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RESEARCH ARTICLE

Achieving Sustainable and Equitable Consumption of Wild Meat

The impact of COVID-19 on public perceptions of wild meat in Central Africa

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Abstract

1. Wild meat is a significant source of food and income generation in Central Africa. However, there is little knowledge of how the assumed link between COVID-19 and wild meat consumption has been discussed by the media and received by the public.
2. In this study, we conducted media content analysis of 264 articles published in 2019–2020 related to wild meat consumption in the Democratic Republic of the Congo (DRC), Gabon and Republic of the Congo and carried out mobile phone surveys with 3644 respondents in Cameroon and DRC in 2021; among those who answered the area question, 912 respondents were from villages, 1166 from towns, and 1199 from cities. We found that COVID-19 increased media discussion of wild meat across all three countries since February 2020. Despite the dominant media discourse focussing on disease risk associated with wild meat (61%), over one-third of respondents considered domestically raised red meat as the riskiest meat. The theory that COVID-19 originated in laboratories was observed both in the media (10%) and among phone survey respondents (7% Cameroonian, 9% DRC respondents).
3. About half (47%) of Cameroonian respondents and one-third (38%) of DRC respondents reported a reduction in wild meat consumption in the surveyed period in 2021 with the most frequent reason being perceived risks of infectious disease. Conversely, some (3% Cameroonian, 32% DRC respondents) increased

their wild meat consumption mainly due to the reduced availability of other meats.

4. Our results suggest that COVID-19 brought increased media attention to wild meat consumption and changed public perceptions and stated consumption behaviours related to wild meat consumption in Central Africa. Bans on trading wild meat were widely discussed in the media as a potential policy response to COVID-19, but there was a lack of consensus among respondents that this would be the most appropriate policy: more than half of respondents did not support a ban on wild meat consumption. If policymakers wish to reduce wild meat consumption in Central African countries, trustworthy communication strategies and access to alternative food sources will be needed.

KEYWORDS
Bushmeat, Central Africa, COVID-19, policy, public perceptions, wild meat, wildlife management, wildmeat

1 | INTRODUCTION

The COVID-19 pandemic caused great social and economic harm globally (Srisawasdi et al., 2023; WHO, 2020). The assumed link between COVID-19 and wildlife (Ji et al., 2020; Lam et al., 2020) has catalysed a re-evaluation of society's relationship with nature, and led to debate about appropriate policies to reduce infectious disease risk, secure human health and conserve wildlife across the globe (Booth, Arias, et al., 2021; Booth, Clark, et al., 2021; NPC, 2020; Osofsky et al., 2023). Policies adopted based on the purported link between COVID-19 and wild meat vary between countries and regions, ranging from bans on consuming particular species such as pangolins (*Manidae* spp.) and bats in Gabon (Republique Gabonaise, 2020) to broader prohibitions on consuming wildlife in China (NPC, 2020).

The media has been an important channel for disseminating scientific information during health crises, and there has been a wealth of studies on scientific knowledge shared by the media and behaviour change among members of the public (Anwar et al., 2020; Ashe, 2013; Suldovsky, 2017), although effectiveness varies. During COVID-19, the media served as a reliable portal for communication of evidence—defined in the context of health reporting as information derived from research papers, expert opinions and other credible resources that support what is reported (El-Jardali et al., 2015)—between governments, health institutions and the public. In contrast, social media often spread misinformation about COVID-19 (Bridgman et al., 2020; Cuello-Garcia et al., 2020; Mheidly & Fares, 2020). However, the origins of COVID-19 remain uncertain, which poses a challenge for news media when reporting these scientific uncertainties, interpreting science accurately and promoting trustworthy sources. This is important because information presented in the media can impact policy agenda setting, public perceptions and disease prevention and control measures (Anwar et al., 2020; McCombs & Shaw, 1972; Ogbodo et al., 2020).

On the other hand, public responses to media information and government policy are not always passive; their decisions around disease prevention and wildlife use are influenced by their cultural, economic and social contexts as well as their lived experience (Enns et al., 2023; Lehner et al., 2021; Simo et al., 2024). Therefore, understanding public perceptions around wildlife use and COVID-19 is important to inform efforts to increase public understanding of the actual and potential health risks related to wildlife consumption, and to guide associated wildlife management policies, while recognising that these risks are not yet fully understood.

