UNIVERSIDAD MIGUEL HERNÁNDEZ
FACULTAD DE MEDICINA
TRABAJO FIN DE MÁSTER EN COOPERACIÓN AL DESARROLLO:
Especialidad Salud en Países al Desarrollo

Access to health services for chronic disease care during the COVID pandemic in Ecuador: A qualitative analysis using a Social Determinants Health approach.

Acceso a los servicios de salud para la atención de enfermedades crónicas durante la pandemia de COVID en Ecuador: Un estudio cualitativo con un enfoque de Determinantes Sociales de la Salud.

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Curso académico 2020-2021

Convocatoria septiembre 2021

A mis abuelas, por la cercanía en la distancia durante la pandemia.

A mis padres, por intentar seguirme el ritmo y apoyarme en el camino.

A mis amistades, por el regalarme el tiempo de los momentos perdidos.

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Resumen

Este estudio exploratorio tiene como objetivo examinar cómo la pandemia de COVID-19 ha impactado en el acceso a la atención sanitaria de los pacientes con diabetes tipo 2 e hipertensión arterial (HTA) en Ecuador desde la perspectiva del paciente. Para ello, realizamos 19 entrevistas semiestructuradas vía telefónica a pacientes diagnosticados con hipertensión arterial o diabetes tipo 2 en zonas rurales y urbanas de Ecuador. Clasificamos las categorías emergentes según el marco conceptual de la Comisión de Determinantes Sociales de la Salud (CSDH) de la OMS. Entre los determinantes socioeconómicos y políticos del acceso a la salud, los códigos se clasificaron en tres categorías: Sistema sanitario, Protección social e Infraestructura rural. Dentro de los determinantes intermedios de la diabetes y la HTA surgieron tres categorías principales: Condiciones de trabajo, Comportamientos y Factores psicosociales. Además, analizamos el impacto percibido en la equidad considerando la posición socioeconómica (género, estatus migratorio, educación, ocupación, ingresos y ubicación). Nuestros resultados muestran que la reorganización de los servicios sanitarios dejó a los pacientes con un manejo discontinuo de las enfermedades crónicas y con un mayor gasto de bolsillo por la escasez de medicamentos, afectando especialmente a las personas con un empleo informal o un estatus socioeconómico bajo. Por otro lado, las limitadas infraestructuras en los entornos rurales provocaron un aumento de las barreras de acceso a la asistencia sanitaria. En ambos casos el apoyo social de familiares y vecinos fueron cruciales para superar las carencias del sistema. Se encontraron diferencias de género en la vulnerabilidad percibida, el apoyo social declarado, el uso de la medicina tradicional y las condiciones de trabajo. Esta investigación plantea importantes cuestiones sobre las futuras implicaciones de la obstaculización del acceso a la atención sanitaria durante la pandemia, especialmente en las enfermedades no transmisibles (ENT).

Relación con los ODS

La rápida urbanización, los patrones dietéticos inadecuados y el estilo de vida sedentario están impulsando la globalización de las enfermedades no transmisibles (ENT), que ya son la principal causa de muerte en todo el mundo. Además, se estima que causan el 72% de las muertes en Ecuador. Para hacer frente a esta creciente tendencia, las ENT han sido focalizadas en los Objetivos de Desarrollo Sostenible (ODS), 17 objetivos globales interconectados propuestos por las Naciones Unidas para ser alcanzados en 2030. El tercer objetivo pretende

garantizar una vida sana y promover el bienestar para todos en todas las edades. En concreto, la cuarta meta establece: "Para 2030, reducir en un tercio la mortalidad prematura por enfermedades no transmisibles mediante la prevención y el tratamiento y promover la salud mental y el bienestar".

Lejos de alcanzar esta meta, la tasa de mortalidad atribuida a las ENT (enfermedades cardiovasculares, cáncer, diabetes o enfermedades respiratorias crónicas) ha mostrado un aumento gradual en Ecuador en los últimos años. Por lo tanto, es urgente aplicar políticas de salud pública y medidas sociales en línea con los ODS para hacer frente al aumento previsto del número de personas con diabetes en todo el mundo, especialmente en aquellas regiones que pasan de un estatus de ingresos bajos a medios.

La pandemia actual ha puesto en evidencia la importancia de otro objetivo de los ODS, el décimo, que busca reducir la desigualdad dentro y entre los países. Sin embargo, pese a que el COVID-19 infecta a las personas indiscriminadamente, se ha hecho evidente que existen desigualdades de salud entre conciudadanos y entre países. Por un lado, han sido las personas más vulnerables las que han sufrido una mayor exposición e impacto frente al COVID-19 (trabajadores esenciales, sueldos inestables, hogares abarrotados, enfermedades crónicas…). Por otro lado, estamos presenciando una brutal desigualdad entre países con el reparto y el acceso a las vacunas para el virus: mientras los países del Norte deciden si poner una tercera dosis de recuerdo a su población, muchos países del Sur no han inmunizado apenas al 1% de su población.

El presente trabajo fin de máster pretende explorar cómo la pandemia COVID-19 ha impactado el acceso a los servicios de salud con diabetes e hipertensión en Ecuador desde la perspectiva de los y las pacientes. Se encuentra directamente en línea con los objetivos ODS 3 y 10, ya que aborda el efecto de la pandemia en el manejo de ENT como la diabetes y la hipertensión. A su vez, tiene en cuenta cómo los factores socioeconómicos repercuten en la inequidad en el acceso a la salud.

Este trabajo da voz a las personas con enfermedades no transmisibles, como la diabetes y la hipertensión, durante una pandemia y refleja sus experiencias a la hora de manejar su enfermedad y las dificultades que encontraron. De este modo, aporta información en primera persona que permitirá contextualizar los venideros efectos de la COVID-19 en la consecución no sólo del objetivo 3.4 de los ODS, sino también del objetivo 10.2.

Implicación de la estudiante en el trabajo de investigación

Este TFM ha sido realizado dentro del proyecto Europeo CEAD que está liderado por mi tutora Lucy Anne Parker junto al grupo de investigación "Salud Global" del departamento de Salud Pública de la UMH. Su objetivo general es analizar el proceso por el cual las recomendaciones globales en prevención y tratamiento de la diabetes tipo II pueden traducirse en acciones aplicables al contexto de países o regiones con menos recursos. Este proyecto se localiza en dos lugares en Ecuador muy diferentes: una zona urbana humilde de la capital del país y una zona rural de difícil acceso, con una proporción elevada de población afro-ecuatoriana en Esmeraldas. Mi colaboración con este proyecto y el grupo de investigación comenzó en 2019 gracias a una beca de colaboración y ha continuado a través de las prácticas del máster y cuyos resultados quedan reflejados en este TFM.

El inicio de este trabajo comenzó en plena pandemia de COVID-19, cuando la recogida de datos del proyecto CEAD había quedado en suspensión debido a la situación epidémica de Ecuador. Decidimos utilizar las herramientas y estructura del proyecto para poder recoger información acerca de cómo la pandemia estaba afectando al manejo de la diabetes tipo 2 en Ecuador.

Hipótesis: El impacto de la pandemia ha disminuido el acceso a los servicios de salud de las personas con enfermedades crónicas, empeorando su manejo durante el confinamiento. Esta reducción en el acceso está mediada por los determinantes sociales y afecta en mayor medida a las personas más vulnerables generando un aumento en las desigualdades en salud.

Tras desarrollar la idea con el resto del equipo, elaboré la propuesta de investigación cualitativa que formaría parte del protocolo de investigación, junto a la hoja de información al paciente, el consentimiento informado y la estructura de la entrevista. Una vez recibimos la aprobación ética y comenzó el estudio, participé en la formación de las entrevistadoras y la revisión de las primeras entrevistas y transcripciones. Ya en la parte de investigación, analicé y codifiqué parte de las entrevistas, que más adelante revisamos por pares. Además, me encargué de la

integración de las transcripciones al programa de análisis cualitativo Atlas.ti 18 para su posterior análisis.

Finalmente, la redacción del artículo científico de la investigación constituye mi aportación en las etapas finales de este proyecto durante mis prácticas del Máster y que presento aquí como mi Trabajo de Fin de Máster. Los conocimientos adquiridos tanto en el bloque de Cooperación al Desarrollo como en las asignaturas de la especialidad de Salud en países al Desarrollo me han aportado las herramientas necesarias para poder desarrollar mi trabajo de investigación. No solo por ayudarme a entender las relaciones contextuales que influyen en las políticas de salud, sino también por darme la perspectiva tan importante de los determinantes sociales y poder aplicarla de forma transversal en mi enfoque. Por esta razón, la visión global e interdisciplinar es, para mí, la competencia adquirida más importante durante el máster.

Cuerpo del TFM: Artículo científico

Title: Access to health services for chronic disease care during the COVID pandemic in Ecuador: A qualitative analysis using a Social Determinants of Health approach.

