en el estudio muestran que en México se tienen desafíos y oportunidades en cada uno de estos rubros. Respecto al primer punto, los actores del monitoreo mencionaron que los registros sanitarios suelen tener problemas en la calidad de los datos y es difícil acceder a la información. Sin embargo, es posible hacer mediciones a partir de los datos recolectados en las encuestas. Sobre el segundo, se reconoce la complejidad de las mediciones y la falta de recursos humanos y financieros, pero se ha contado con asistencia técnica y apoyo político para medir desigualdades en salud por parte de algunos organismos o iniciativas internacionales.

Respecto a la comunicación y uso efectivo de los resultados, el desafío no es del todo menor. Los datos solo se consideran para la elaboración de informes, no se analiza ni se utilizan para la toma de decisiones. Y esto podría en parte estar relacionado con la falta de mediciones sobre las desigualdades en la atención de la

salud materna. Sin embargo, la agenda internacional ha impulsado el establecimiento de organismos relacionados con el monitoreo tanto de la mortalidad materna como de las inequidades en salud.

4.2 Conclusiones

Los resultados de la investigación muestran que, a pesar de las limitaciones conceptuales y técnicas, es posible estimar las desigualdades en la atención materna por etnicidad. Sin embargo, debido a la complejidad observada, es importante ser claros sobre cómo se clasifica a la población para una correcta interpretación de las desigualdades y un uso adecuado en la toma de decisiones.

Dadas las diferencias observadas, resulta útil y necesario monitorear las desigualdades por etnicidad para identificar los factores que limitan la cobertura de la atención que reciben las mujeres indígenas. Empezar a estas desigualdades es un punto de partida para colocar en la agenda de los tomadores de decisiones la necesidad de monitorear la cobertura de los servicios de atención materna. Los resultados obtenidos serían esenciales para diseñar programas y políticas culturalmente apropiados para reducir los riesgos de la mortalidad materna y las inequidades en la atención que enfrentan las mujeres indígenas.

No es posible dar una respuesta definitiva sobre cuál es la mejor manera de identificar a la población indígena para medir las desigualdades. De hecho, en la práctica, la elección de criterios y la categorización de la población dependerán de la información disponible. Sin embargo, es importante considerar que los criterios no son necesariamente independientes pues se refieren a dimensiones diferentes de un mismo concepto.

Cuando se cuente con información relacionada con diferentes criterios de identificación étnica, sería aconsejable analizar las desigualdades a través de cada uno de ellos para determinar la medida más adecuada acorde con el contexto y los objetivos del análisis. Inclusive podrían combinarse los distintos criterios para captar las distintas dimensiones del concepto de pueblo indígena. En los casos en que solo hay datos basados en un único criterio, se debe reconocer la sensibilidad potencial de los posibles hallazgos. En todos los casos,

los investigadores o técnicos deben ser explícitos sobre cómo se define y categoriza la población indígena, así como las limitaciones asociadas.

Los aspectos técnicos de la medición de las desigualdades en salud requieren la debida consideración para garantizar que el monitoreo sea relevante para la población analizada, y que las conclusiones obtenidas se basan en un análisis sólido y transparente.¹⁶ Además será crucial para ayudar a los responsables de la toma de decisiones a generar acciones de respuesta adecuadas.

De acuerdo con nuestros hallazgos, en el corto plazo las encuestas podrían usarse como la fuente de información más factible, debido a la baja calidad, las demoras o la falta de datos disponibles en los registros sanitarios. En el futuro, una vez que el nuevo sistema de información implementado en México esté en pleno funcionamiento, podría explorarse como un posible recurso.

Sin embargo, el monitorear estas desigualdades no solo dependerá de la precisión de las estimaciones sino también del contexto en el que se implementarán. Comprender la operación, los obstáculos y las oportunidades del actual sistema de monitoreo podría ser clave para incorporar indicadores que permitan la evaluación de las desigualdades por condición étnica.

Para la implementación de este tipo de mediciones en el actual monitoreo se deberán superar barreras relacionadas con la disponibilidad y calidad de la información, recursos limitados o escasos (financieros y técnicos), poco compromiso o voluntad política por parte de los tomadores de decisiones, y la falta de articulación entre los actores involucrados. Así como aprovechar el actual impulso que la agenda internacional da a la medición de las desigualdades a través de asistencia técnica y apoyo político.

Esta investigación contribuye a visibilizar las desigualdades que en la cobertura de la atención de la salud materna afectan a las comunidades indígenas, quienes han sufrido históricamente de invisibilidad estadística. Las diferencias observadas reflejan las inequidades que enfrentan las mujeres indígenas considerando las mayores coberturas alcanzadas en el resto de la población.

Más allá de mejorar las condiciones de vida de las poblaciones indígenas, también es necesario analizar la aceptabilidad sociocultural de los servicios de salud otorgados. Hacer caso omiso del contexto sociocultural que envuelve a las

poblaciones indígenas podría hacer que las acciones generadas no logren reducir las brechas de cobertura o evitar una muerte materna. El contar con las instalaciones y el personal calificado no hará necesariamente que las mujeres indígenas accedan a los servicios si estos no cumplen con las expectativas sociales y culturales de sus comunidades.

Esperamos que los hallazgos encontrados den inicio a una preocupación central sobre un tema que es crucial. Si no se logran reducir las diferencias en la atención difícilmente se logrará reducir la mortalidad materna.

Mientras las desigualdades persistan, identificarlas será un primer paso para su eliminación

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