In Central Africa, wild meat—defined for this study as non-domesticated terrestrial wild mammals, birds, reptiles and amphibians (Nasi et al., 2008)—has been used as a source of food, medicine and income generation or exchange by rural communities throughout history (Abernethy et al., 2013; Ingram et al., 2021; Mbete et al., 2011; Milner-Gulland & Bennett, 2003). However, the growing human population and urban wealth have increased demand for wild meat in the region, leading to a rise in commercial trade in wildlife for consumption in urban centres, which now threatens many species in tropical forest ecosystems (Chausson et al., 2019; Wicander & Coad, 2018). The consumption of wild meat necessitates close contact with wild animals, the process of which may include hunting, transportation, sale of live animals, mixture of wildlife and domestic animals, and butchering; each of these activities may increase the risk of zoonotic disease transmission from wild animals to people (Hilderink & de Winter, 2021; Kock & Caceres-Escobar, 2022; Leroy et al., 2004). For example, taxa including primates (*Primates*) and bats (*Chiroptera*) are sold in wild meat markets and are known reservoirs of infectious diseases (Fa & Brown, 2009; Leroy et al., 2004). However, the public had mixed responses to previous infectious disease outbreaks related to wild meat, including Ebola; the idea that wild meat could be risky and that precautionary measures were needed was not well-received by some consumers (Bonwitt et al., 2018). Though the

wild meat trade fell to a low level and prices decreased during the Ebola crisis, including in Sierra Leone in 2016 (Bonwitt et al., 2018) and Nigeria in 2015 (Ogoanah, 2017), it rebounded after the crisis had passed.

Several studies have explored COVID-19's impact in urban areas, such as reduced wild meat availability in Nigeria (Funk et al., 2022), unchanged trade and consumption in Cameroon (Gaubert et al., 2024; Simo et al., 2024) and increased subsistence hunting in rural areas of Cameroon and Nigeria (Emogor et al., 2024; Tagne et al., 2022). Additionally, causal models of how wild meat markets respond during pandemics have been developed (Enns et al., 2023; McNamara et al., 2020). However, there is little understanding of how any presumed links between COVID-19 and wildlife consumption have been communicated to the public by media in the West and Central Africa region, and how people have perceived the risks. There also remains a lack of knowledge of how COVID-19 has affected wild meat harvest, use and trade in West and Central Africa at a larger scale across the region. Filling these knowledge gaps is crucial for understanding the dynamics of wild meat consumption and the underlying reasons for consumption, as well as for designing policies that address both wildlife conservation and public health. Here, we focussed on Central Africa because wild meat consumption is common in the region, including in both urban and rural areas (Abernethy et al., 2013), and all governments of the region are actively involved in developing policies for more sustainable management of the resource (COMIFAC, 2014). Moreover, international calls to ban commercial wildlife trade could have the most impact on livelihoods in this area, as people rely on wild meat for food and income generation (Abernethy et al., 2013; Ingram et al., 2021). We focussed on the pre-COVID-19 period and the first wave of COVID-19 in Central Africa, because this was when the pressure to reform laws was at its height, and we aimed to explore the context of the public discourse and factors affecting wild meat consumption decisions within the context which NGOs and governments were operating in at that time. We tested a set of hypotheses forming a hypothesised causal chain from media reporting through to behavioural change as shown in Figure 1: (i) the media (e.g. BBC and Jeune Afrique) carried out evidence-based reporting of the disease risks associated with wild meat (Hypothesis 1); (ii) the media was trusted by the public (Hypothesis 2); (iii) therefore, the public believed that wild meat carried a disease risk (Hypothesis 3); (iv) this risk perception influenced individual decision-making and behaviours regarding wild meat consumption (Hypothesis 4); and (v) the public supported the ban on wild meat consumption as a suitable policy response (Hypothesis 5) (Figure 1). This research is vital for informing policy decisions that balance public health, wildlife conservation and behavioural change practices in the region.