Abstract

This exploratory study aims to examine how the COVID-19 pandemic has impacted health care access for patients with diabetes and arterial hypertension in Ecuador from the patient's perspective. In order to do that, we conducted 19 semi-structured interviews via phone with patients diagnosed with arterial hypertension or type 2 diabetes in both rural and urban areas of Ecuador. We classified the emerging categories according to the WHO Commission on the Social Determinants of Health (CSDH) conceptual framework. Among the socioeconomic and political determinants of healthcare access, the codes were classified in three categories: Health system, Social protection and Rural infrastructure. Within the intermediary determinants of diabetes and HTA three main categories emerged: Working conditions, Behaviours and Psychosocial factors. Furthermore, we analysed the perceived impact on equity by considering the socioeconomic position (gender, migration status, education, occupation, income and location). Our findings show that the reorganisation of health services left patients with discontinuous management of chronic diseases and higher out-of-pocket expenses due to drug shortages, particularly affecting people with informal employment or low socio-economic status. On the other hand, limited infrastructure in rural settings led to increased barriers to accessing healthcare. In both cases, social support from family members and neighbours was crucial to overcome the system shortfalls. Limited infrastructure in rural settings lead to an increase in barriers to access healthcare. Participants with informal employment or low socio-economic status found it more difficult to manage their disease due to the lack of financial resources. Gender differences were found in the perceived vulnerability, reported social support, use of traditional medicine and working conditions. This research raises important questions about the future implications of the hindered access to health care during the pandemic, especially in NCDs.

Introduction

In the wake of the COVID-19 pandemic, most countries have been forced to adopt a series of measures. Physical distancing, frequent hand washing, isolation and the use of masks help to prevent the pandemic from spreading (1). These measures aim at decreasing the transmission of the disease and, therefore, reducing the pressure on healthcare systems. Nevertheless, the lack of health workers, personal protective equipment and hospital beds has strained the capacity of all health systems regardless of the socio-economic setting (2). The situation is especially worrying in low- and middle-income countries. Weakened and under-resourced health systems are overwhelmed with the management of the pandemic, resulting in a greater impact on the most vulnerable populations (2-5). In Ecuador, where this study is focussed, the health system is weak and fragmented (6) with significant out-of-pocket health costs even before the pandemic (7).

It is widely reported that by focusing all efforts on controlling the pandemic curve, health care for other pathologies has decreased and patient follow-up has been set aside. (8-10) According to the WHO more than half (53%) of the countries surveyed have partially or completely disrupted services for hypertension treatment and 49% for treatment for diabetes and diabetes-related complications (11). In many cases, consultations are being carried out remotely by telephone and in other instances patients are left to their own devices. It is likely that this limited interaction with face-to-face health services has generated additional challenges for self-management and following preventative advice (12).

Many individuals with chronic health conditions are especially at risk of COVID, for example having diabetes increases the lethality of the virus by 50% (13). This is made worse by the fact that the very people who are most likely to be infected are also most likely to suffer chronic health conditions. The syndemic approach of the COVID-19 pandemic tries to explain how the virus clusters with pre-existing conditions, such as poverty, political instability, noncommunicable diseases, and lack of access to health services. Furthermore, the social determinants of health also modulate the intensity of the COVID-19 impact (14).

Diabetes patients facing a challenging socioeconomic environment are even more vulnerable to COVID-19 (15). Both diabetes and hypertension disproportionately affect people of low socioeconomic status because they encounter greater difficulties due to a lack of resources, support networks, housing space and income (16). The employment situation affects women in particular, as measures to restrict mobility and social distancing have led to the cessation of the highly feminised service sector (17). Experts predict that when COVID infections are under control, there will be a second wave of patients with urgent pathologies neglected during the

pandemic (18, 19). Time will gradually unveil how severely the interruption of care impacted chronically ill patients (20).

COVID-19 and its containment measures are thought to have exacerbated prior health inequities, creating new vulnerabilities for people with lower socioeconomic positions. The unequal socioeconomic impacts of COVID-19 and non-COVID-19-related health inequities are intertwined (21). This is the case of NCDs, which disproportionately affect these populations, and whose prevention and treatment was suspended or decreased during the collapse of the health services (22). As a result, the death rate from NCDs may increase in the next few years, slowing down the attainment of target 3.4 of the Sustainable Development Goals (SDGs) (23). Not to mention goal 10.2, which targets the empowerment and promotion of social, economic and political inclusion for all. The impact of the pandemic is likely to hinder the progress of the countries with the lowest resources by 10 years (24).

Effectively addressing these impacts of COVID-19 requires adequate knowledge of the circumstances that people were faced with during the pandemic. This study aims to examine how the COVID-19 pandemic has impacted health care access for patients with diabetes and hypertension in Ecuador from the patient's perspective.

Methodology

Study design

Exploratory study with a qualitative approach in which we conducted semi-structured interviews with adult patients diagnosed with arterial hypertension or diabetes.

Participants

Between 17th August and 17th September 2020, we conducted telephone interviews among people with diabetes and/or hypertension. In-person interviews were not feasible due to the movement restrictions introduced to combat COVID-19. Recruitment used purposive sampling seeking to include a group of people with diabetes and/or hypertension that was heterogeneous in terms of gender, age and socioeconomic status in two very different areas of Ecuador. In Quito, the nation’s capital, we recruited individuals in low-income districts of the city, with the help of the patient clubs for people with diabetes at different public primary care facilities (Chimbacalle, La Magdalena, Historic Centre and Comite del Pueblo). Furthermore, using the Centre for Community Epidemiology and Tropical Medicine’s (CECOMET) network of lay health promoters, we recruited individuals from rural communities in Eloy Alfaro, Esmeraldas. Dense forest, limited infrastructure, and a majority afro-Ecuadorian population characterise this rural area. We increased the number of participants until we reached saturation and no new information

was obtained. Similar studies have shown that saturation is reached with 12 participants (25), but for full complementation, 16-24 participants are usually needed (26).

Setting and epidemiological context

Epidemiological context

The first confirmed case of COVID-19 in Ecuador was registered on 29 February 2020 in the city of Guayaquil. It was the third country in Latin America to confirm cases of COVID-19, after Brazil and Mexico. As a result of this case, a health emergency was declared in the country on the 11th March 2020. Cases of COVID-19 spread rapidly throughout all provinces of the country, making it one of the countries in Latin America hardest hit by the pandemic. In April 2020, with 1931 infected and 60 dead, the situation in the city of Guayaquil, one of Ecuador's main cities, was beyond the capacity of the health system to cope; the increase in deaths led to the collapse of the funeral system (27). During the interview data collection period, August and September 2020, cases of COVID-19-related disease had already spread to all provinces (administrative territorial units in the country), and the case fatality rate currently stood at 6.8% of confirmed cases (28).

COVID response

As a response to the pandemic, the government initially imposed a full lockdown, limited transport, and ordered a curfew from 6pm to 5am. A general confinement obliged the population to stay at home except for purchasing food or medication. Following the line of the rest of the countries, Ecuador established a de-escalation traffic light system indicating the epidemiological situation of each region (29).

Data collection and analysis:

We conducted semi structured, in-depth telephonic interviews between August and September, 2020. We developed an interview topic guide to conduct the interviews, which consisted of open-ended questions focused on three aspects: the previous experience of the disease, the management of the disease during the confinement and their personal experience during COVID (supplementary file S1). The questions were reviewed by the Ecuadorian research team to assure their adaptability to the local language and culture. The interviewers received training to standardise data collection and interview conduction. The interview guide included prompts to obtain the maximum information about each topic, and participants were encouraged to develop their answers in order to derive sufficient detail and information. At the beginning of each interview, we collected data including age, disease history, location, education, marital status, occupation and monthly income. To aid the equity analysis, we classified education in three categories: primary, secondary and tertiary; monthly income in two categories: income below or

above the Ecuadorian basic monthly salary (BMS) of $400; and occupation in six categories according to the Ecuadorian Statistical Office's definition, which is in line with the International Standard Classification of Occupations (ISCO-08) (30). Interviews' length ranged from 16 to 53 minutes.

The interviews were audio recorded, transcribed verbatim in Spanish, anonymised and uploaded to Atlas.ti 8 for thematic analysis. Tone of voice, pauses and interruptions were documented during the interviews and described in the transcriptions. We used the Framework Method to qualitatively analyse the interview data in order to compare and contrast data by themes across the different interviews, while keeping the context of each perspective and individual's experience. (31). After an in-depth reading of the interviews, the research team agreed on a basic set of codes for an initial analysis, in line with the structure of the interview guide. After this first analysis, we discussed the suitability of the codes created and adapted them for a second analysis. With this iterative approach, two researchers independently coded each interview, made a comparison of the codes used and discussed possible discrepancies. We identified categories by crossing the coded information and classified them according to the WHO Commission on the Social Determinants of Health (CSDH) conceptual framework (32) as (a) Socioeconomic and Political Determinants of Health and (b) Intermediary Determinants of Health. The structural determinants of health and equity in the CSDH framework also include factors that generate social hierarchies and define differential access or vulnerabilities according to one's socioeconomic position. To integrate this part of the framework into our analysis, three researchers independently compared the different codes among subgroups according to their socioeconomic position (gender, migration status, education, occupation, income and location) and agreed on the perceived impact on equity. We analysed the interviews in Spanish and, only after analysis, the selected extracts to be included in the manuscript were translated into English by members of the research team, (two Spanish native speakers; one from Spain, another from Ecuador and one English native speaker). The original language version of the extracts can be accessed in supplementary file S2.

Ethics

Participation was voluntary, and all participants gave their oral consent to participate in the study and agreed to recording the call. This verbal consent addressed all the indications that would be included in a normal written consent (participants were free to withdraw from the study at any time, for any reason and without any detriment to their future care, no justification for this being necessary; all data relating to the individual can be removed should they wish to withdraw their consent at a later date; and participants were informed of the study objectives, and the risks and benefits of participating).

The collected information was de-identified before coding and analysis, and we used the data solely for research purposes. The study protocol was reviewed and approved by the Office of Responsible Research of Miguel Hernández University, the Research Ethics Committee of the Sant Joan d'Alacant Hospital and the Subcommittee on Ethics in Human Research of the Central University of Ecuador (SEISH UCE). The processing of the data was carried out in accordance with the applicable Spanish and Ecuadorian regulations and specifically with the Seventeenth Additional Provision of the LO 3/2018, of 5 December, on the Protection of Personal Data and Digital Guarantees.

Results

20 participants completed the interview; however, one individual was later excluded because it was felt that the responses to the questions given were highly influenced by the presence of her spouse. Nine (47.37%) of the participants were women and the mean age (SD) was 57.4 years (8.0) years (table 1). Thirteen (68.4%) participants lived in Quito and six (31.6%) lived in rural areas of Esmeraldas (Eloy Alfaro). Seventeen (89.5%) had a diagnosis of type 2 Diabetes, and five (26.3%) of hypertension (three individuals had both conditions). More than half of the participants (12, 63.2%) were married. Overall the participants were of relatively low socio-economic status, with nearly half of the interviewees (9, 47.4%) had achieved secondary education, and four (21.1%) tertiary education. The majority of the participants (13, 68.4%) had an income below $400, the Basic Monthly Salary, and the different occupations held included being a street vendor, small-scale agriculture, cleaner or taxi driver. Two participants were unemployed.

Table 1: Characteristics of the participants

Characteristics	Male, n (percent)	Female, n (percent)
Age (in years), mean± DS	**60 ± 6**	**54 ± 9**
Condition		
Type 2 Diabetes	7 (70.0)	7 (77.8)
Hypertension	1 (10.0)	1 (11.1)
Both	2 (20.0)	1 (11.1)
Disease history		
0-9 years	1 (10.0)	3 (33.3)
10-19 years	4 (40.0)	4 (44.4)
20 years or more	4 (40.0)	0 (0)
Not reported	1 (10.0)	2 (22.2)
Location		
Quito	7 (70.0)	6 (66.7)
Esmeraldas	3 (30.0)	3 (33.3)
Education		
Primary	3 (30.0)	3 (33.3)
Secondary	6 (60.0)	3 (33.3)
Tertiary	1 (10.0)	3 (33.3)
Occupation		
Technicians and professionals at intermediate level (e.g. teachers)	2 (20.0)	2 (22.2)
Elementary occupation (e.g. cleaners, unpaid housework,)	0 (0)	3 (33.3)
Construction and crafts	3 (30.0)	0 (0)
Services and sales (e.g. taxi drivers, street vendors)	2 (20.0)	3 (33.3)
Agriculture	2 (20.0)	0 (0)
Unemployed	1 (10.0)	1 (11.1)
Monthly income		
Below BMS (< $400)	7 (70.0)	6 (66.6)
Above BMS (> $400)	3 (30.0)	2 (22.2)
Not reported	0 (0.0)	1 (11.1)
Total	10 (100)	9 (100)

Among the socioeconomic and political determinants of healthcare access, the codes were classified in three categories: Health system, Social protection and Rural infrastructure (table 2). 'Health system' includes information about how care was organized and accessed during the pandemic, and includes codes such as 'reorganization of health services' during the pandemic, 'stock outs of medication' and 'out-of-pocket costs'. 'Social protection' refers to the measures taken by the government to assure the protection of the inhabitants and integrates the following codes: 'informal employment', reduction or lack of payments and lack of anticipatory policies to provide financial aid during health emergencies. We categorised under 'Rural infrastructure' issues such as 'shortage of health workers', 'lack of basic health material', 'limited mobility', limited reach of 'government assistance during COVID'.

We classified the intermediary determinants of diabetes and HTA healthcare access in three main categories: Working conditions, Behaviours and Psychosocial factors (table 3). 'Working conditions' refers to how informal employment, essential occupations and working timetables shape the access to health services. 'Behaviours' includes codes such as 'use of traditional medicine' to overcome lack of access to medication and 'awareness of the importance of adherence' to medication and medical controls. We grouped within 'Psychosocial factors' matters such as the impact of a family member loss by COVID on the code 'vulnerability perception', and the importance of the 'social support' from family members and friends to manage the disease during the pandemic.

Table 2: Socioeconomic and political determinants of equity in diabetes and HTA related healthcare access during the COVID pandemic in Ecuador.

Category	Description	Perceived impact on equity
Health system	• Reorganization of the services during the pandemic: no access to primary care, just to collect medication. • Stock outs of medications during the pandemic. • Out-of-pocket costs: purchasing medication when not available via the health system.	• Low-income participants had more difficulties getting appointments. • Urban communities had thinner support networks, increasing the isolation when lack of access persists. • Medication shortages in rural contexts were exacerbated during the pandemic. • Long periods without medication more frequent among individuals with low educational status and/or informal employment. • Increased vulnerability among immigrants.
Social protection	• Large proportion of individuals in informal employment with no source of income during the pandemic. • Reduced or interrupted payments to those with formal employment. • Lack of anticipatory policies to protect people during health emergencies	• Informal employment was more common among individuals with a lower education. • Unemployed, or low-income individuals were more likely to discuss severe challenges to cover medication costs and attend medical controls. • Individuals with higher education and occupational status could overcome medication shortages with savings. • Some immigrants are eligible for support from NGOs.
Rural infrastructure	• Shortage qualified health workers and basic health material to manage chronic conditions (e.g. glucometers). • Mobility: lack of accessible public transport and geographical conditions: high travel costs. • Limited reach of government COVID assistance. • Spontaneous rural health initiatives: medication facilitated door-to-door in some isolated communities.	• Occupational access in rural areas define lower incomes: aggravated ability to cover costs associated with travel and medication.

Table 3: Intermediary determinants of diabetes and HTA related access to health services, medication and treatment adherence during the COVID pandemic in Ecuador.

Category	Description	Perceived impact on equity
Working conditions	• Informal employment: street sellers unable to work during pandemic lost their only source of income. • Essential workers: exposure to COVID infection increased the fear for their safety. • Working timetables were a barrier before COVID to access health care: lessened during the pandemic.	• Individuals of low socio-economic position are more likely to feel the impact of the pandemic affecting their ability to earn money. • Gender differences in access caused by work constraints of men are likely reduced. • Concern for lack of employment and inability to provide for the family frequently reported by men.
Behaviours	• Use of traditional medicine to manage chronic conditions before and during the COVID pandemic: increased during pandemic. • Awareness of the importance of adherence to medication, advice about behaviour changes (diet, physical activity) and attending medical controls.	• Traditional medicine used by all educational levels, more frequently among women and individuals from Esmeraldas. • Individuals with tertiary education combined traditional medicine with the prescribed treatment. • Good adherence more frequently reported among women and those with higher educational status. • One woman reported sharing her medication with her husband to overcome limited access.
Psychosocial factors	• Fear of leaving home due to perceived vulnerability to COVID infection, especially among individuals who had lost family members to COVID. • Social support: Reliance on family members, friends or neighbours to obtain medication or encourage physical activity. • Social networks: Patient chat groups organised by health centres were useful to resolve questions about the management of their diseases.	• Increased vulnerability perception among women meant that men were more likely to leave the house to collect medication. • Women were more likely to report support from family members for controlling their condition (medication and encouraging physical activity). • Social support solidarity in rural communities in contrast with the anonymity of urban settings. • High education status is linked to having social networks with members that can aid access to medication and help overcome other challenges.

Socioeconomic and political determinants

Health system

During the COVID-19 pandemic, the collapse of the primary care and hospitals with COVID-19 patients forced the health care system to reorganise. Health centres would no longer be open to receive routine patients face-to-face and the only way to get a medical appointment in Quito was through the call centres. Several participants described difficulties with accessing non-COVID care through the call centre:

> *"Look, I call the call centre and they don't want to give me an appointment, so now I have to go for some tests on 20th [August] and I don't know how I will go because the call centre won't give me an appointment "no, I will give it to you for November", and I tell them, but I am diabetic, how can you give me [an appointment] for November". " - Female, 55, street vendor, income below BMS (Quito)*

In Esmeraldas, individuals mentioned how the doctors adjusted their medication prescription to diminish the need to access the health centre and to have enough supplies for a couple of months:

> *"They have been giving me [medication] all the time, every time I go up and sometimes during these seasons the doctor would even prescribe my medication for two months so as not to run the risk of going up to the sub-centre. – Female, 43, teacher, income above BMS (Esmeraldas)*

When routine appointments were cancelled, patients could continue to collect their medication from the pharmacies at their health care facilities. However, many of the participants reported shortages in medicine stock in care centres and hospitals, meaning they must purchase their medication in private pharmacies, increasing their out-of-pocket costs:

> *"January, February, March, until March they gave me medication, from March until now I have been buying it because there is no way to get down there [to the health centres] ... nor are there any medicines in the hospitals nor in health centres". - Male, 70, trader, income below BMS (Quito)*

> *"Here...there is too much problem of infection and everything and... even with precaution and everything...no, I don't go [to the hospital], I pick it up here [the medicine] at the sub-centre but...sometimes there are not, sometimes there are not and already twice I have had to buy...and they are not very cheap, I buy them for about $0.25 each pill, but I*

have to buy them because I have to have medicine...". – Female, 51, teacher, income above BMS (Esmeraldas)

Some participants reported being unable to cover the costs for medication and stopped taking the medication all together.

"Imagine 3 months locked up, 3 months without work, without being able to do anything then, that's a bit...a bit critical, that's terrible, so now I take the pills when I can buy them and sometimes I'm late...I take them for 8 days, I stop them for 8 days and so on but...I take them, I'm not going anywhere to any health centre or hospital because the health centres they send us to the hospitals, but there are no [medication] at hospitals...". – Male, 59, construction worker, income below BMS (Quito)

Medication shortage was mostly referring to oral medication, while the insulin dependent patients described continued access to insulin during the pandemic. According to one participant who worked in health services, the stock shortages were not necessarily a new phenomenon caused by the pandemic, but were exacerbated during the pandemic:

"The doctors were attending [patients], but there were almost no medicines, a month with stock of medicines from the pharmacy, (…) we in the community of this area… there are about 38 communities, so there are quite a lot of diseases, so the medicine is given and sometimes there is no medicine in the pharmacy so we to continue with the treatment we have to go out to find, to buy with our pocket, sometimes the ministry of health does not supply all the stock of medicines so, that was a little bit of difficulty we had". – Male, 58, lab assistant, income above BMS (Esmeraldas)

Passing various days/months without medication was more frequent among individuals with informal employment and low educational status, both among men and women. Difficulties getting appointments through the call centre was more common among low-income participants in Quito. A thinner support network was more frequently reported in the capital probably due to the anonymity that characterises urban centres. In this context, vulnerable people with impeded accessibility and unanswered calls were more likely to be isolated. Immigration status also appeared to determine access to health care. One interviewee reported discrimination by medical doctors due to her immigration status:

"Well, I am going to be honest and sincere. I have come across many good doctors, but at the health centre I have come across many insensitive doctors who do not care and

when they know that you are not of Ecuadorian nationality they treat you even more badly (...) I am telling you that I begged the doctor to see my husband and to give me medication or not to see him but to give him medication, but she said no, that she has many patients, I told her 'oh doctor, please' - she said no, just like that." – Female, 55, street vendor, income below BMS (Quito)

Social protection

A significant proportion of people in Ecuador work in informal employment and given the limited reach of social protection policies in the country a significant proportion of the population had no source of income during the pandemic (33). Participants frequently expressed difficulties meeting their basic needs; sometimes having to decide between purchasing either food or medication.

"So, I sometimes buy [medication] when I can, when I can't, I don't! And so, when I take it, as I say, I get better, but when I stop taking it, I... I start to get worse". – Male, 59, construction worker, income below BMS (Quito)

Even those in formal employment mentioned periods with reduced salary or even without pay during the pandemic. A 'humanitarian law' was implemented on June 19th 2020 which allowed both public and private companies to reduce the dedication and salaries of their employees by 50% (art. 20) and prevented redundancies unless the company was declared bankrupt. It also guaranteed stability of health workers (art. 25) and the creation of new positions for frontline workers. (34)

"We haven't been able to buy [the medication] for more than 20 days now because we haven't been paid by the ministry, so we haven't been able to buy...". – Male, 58, lab assistant, income above BMS (Esmeraldas)

"Yes, it has affected us financially, it has affected us as people, it continues to affect us because the state owes us all the teachers [our salary] for two months now, so financially it has affected us a lot. – Female, 43, teacher, income above BMS (Esmeraldas)

Regarding governmental support, participants described the limited reach of anticipatory policies to protect people during health emergencies. For example, the Ecuador government gave a voucher ($60) for three months which failed to cover health care or basic needs, as reported by one participant, who used it to cover electricity, water and phone bills. On the other hand, one individual with immigrant status spoke of receiving monthly help from an NGO ($30). Other

participants in Esmeraldas mentioned receiving food baskets. But according to them, this happened only one or two times. Furthermore, some participants described that neither the vouchers nor the food was equitably distributed among the community:

> *"The government gave a subsidy of 60 dollars for three months, here in my area, I think, you see, in this area, in this sector, only two people received it". – Male, 61, farmer, income below BMS (Esmeraldas)*

Even one public worker narrated the economic struggles based on the humanitarian law and being excluded from the government support food baskets:

> *"to tell you the truth... the truth, really, they have given us [the food basket] twice and they didn't give me anymore because supposedly we are, we are...we are more… we earn a salary, the support arrives and they give it to everyone, they don't give it to us because we are employees, we are state employees (...) they pay us every two months, they pay us for a month, the support arrives, the food support is not given to us". – Female, 51, teacher, income above BMS (Esmeraldas)*

In general, informal employment was more commonly reported among individuals with low education. Furthermore, unemployed individuals, and those with low income were more likely to discuss severe challenges to cover medication costs and were more likely to miss their medical controls. Some individuals with higher education and higher occupational status claimed to be able to overcome the medication shortages by using their savings.

Rural infrastructure

The difference between the urban and rural context in Ecuador was clear. Limited infrastructure makes managing chronic diseases more challenging in rural settings even without the restrictions imposed by the COVID-19 pandemic, yet certain aspects were exacerbated during the pandemic. Participants in rural areas discussed the lack of qualified staff in rural health facilities, with no specialists available and interrupted access to health care with closed facilities when health workers leave to visit isolated communities. They also mentioned lack of basic material to manage chronic diseases, such as glucometers.

> *"In the countryside, here, we are without, without all the medical specialties that can attend to us, for example: a psychologist to help us with emotional support, that the doctors are permanent, one doctor leaves and another comes… There have been problems in that case, that the doctor goes out to visit the houses and the sub-centre is*

empty. So there have always been complaints, because if there is only one doctor, he goes out to the communities to visit, then the sub-centre is closed and there is no attention for several days, so there have been problems". – Female, 43, teacher, income above BMS (Esmeraldas)

"The doctors work 22/8 and sometimes they have to go out for...eight days, but the one who is there...the nurse who is there, but sometimes the person who does the tests is not there because this test is done by only one person (...) you go...and [the doctor] is not there because sometimes she or he has to go out to Borbón to do things that they have to do, right? And... you don't know, one doesn't know and you have to go and when you get there she or he is not there" – Female, 51, teacher, income above BMS (Esmeraldas)*
**[22 consecutive days working in isolated community / 8 days off]*

Isolated communities have limited mobility due to geographical conditions and lack of public transport network in some areas. Rural participants discussed the need to travel mostly by canoe to visit health centres and retrieve their medication. One participant expressed the preference of visiting a private doctor to access the medication, assuming the costs, due to the barriers of accessing the public system.

"I have to go down with the canoe and that's where I buy [medication], it's easier for me to go to Esmeraldas because in one time I am already bringing it back, so sometimes every 15 days, 20 days I restart the process, (...). The first place I go in Esmeraldas is to the doctor and I tell him to do a test to see how I am (…) he tells me 'but your sugar is normal but we are going to give you the pills' and he gives me the bill." – Male, 61, farmer, income below BMS (Esmeraldas)

Several participants reported that movement restrictions during the COVID-19 lockdown, left them without access to healthcare attention and medication.

"There was no transport, there was no mobility, so I couldn't go out, and that has affected me, and lately I've been feeling bad, and I'm feeling a bit bad right now, and this week I went to the doctor because I was able to go out, I went to the doctor and what is the surprise..., my blood pressure has shot up, and my blood sugar is extremely high" – Male, 61, farmer, income below BMS (Esmeraldas)

According to some interviewees in Esmeraldas, health workers visited their residence during this lockdown period to facilitate the medication and controls. This would mean that spontaneous rural

health initiatives managed to provide these communities with care continuity even during the pandemic, improving the management of the chronic disease. Contrarily, urban areas lacked this door-to-door care services due to its own structural system.

> *"Yes, with the doctors I had, I had a medical appointment at home, (...) so they came and checked us and gave us some medicine that they brought with them. Before, we used to go out, but because of the pandemic, we couldn't go out at all, so they came to visit us where we were sick, so that's what happened during all these months". – Male, 58, lab assistant, income above BMS (Esmeraldas)*

Furthermore, one participant mentioned the support received by a local faith-based NGO (CECOMET) to cover a medicine shortage at the local health centre:

> *"So sometimes I would tell her [CECOMET worker] about the lack of medicines, what to do, so she always gave us a hand, she would send us from there from Esmeraldas [medicines] for diabetics, e.g. anything we needed, medicine... She would send it through the sub-centre of Esmeraldas to Borbón and from Borbón here to the sub-centre where I am, so that gave us a little bit of support with the medicine" – Male, 58, lab assistant, income above BMS (Esmeraldas)*

Participants with higher education were more likely to have contacts working in Esmeraldas and able to facilitate the acquisition of medication.

> *"I... got the medicine from a, from a, from a... cousin who works, lives in Esmeraldas and she, through the doctors, she would go to some doctors with my ID card and she would...get the medicine and send it to me, because my doctor has been unable to see me for a long time" – Female, 51, teacher, income above BMS (Esmeraldas)*

Due to the occupational structure in rural areas, in which low-scale farming predominates, income tends to be lower, which aggravates people's ability to cover the costs associated with traveling and purchasing medication. Both men and women discussed the high transport costs and increased price of gasoline during the pandemic, and how this impacted their mobility and hence access to health services.

"Because of the pandemic [the price of canoe fares] went up, some charge $7, others charge $5... it was as high as $8 at the beginning. " – Female, 51, teacher, income above BMS (Esmeraldas)

Another barrier related to rural areas was the limited reach of government assistance during COVID. Some participants reported that food packages did not arrive to isolated communities in Esmeraldas, further exacerbating the difficulties to cover basic necessities, such as medication.

Intermediary determinants

Working conditions

Working conditions were often mentioned when participants discussed access going to the health centre or taking their medications. Some individuals, particularly men, mentioned how, before the pandemic, the working constraints and timetables were not compatible with healthcare demands:

"No, I didn't visit [the health centre] before the pandemic because, I mean, because I didn't have the time, thank God I had a job, I had a full work schedule, so going to the health centre means spending 3 to 4 hours and at work they don't allow me that kind of time" – Male, 50, construction worker, income below BMS (Quito)

The impact of the pandemic was different depending on the type of employment held. On the one hand, during the initial COVID lockdown, informal employees reported to be greatly affected by the lockdown due to their inability to work and the lack of government financial aid. This was the case of street sellers, who reported ending up with no income:

"Right now, there is no work, the only work is to go out and sell in the street and we can't do that" – Female, 50, street vendor, income below BMS (Quito)

On the other hand, essential workers expressed how they had to work and expose themselves to the virus during these times, fearing for their safety and risk of infection. This quote shows how a health worker in Esmeraldas was aware of his increased vulnerability as diabetic and the lack of access to a hospital:

"We don't have a way to get to [the hospital in Esmeraldas], so that made it very difficult for us and it made me afraid, as I was working in the sub-centre, that's why I told the

doctor, I'm afraid because I'm diabetic" – Male, 58, lab assistant, income above BMS (Esmeraldas)

The analysis shows that people with lower socioeconomic status had an increased awareness of the COVID-19 impact, as long as it affected their ability to earn money. Men were more likely to describe this constraint, as it is expected from them to provide financially to the household.

Behaviours

Traditional medicine use was largely reported, not only as a regular behaviour based on ancestral knowledge, but also as a measure to overcome the lack of access to medication for financial reasons, both before and during COVID-19 pandemic:

"'¡Ay madrecita!' Sometimes here with the problems that we are going through… one has to pay pennies, one also has problems, personal problems, one has debts...there have been times when I haven't even had enough money, not even to buy a pill, but one has to find one's own way here with...with home-made medicines, treatment with vegetables..." – Female, 51, teacher, income above BMS (Esmeraldas)

"Frankly I have not [been able to access the health centre] 'mi señorita', I have been taking care of myself at home with my diabetes medication, honestly with natural medicine" – Female, 52, unemployed, income below BMS (Quito)

This use of natural remedies was more frequent in women and in Esmeraldas, where participants reported that they were able to manage their condition thanks to the availability of traditional medicines growing in their gardening plots. All educational groups discussed the use of natural remedies, although the people with tertiary education expressed its use on top of taking the prescribed medication:

"Now I am, I am taking guava leaf, which they tell me controls sugar and I am taking that, every day. I boil my pot of water and add guava leaf and I am taking that every day; besides my pills, I am taking that water, I am taking.... everything, everything that is vegetable for it because diabetes is a disease that kills but it also has medicines that...that can control it" - Female, 51, teacher, income above BMS (Esmeraldas)

Regarding the adherence to medication and controls, in general, individuals were aware of the importance of being adherent and expressed a will to take medication, although as previously discussed, this was hindered by limited access to the facilities and availability of medication

during the pandemic. One man talked of not being on medication because of not taking diabetes seriously until symptoms appeared:

"At the beginning, I didn't, I didn't stop it and I ignored it because none of my friends have had this disease, so I said, no, I don't have anything and I'm not going to take any pills, I spent months I think when I saw that I… that I was going to get sick, I went to them [the pills]". – Male, 61, farmer, income below BMS (Esmeraldas)

Psychosocial factors

Some participants reported having lost their family members to COVID and were more likely to be wary of leaving their homes or communities to retrieve or purchase medication. Also, the perceived vulnerability to COVID and fear prevents people with higher risk factors, such as diabetes or the elderly, from approaching health centres. Instead they assume the full cost of the medication at the private pharmacy when it is possible.

"Due to the COVID problem, I haven't gone to the clinic, I haven't gone to the..., to the social security clinic because clearly I'm...afraid to go...because the problem is too serious and, as you know, we are, I am vulnerable – Female, 51, teacher, income above BMS (Esmeraldas)

"So, I also think that... for safety reasons I am no longer going to the health centre because of this situation. You know that for safety reasons, entering a hospital is a bit... risky (...) I... go about... as it is, with... many precautions because one knows that one runs the risk of..., they say... I don't know, that we are vulnerable to..., that diabetics are vulnerable in this situation.... " – Male, 65, printing service worker, income below BMS (Quito)

Women were more likely to identify themselves as "vulnerable" and at increased risk, therefore men took the risk of leaving the house in order to fetch medicines. One women also narrated the need to share her medication with her husband:

"My husband is without pills for both diabetes and hypertension, so we are both taking the pills they gave me for me, that's why I'm not taking the whole medication, he doesn't have any for his hypertension, he's dying with a headache every day because his hypertension must have high blood pressure, and since the little we eat is the little we get from those that help us, then you can imagine, what else can we do (...) we are both taking [the medication] to at least protect us a little from something" – Female, 55, street vendor, income below BMS (Quito)

The social network played a major role during the pandemic. Due to financial or access constraints, participants frequently mentioned that they relied on their family members, friends or neighbours to obtain their medication:

> *"Those who are taking care of us are my children, they are giving us all the food, medicine and fruit, they are taking care of me at the moment" – Female, 52, unemployed, income below BMS (Quito)*

Women were more likely to report support from family members, whereas the discourses of men tended to focus on the need for employment to cover the costs and provide for the family.
Apart from family, rural participants expressed more solidarity and support from community members and leaders, such as helping with the access to medication, covering costs of gasoline together or demanding governmental support.

Contrary to this, the anonymity of urban settings may increase the isolation, with individuals reporting that they had to overcome barriers to healthcare alone. Nevertheless, some health centres in Quito had patient chat groups to resolve questions and uncertainties around management of the disease. This was helpful when they could not access control appointments with the doctor.

> *"I only [went to the health centre] when I had my medical appointment (..). Since then, I haven't gone at all, not at all, not at all, as we have a group chat [WhatsApp group] here in the health centre for the diabetic patient's club, we have also consulted there any concerns" – Male, 53, taxi driver, income below BMS (Quito)*

Most participants expressed how family support to access healthcare and chronic medication was critical in situations of low income or impossibility to work. When there is a lack of social or family support, the treatment continuity is hindered until economical resources are available.

> *"I have a son who used to buy my pills but... now... they also cut his salary, he works at the C-C. So, he used to buy my pills and he got them for me... but now with the situation they cut his salary, they took away his overtime, everything so they are also...so no, it is not enough for him because he also has expenses (...) so I sometimes buy when I can, when I can't I don't!" – Male, 59, construction worker, income below BMS (Quito)*

Discussion

To the best of our knowledge, this is the first qualitative study to investigate the access to health services for chronic disease care during the COVID pandemic from the patient's perspective in Ecuador and the impact it had on the management of their disease. We summarised our findings into six categories according to the conceptual framework of social determinants of health and health inequality (CSDH): health system, social protection, rural infrastructure, working conditions, behaviours and psychosocial factors. Furthermore, we analysed how an individual's socio-economic position ultimately influenced healthcare access for HTA and diabetes by interacting with the different determinants identified.

The readiness to face a health crisis like COVID-19 pandemic depends on the health system of the country, which should guarantee the promotion, prevention, recovery and rehabilitation of people with NCDs. Gujral UP, et al have developed a diabetes care preparedness cycle framework to address transitions in care during the COVID-19 pandemic and future outbreaks (35). However, this framework could be difficult to apply in contexts with a weakened health system like is the case of Ecuador (36). This fragility and vulnerability of the public health system is directly related to the political instability of the country, which hinders the adequate political framework to carry out social protection policies (37). Our study highlights the difficulties with continuity of chronic disease care during the initial months of lockdown and serious issues with basic medicine supply in the public health system which continues to exist to this day. This problem with access to healthcare and medication has been identified in another low-middle income country (38). Supply failures in the public health system further compound the population's reliance on out-of-pocket payments to cover their treatment costs, which, during a time with reduced or absent earnings due to interrupted employment, can have a catastrophic impact on the poorest of society. The issue emerged most poignantly with one individual describing the need to choose between purchasing food or purchasing medication. This matter must be considered within the overarching structural determinant which is the limited reach of social policies to support the population during health or other emergencies. In contrast with European and other high-income nations where furlough schemes provided workers with a source of income during the lockdown (39), most of the low- and middle-income countries lacked the means to implement this social protection.

This study shows critical differences between the urban and rural areas in line with other studies (40-42). Even though rural areas tend to present more barriers to access healthcare due to the lack of transport, long distances and lower availability of services, the role of lay health promoters made a positive difference. Most of the interviewees in Esmeraldas mention having access to their medication thanks to the door-to-door deliveries held by lay health promoters, otherwise difficult to reach. This advantage was lacking in Quito, where health promotion is usually more focused

on physical activities organized in the health centre, such as dance therapy which were completely cancelled during the pandemic, and remain so today (personal observation, 9th Sep 2021). On the other hand, in Quito one participant mentioned a chat group organised by the Diabetic Patient's Club. Considering the lack of continued access to regular health services, the chat group was identified as a gateway for patients to consult and share concerns with their peers. The use of social media groups as a way to provide and receive psychosocial support (43) may be crucial in an urban lockdown situation, where social support is limited.

In fact, social support has been reported as a cornerstone of NCDs management during COVID from our participants' perspective. When lacking economic resources, most participants depended directly on their family to continue with the pharmacological treatment. This trust on family and community is particularly important when the state cannot provide and assure the access to resources and economic stability, as happened during the COVID-19 pandemic in Ecuador. While participants in urban areas, particularly women, mostly mentioned family support, the rural communities showed to have a stronger community support network relying additionally on neighbours or friends to help them to overcome system shortfalls. Further research should be conducted to explore the role of family and community support to promote access to healthcare during the pandemic and beyond.

Another remarkable finding was the increased use of traditional medicine during the pandemic. Traditional medicine is widely used in Ecuador, above all in the rural context due to the culture and accessibility to plants (44). According to Kasole, et al, the high cost of conventional medicines, availability and accessibility of traditional medicines, cultural inheritage and advice from the community are the main reasons to use plants as an alternative to healthcare. (45). Considering the already discussed effect of the COVID-19 pandemic on the access to treatment, it appeared that people were more likely to turn to traditional medicine, either as the sole remedy or combining it with the usual medical treatment.

Psychosocial factors also influenced whether patients assessed health facilities. Given that diabetes and HTA are risk factors for COVID most participants expressed fear of reaching them, this was particularly noticeable in women. This reticence to leave the house and collect medicine because of an increased vulnerability perception has been identified in other contexts (46-48).

Strengths and limitations

This study shed some light on how the management of chronic diseases was affected by the impact of the COVID-19 pandemic on the access to healthcare in Ecuador. Collecting these insights is crucial for a better understanding of the pandemic consequences on a personal level, with the aim

of combining them with quantitative analysis. We analysed the interviews according to the WHO Commission on the Social Determinants of Health (CSDH) conceptual framework, which provides a more comprehensive perspective of the health inequities. We decided to use this framework because it conceptualises the health system itself as a social determinant of health and interconnects it with the rest of social determinants of health.

This study has several limitations. First, the qualitative nature of the data collection and the small sample size might limit the generalization across other contexts. Second, the convenience sample through patient clubs in Quito, and CECOMET rural health promoters in Esmeraldas likely included participants with a higher contact with the health system, meaning not only that they might be more aware of the management of the disease, but also, they may experience fewer barriers to healthcare access than patients with chronic disease who live in other rural areas or who do not attend patient clubs. That being said, the challenges experienced by these participants are real and cause for concern in themselves. That the situation may be direr for other patients only adds to the importance of shedding light on the serious issues faced by people with diabetes and hypertension in Ecuador during the pandemic. Third, the interview extracts were translated from the local language, Spanish, to English. Therefore, the precise implication of the expression or metaphor used is difficult to report. For this reason, we ensured that translations were reviewed and discussed with native speakers of both Ecuadorian Spanish and English. Lastly, conducting the interviews via telephone may have impacted the data in that participants were less comfortable talking in-depth in this situation and meant that we were unable to analyse their visual expressions and/or body language.

Conclusions

Our study shows, through the patient's perspective, how the response to COVID-19 affected the health care access for people with diabetes and hypertension in Ecuador. We found that contextual factors played a major role in the impact of the pandemic, worsening the pre-existing health inequities. The reorganization of healthcare services left patients with a discontinued management of chronic diseases and with an increased out-of-pocket expense in the shortage of medicines. Due to the economic instability and the lack of anticipatory social policies, participants with informal employment or low socio-economic status struggled to overcome the system shortfalls, and that is when social support networks were reported as essential. Limited infrastructure in rural settings lead to an increase in barriers to access healthcare, yet in some cases the treatment could be continued thanks to the lay health promoters distributing medicines door-to-door. Gender differences were found in the perceived vulnerability, reported social support, use of traditional medicine and working conditions. This research raises important questions about the future

implications of the hindered access to health care during the pandemic, especially for NCDs. Policy makers should address the presented impacts of COVID-19 and future outbreaks, taking into account the social determinants of health and their influence in the management of diabetes and HTA.

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Supplementary file 1: Interview guide

1. **Socio-demographic/ socio-economic information:**

To begin with, I would like you to tell me a little bit about yourself. Prompts:

- How old are you?
- What is your marital status?
- What is your level of education, or what level did you achieve at school?
- What is your profession? What is your or your household's typical monthly income?
- With whom do you live, and do you have dependants?

2. **Previous health experience:** What was your experience with your diabetes/hypertension like before the pandemic? Prompts:

- How have you managed the disease since you were diagnosed, who do you consult when you need help or advice (doctor, family, friends...)?
- What was your access to health services like, how often did you use them?
- Before the pandemic, did you ever have to stop managing your hypertension/diabetes or taking medication? If so, for what reason?
- How was your diabetes/hypertension controlled before the pandemic, how long have you had the disease, who do you usually consult when you need help or advice (doctor, family, friends, etc.)?
- Before the pandemic, could you routinely afford to buy the medicines or other products necessary for your health care?
- Where do you check your diabetes/hypertension, how easy was it for you to go there, did you go there often?

3. **Management of illness during confinement:** I would like you to tell me about how confinement has affected living with your illness. Prompts:

- Do you feel that your health has improved, stayed the same or got worse, for what reason?
- Did you have someone to turn to in case of doubt or when you felt unwell, did you have any complications, how did you cope with them?
- Did you ever fail to attend health services even when you thought it was necessary?
- Did you stop taking any medication, for what reason?
- Has your diet changed during confinement, why?
- How has your physical activity changed as a result of the confinement, and why?

4. **Personal experience:** How did you feel during the confinement, why did you feel this way? Prompts:

- Were you afraid of your illness or of going to the health centre, did you have someone to talk to about your concerns?
- How has the situation affected you and your family, how has the confinement affected your relationship with your family?
- How has your financial situation been affected?
- Has your workload in the household increased, how?
- Have you received any financial and social support in confinement?

Supplementary file 2: Translation of the transcript's quotes.

English version	Original
"Look, I call the call centre and they don't want to give me an appointment, so now I have to go for some tests on 20th [August] and I don't know how I will go because the call centre won't give me an appointment "no, I will give it to you for November", and I tell them, but I am diabetic, how can you give me [an appointment] for November". " - Female, 55, street vendor, income below BMS (Quito)	"Mire que yo llamo al call center y no me quieren dar cita, entonces ahorita estoy que el 20 [de agosto] me toca unos exámenes que me mandaron hacer y no sé cómo voy a ir porque el call center no me quieren dar cita, no la voy a dar para noviembre, yo le digo, pero yo soy diabética, como me va a dar para noviembre"
"They have been giving me [medication] all the time, every time I go up and sometimes during these seasons the doctor would even prescribe my medication for two months so as not to run the risk of going up to the sub-centre. – Female, 43, teacher, income above BMS (Esmeraldas)	"Todo el tiempo me han estado dando [medicación], cada vez que yo subo y a veces por estas temporadas el doctor me recetaba hasta mi medicamento por dos meses para no correr el riesgo de estar subiendo en el sub centro"
"January, February, March, until March they gave me medication, from March until now I have been buying it because there is no way to get down there [to the health centres] ... nor are there any medicines in the hospitals nor in health centres". - Male, 70, trader, income below BMS (Quito)	"Enero, febrero, marzo, hasta marzo me dieron medicación, de ahí de marzo para acá estado comprando porque no hay como bajar ni… ni tampoco hay remedios en los hospitales ni centros de salud"
"Here...there is too much problem of infection and everything and... even with precaution and everything...no, I don't go [to the hospital], I pick it up here [the medicine] at the sub-centre but...sometimes there are not, sometimes there are not and already twice I have had to buy...and they are not very cheap, I buy them for about $0.25 each pill, but I have to buy them because I have to have medicine...". – Female, 51, teacher, income above BMS (Esmeraldas)	"Acá…hay demasiado problema de contagio y todo y… con reserva y todo…no, no voy, lo retiro acá [el medicamento] en el sub centro pero…a veces no hay, a veces no hay y por dos ocasiones me ha tocado comprar…y no es que son muy baratos, las compro como a $0.25 cada pastilla, pero tengo que comprarlas porque tengo que tener medicamento…"

"Imagine 3 months locked up, 3 months without work, without being able to do anything then, that's a bit...a bit critical, that's terrible, so now I take the pills when I can buy them and sometimes I'm late...I take them for 8 days, I stop them for 8 days and so on but...I take them, I'm not going anywhere to any health centre or hospital because the health centres they send us to the hospitals, but there are no [medication] at hospitals...". – Male, 59, construction worker, income below BMS (Quito)	"Imagínese 3 meses encerrados, 3 meses sin trabajar, sin poder hacer nada entonces, eso un poco…un poco crítico esto, ¡eso es terrible! Entonces ahora yo, las pastillas me tomo cuando puedo comprarlas y a veces me atraso…me tomo unos 8 días, dejo unos 8 días y así, pero…eso tomo, no estoy yendo a ninguna parte a ningún centro de salud ni a un hospital porque como no le digo de los centros de salud nos mandan a los hospitales, pero en los hospitales no hay…"
"The doctors were attending [patients], but there were almost no medicines, a month with stock of medicines from the pharmacy, (…) we in the community of this area… there are about 38 communities, so there are quite a lot of diseases, so the medicine is given and sometimes there is no medicine in the pharmacy so we to continue with the treatment we have to go out to find, to buy with our pocket, sometimes the ministry of health does not supply all the stock of medicines so, that was a little bit of difficulty we had". – Male, 58, lab assistant, income above BMS (Esmeraldas)	"Los médicos atendían pero casi no había las medicinas, un mes con cantidad stock de medicamentos de la farmacia, (...) en estas zonas nosotros en la comunidad hay como 38 comunidades, entonces hay bastante tipo de enfermedades no, entonces así mismo sale la medicina y a veces la medicina no hay en la farmacia entonces nosotros para seguir vuelta con el tratamiento tenemos que salir a buscar, a comprar con nuestro bolsillo, a veces ministerio de salud no abastece todo stock de medicamentos entonces, eso fue un poquito medio dificultad que teníamos"
"Well, I am going to be honest and sincere. I have come across many good doctors, but at the health centre I have come across many insensitive doctors who do not care and when they know that you are not of Ecuadorian nationality they treat you even more badly (...) I am telling you that I begged the doctor to see my husband and to give me medication or not to see him but to give him medication, but she said no, that she has many patients, I told her 'oh doctor, please' - she said no, just like that." – Female, 55, street vendor, income below BMS (Quito)	"Bueno yo le voy hacer muy honesta y muy sincera, yo me he topado con muchos médicos buenos, pero en el centro de salud yo me he topado con muchos médicos indolentes que no les importa y cuando saben que uno no es de nacionalidad ecuatoriana le tratan más mal (...) no le digo que le rogué a la doctora que viera a mi esposo y que me diera medicamento o que no le viera pero que le del medicamento me dijo que no que ella tiene muchos pacientes, le dije 'ay doctora, por favor', dijo que no, así me lo dijo."

"So, I sometimes buy [medication] when I can, when I can't, I don't! And so, when I take it, as I say, I get better, but when I stop taking it, I... I start to get worse". – Male, 59, construction worker, income below BMS (Quito)	"Entonces yo así de repente cuando puedo compro [medicación] cuando no ¡No! Y así, cuando tomo como le digo me…me mejoro, pero cuando dejo de tomar ya me…voy decayendo."
"We haven't been able to buy [the medication] for more than 20 days now because we haven't been paid by the ministry, so we haven't been able to buy...". – Male, 58, lab assistant, income above BMS (Esmeraldas)	"Ahorita ya tenemos más de 20 días que no hemos podido comprar [la medicación] porque tampoco no nos pagaban desde el ministerio, entonces no hemos podido comprar..."
"Yes, it has affected us financially, it has affected us as people, it continues to affect us because the state owes us all the teachers [our salary] for two months now, so financially it has affected us a lot. – Female, 43, teacher, income above BMS (Esmeraldas)	"Sí, afectó en lo económico, si nos afectó como personas, hasta ahorita nos sigue afectando porque ya son dos meses que nos debe el Estado a todos los docentes, entonces eso sí en lo económico sí nos ha afectó bastante"
"The government gave a subsidy of 60 dollars for three months, here in my area, I think, you see, in this area, in this sector, only two people received it". – Male, 61, farmer, income below BMS (Esmeraldas)	"El gobierno puso un bono de 60 dólares por tres meses, acá en mi zona, creo que, verá, en esta zona, en este sector solamente cobraron dos personas"
"to tell you the truth... the truth, really, they have given us [the food basket] twice and they didn't give me anymore because supposedly we are, we are...we are more… we earn a salary, the support arrives and they give it to everyone, they don't give it to us because we are employees, we are state employees (...) they pay us every two months, they pay us for a month, the support arrives, the food support is not given to us". – Female, 51, teacher, income above BMS (Esmeraldas)	"Para decirle la verdad… la verdad, verdad, nos han dado dos veces [cesta alimento] y ya no me dieron más porque supuestamente somos, somos...somos más… ganamos un sueldo, llega la ayuda y le dan a todo el mundo a nosotros no nos dan porque somos empleados, somos empleados públicos (…) a nosotros nos pagan cada dos meses, nos pagan de un mes, llega la ayuda, la ayuda los alimentos no nos da."
"In the countryside, here, we are without, without all the medical specialties that can attend to us, for example: a psychologist to help us with emotional support, that the doctors are permanent, one doctor leaves and another	"En el campo, acá, estamos sin, sin todas las especialidades médicas que nos puedan atender, por ejemplo, decía de un psicólogo que nos ayude en lo emoción contencional, que los médicos estén permanentes, salga uno y

comes… There have been problems in that case, that the doctor goes out to visit the houses and the sub-centre is empty. So there have always been complaints, because if there is only one doctor, he goes out to the communities to visit, then the sub-centre is closed and there is no attention for several days, so there have been problems". – Female, 43, teacher, income above BMS (Esmeraldas)	venga otro… Ese caso si habido problemas, que la gente un doctor sale de visitar a las casas y queda el sub centro vacío, entonces son un poquito quejas que sí, siempre habido porque si habiendo un solo médico, sale a las comunidades a visitar, entonces el sub centro queda cerrado y no hay atención por varios días, entonces eso si habido problemas"
"The doctors work 22/8 [22 consecutive days working in isolated community / 8 days off] and sometimes they have to go out for...eight days, but the one who is there...the nurse who is there, but sometimes the person who does the tests is not there because this test is done by only one person (...) you go...and [the doctor] is not there because sometimes she or he has to go out to Borbón to do things that they have to do, right? And... you don't know, one doesn't know and you have to go and when you get there she or he is not there" – Female, 51, teacher, income above BMS (Esmeraldas)	"Está el médico eh…solo que…ellos trabajan 22/8 [22 días seguidos trabajando en comunidad aislada / 8 días libres] y a veces les toca salir pues, a...así ocho días, pero el que está…el enfermero o la enfermera que está, pero es que a veces la persona que hace el examen no está porque ese examen lo hace una sola persona (...) uno va…y no está [el médico] por motivos que a veces le toca salir a B. a hacer sus cosas que les toca hacer a ellos ¿no? Y…no sabe, uno no sabe y uno le toca ir y cuando llega no está"
"I have to go down with the canoe and that's where I buy [medication], it's easier for me to go to Esmeraldas because in one time I am already bringing it back, so sometimes every 15 days, 20 days I restart the process, (...). The first place I go in Esmeraldas is to the doctor and I tell him to do a test to see how I am (…) he tells me 'but your sugar is normal but we are going to give you the pills' and he gives me the bill." – Male, 61, farmer, income below BMS (Esmeraldas)	"Tengo que bajar canoa abajo y ahí es que compro [medicación], más fácil me sale irme a Esmeraldas que de una vez ya vengo trayendo, entonces a veces cada 15 días, 20 días para, para, para reiniciar vuelta el proceso, (...). Yo lo primero que voy a Esmeraldas es al médico y le digo que [me haga] el examen para ver cómo estoy, entonces él ahí cuando, (...) cuando me hace los exámenes ya, yo le entrego, él me dice 'pero su azúcar está normal, pero vamos a darte las pastillas' y me da la cuenta."
"There was no transport, there was no mobility, so I couldn't go out, and that has affected me, and lately I've been feeling bad, and I'm feeling a bit bad right now, and this week I went to the doctor because I was able to go out, I went to the doctor and what is the surprise..., my blood pressure has shot up,	"No había transporte, no había movilidad, entonces, no podía salir y, eso ha afectado que últimamente me he sentido mal y estoy medio mal ahorita que casualmente esta semana que estuve, fui al médico ya porque pude salir, me fui al médico y cuál es la sorpresa..., que se me ha disparado o sea la presión alta y la azúcar sumamente elevada"

and my blood sugar is extremely high" – Male, 61, farmer, income below BMS (Esmeraldas)	
"Yes, with the doctors I had, I had a medical appointment at home, (...) so they came and checked us and gave us some medicine that they brought with them. Before, we used to go out, but because of the pandemic, we couldn't go out at all, so they came to visit us where we were sick, so that's what happened during all these months". – Male, 58, lab assistant, income above BMS (Esmeraldas)	"Sí, con los médicos, yo tenía, ósea tenía una, ósea una, una cita médica en la casa, (…) entonces ellos nos vienen y nos revisan y le dan unos medicamentos traen ellos. Antes nosotros salíamos, pero ya como esa pandemia que hubo entonces nosotros no podíamos salir nada, entonces ellos mismo nos venían a visitar a donde estábamos enfermos, entonces eso es lo que paso todo, durante todos estos meses que paso también."
"So sometimes I would tell her [CECOMET worker] about the lack of medicines, what to do, so she always gave us a hand, she would send us from there from Esmeraldas [medicines] for diabetics, e.g. anything we needed, medicine... She would send it through the sub-centre of Esmeraldas to Borbón and from Borbón here to the sub-centre where I am, so that gave us a little bit of support with the medicine" – Male, 58, lab assistant, income above BMS (Esmeraldas)	"Entonces yo a veces comunicaba a ella [trabajadora CECOMET] por falta de medicamentos, que hay que hacer, entonces ella siempre nos daba la mano, nos mandaba de allá de esmeraldas para diabético, eee cualquier cosa que nosotros necesitamos, medicina… ella le mandaba a través del subcentro de esmeraldas a borbón de borbón acá al subcentro donde yo estoy, entonces eso nos daba un poquito de apoyo también ella con la medicina"
"I... got the medicine from a, from a, from a... cousin who works, lives in Esmeraldas and she, through the doctors, she would go to some doctors with my ID card and she would...get the medicine and send it to me, because my doctor has been unable to see me for a long time" – Female, 51, teacher, income above BMS (Esmeraldas)	"Me… obtenía el medicamento por medio de una, de una, de una… prima que trabaja, vive en Esmeraldas y ella por medio de los médicos ella, ella me iba donde algunos médicos con mi cédula me…me retiraba el medicamento y me enviaba, porque mi doctora tengo bastante tiempo que no me he podido ir atender"
"Because of the pandemic [the price of canoe fares] went up, some charge $7, others charge $5... it was as high as $8 at the beginning. " – Female, 51, teacher, income above BMS (Esmeraldas)	"Ante la pandemia [el precio del pasaje en canoa] subió, unos cobran $7, otros cobran $5… llegó hasta $8 al inicio"

"No, I didn't visit [the health centre] before the pandemic because, I mean, because I didn't have the time, thank God I had a job, I had a full work schedule, so going to the health centre means spending 3 to 4 hours and at work they don't allow me that kind of time" – Male, 50, construction worker, income below BMS (Quito)	"No, no he visitado [el centro de salud] antes de la pandemia porque, o sea, porque no me daba el tiempo, gracias a Dios tenía trabajo, tenía full de trabajo, entonces eso de ir al centro de salud es pasar siquiera unas 3 a 4 horas y en el trabajo no me dan permiso esa calidad del tiempo"
"Right now, there is no work, the only work is to go out and sell in the street and we can't do that" – Female, 50, street vendor, income below BMS (Quito)	"Ahorita ahora no hay trabajo, el único trabajo es salir a vender en la calle y eso no lo podemos hacer"
"We don't have a way to get to [the hospital in Esmeraldas], so that made it very difficult for us and it made me afraid, as I was working in the sub-centre, that's why I told the doctor, I'm afraid because I'm diabetic" – Male, 58, lab assistant, income above BMS (Esmeraldas)	"No tenemos cómo salir [al hospital de Esmeraldas], entonces eso nos dificulto bastante y me dio miedo a mí, como yo estaba trabajando en el subcentro, por eso yo le dije al doctor, a mí me da miedo porque, porque soy diabético"
"*¡Ay madrecita!* Sometimes here with the problems that we are going through… one has to pay pennies, one also has problems, personal problems, one has debts...there have been times when I haven't even had enough money, not even to buy a pill, but one has to find one's own way here with...with home-made medicines, treatment with vegetables..." – Female, 51, teacher, income above BMS (Esmeraldas)	"¡Ay madrecita! a veces acá con el problema que estamos pasando que…a uno le pagan los centavitos, uno también tiene problemas, problemas personales, tiene deudas... haaaay ocasiones que no he tenido ni para, ni para comprar la pastilla, si no que uno acá se, se la rebusca con…con los medicamentos caseros, medicina em...vegetales"
"Frankly I have not [been able to access the health centre] *mi señorita*, I have been taking care of myself at home with my diabetes medication, honestly with natural medicine" – Female, 52, unemployed, income below BMS (Quito)	"Francamente no [he podido acceder al centro de salud] mi señorita yo me he estado cuidando así en la casa con los medicamentos de la diabetes, así como decirles francamente con medicamentos natural"
"Now I am, I am taking guava leaf, which they tell me controls sugar and I am taking that, every day. I boil my pot of water and add guava leaf and I am	"Ahora me estoy, me estoy tomando la hoja de guayaba, que me dicen que controla el azúcar y estoy tomando esa, yo hoy todos los días. Ósea yo hiervo

taking that every day; besides my pills, I am taking that water, I am taking.... everything, everything that is vegetable for it because diabetes is a disease that kills but it also has medicines that...that can control it" - Female, 51, teacher, income above BMS (Esmeraldas)	mi olla de agua y le hecho la hoja de guayaba y eso estoy tomando todos los días; además mis pastillas yo me tomo, estoy tomándome esa agua igual tomo…todo, todo lo que sea vegetal para eso porque la diabetes es una enfermedad que mata, pero también tiene medicamentos que…que se la puede controlar"
"At the beginning, I didn't, I didn't stop it and I ignored it because none of my friends have had this disease, so I said, no, I don't have anything and I'm not going to take any pills, I spent months I think when I saw that I… that I was going to get sick, I went to them [the pills]". – Male, 61, farmer, income below BMS (Esmeraldas)	"Al principio, yo no, no, no le paraba mejor dicho asunto y yo lo ignoraba porque mis amigas ninguna ha tenido esa enfermedad, entonces yo decía, no yo no tengo nada y no voy a tomar ninguna pastilla, yo me pasaba meses creo cuando yo ya veía que me, que me, que me iba hacer yo mal, recurría a ellas [las pastillas]."
"Due to the COVID problem, I haven't gone to the clinic, I haven't gone to the..., to the social security clinic because clearly I'm...afraid to go...because the problem is too serious and, as you know, we are, I am vulnerable – Female, 51, teacher, income above BMS (Esmeraldas)	"El problema del COVID yo no he ido al dispensario, yo no he ido al…, al seguro porque claramente me da…recelo ir…porque el problema es demasiado serio y como usted sabe nosotros somos, yo soy vulnerable"
"So, I also think that... for safety reasons I am no longer going to the health centre because of this situation. You know that for safety reasons, entering a hospital is a bit... risky (...) I... go about... as it is, with... many precautions because one knows that one runs the risk of..., they say... I don't know, that we are vulnerable to..., that diabetics are vulnerable in this situation.... " – Male, 65, printing service worker, income below BMS (Quito)	"Entonces también pues yo creo que…por mayor seguridad yo ya no estoy yendo al centro de salud por esa situación. Usted sabe que por seguridad pues ahorita entrar a un hospital es un poco… riesgoso (...) yo… ando… como es, ya con… muchas precauciones porque uno sabe que uno corre riesgo de…, dicen pues no sé qué somos vulnerables a, a esta situación que estamos los diabéticos..."
"My husband is without pills for both diabetes and hypertension, so we are both taking the pills they gave me for me, that's why I'm not taking the whole medication, he doesn't have any for his hypertension, he's dying with a headache every day because his hypertension must have high blood pressure, and since the little we eat is the little we get from those that help us, then you	"Mi esposo está sin pastillas de diabetes ni hipertensión, entonces de las pastillas que me dieron a mi estamos tomando los dos, por eso yo no estoy bebiendo la medicación completa, él no tiene para la hipertensión todos los días se muere con el dolor de cabeza porque la hipertensión debe tener la tensión alta, y como lo que medio comemos es lo que medio conseguimos

can imagine, what else can we do (...) we are both taking [the medication] to at least protect us a little from something" – Female, 55, street vendor, income below BMS (Quito)	por ahí lo que nos ayudan, entonces se puede imaginar, que más se puede hacer (...) estamos bebiendo los dos para medio protegernos de algo pues"
"Those who are taking care of us are my children, they are giving us all the food, medicine and fruit, they are taking care of me at the moment" – Female, 52, unemployed, income below BMS (Quito)	"Lo que nos están cuidando son mis hijos ellos nos están dando la alimentación todo el medicamento la fruta ellos me están actualmente cuidando"
"I only [went to the health centre] when I had my medical appointment (..). Since then, I haven't gone at all, not at all, not at all, as we have a group chat [WhatsApp group] here in the health centre for the diabetic patient's club, we have also consulted there any concerns" – Male, 53, taxi driver, income below BMS (Quito)	"Solamente [acudí al centro de salud] cuando me toco la cita médica que tuve fui ahí, de ahí no, no me he ido para nada, para nada, para nada, como nosotros tenemos aquí un chat [grupo de WhatsApp] en el centro de salud del club de diabéticos, cualquier inquietud así por medio de eso hemos consultado también"
"I have a son who used to buy my pills but... now... they also cut his salary, he works at the C-C. So, he used to buy my pills and he got them for me... but now with the situation they cut his salary, they took away his overtime, everything so they are also...so no, it is not enough for him because he also has expenses (...) so I sometimes buy when I can, when I can't I don't!" – Male, 59, construction worker, income below BMS (Quito)	"Tengo un hijito que me sabe comprar las pastillas, pero… ahorita…él también le bajaron el sueldo, él trabaja en la C-C. Entonces él me sabía comprar las pastillas y me…me daba, pero ahorita con la situación ésta les bajó el sueldo les quitaron las horas extras, todo entonces están también…entonces no, no le alcanza también a él porque él también tiene gastos (...) entonces yo así de repente cuando puedo compro cuando no ¡No!"

Agradecimientos

Quisiera agradecer a todas las personas que dedicaron su tiempo para participar en la entrevista y contarnos su experiencia en esos momentos particularmente difíciles. Del mismo modo, este trabajo de investigación no hubiera sido posible sin el equipo de entrevistadoras, que sacaron adelante la realización de las entrevistas y su posterior transcripción.

También dar las gracias a mi tutora, Lucy Anne Parker por todo el apoyo recibido, y a todas las personas del grupo de investigación "Salud Global" por hacerme un hueco en el equipo y fomentar mi aprendizaje en el mundo de la Salud Pública y la Epidemiología durante estos años. Sin olvidar al equipo CEAD de Ecuador, tanto de la PUCE como de CECOMET, por colaborar tanto en la organización del estudio como en su análisis.