2 | METHODS

2.1 | Media content analysis

To evaluate the local, national and international media narratives on wild meat and zoonotic diseases, including COVID-19, we systematically collected articles (i.e. news stories) published in the digital media in either English or French from Democratic Republic of the Congo (DRC), Gabon and Republic of the Congo (RoC) media outlets, then across Africa and internationally, from 1 August 2019 to 31 October 2020. Thus, we collected articles pre-COVID-19 as well as during the initial stages of the pandemic. To identify relevant articles, we selected search terms in English and French based on expert knowledge; these terms are used to describe wild meat, such as 'bushmeat' and 'gibier', either formally or informally, in our study countries. We coupled these terms with those used to describe COVID-19 and other zoonotic diseases, such as 'COVID' and 'zoonose' (see Data S1 for the full list of terms).

We systematically searched for relevant articles using three online data sources. First, we searched the World Wide Web for articles published on the top 10 news websites in DRC, Gabon and RoC; the top 10 news websites were identified by using Alexa (a website popularity ranking system, now retired) and the number of Facebook followers as a proxy where Alexa did not track website usage (Data S2). Second, we searched the Global Database of Event, Language and Tone (GDELT), an open platform that monitors digital news media daily in over 100 languages (The GDELT Project, 2021 [https://www.gdeltproject.org]). Third, we searched the World Wide Web using Google's Advanced Search function. For each data source, we used the same English and French search terms and combinations, depending on the source's language. Our

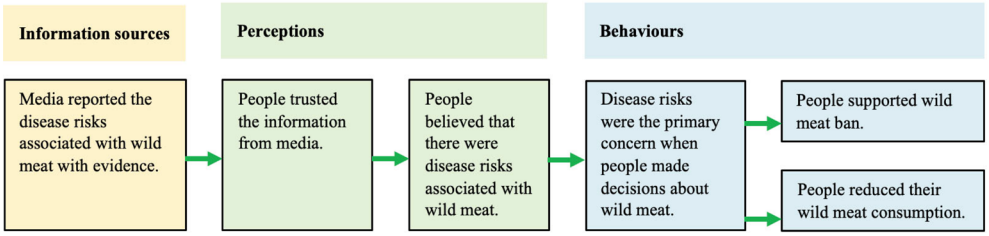

FIGURE 1 Hypothesised linkages tested in this study between information in the media, public perceptions and behaviours. The hypotheses are placed within a causal chain from content within information sources, public perceptions to behaviours.

relevance criteria were that articles must contain one or more wild meat *and* disease terms and must have been published within our study period (Data S1). We manually cross-referenced articles from all three sources to remove duplicates and subsequently categorised articles into three groups by their source: Those published by national news outlets in DRC, Gabon and RoC, those published by regional outlets in Africa, and those from international media outlets. All relevant articles were stored in Zotero (Zotero, 2022 [https://www.zotero.org]).

To enable analyses of media content in relation to the changing COVID-19 situation in each country, we also collected data on confirmed COVID-19 cases in DRC, Gabon and RoC from the World Health Organization (WHO, 2022b) from 1 January 2020 to 31 October 2020.

Following the searches, we analysed 264 relevant media articles in NVivo to investigate how issues related to wild meat and COVID-19 were presented and characterised over time and if the articles accurately reported the situation on the ground (NVivo, 2022). We used a content-driven and inductive coding approach (Guest et al., 2013), revising the coding structure during the coding process (code book in Data S3). Prior to coding, we randomly selected 6% of the articles (15 articles) and two members of our author team coded these articles independently. The agreement between coders was high (Cohen's Kappa $\kappa = 0.82$, Bernard et al., 2017). We then coded the remaining articles. Themes identified in the articles were categorised hierarchically into several higher level themes (Data S3).

2.2 | Mobile phone surveys

To understand the information sources trusted by the public, public perceptions of wild meat consumption and associated disease risks, and stated wild meat consumption behaviours, we conducted mobile phone surveys in Cameroon and DRC (RoC and Gabon were excluded due to cost constraints). We used the Sample Size Calculator from Calculator.net to determine a necessary sample size of 1067 respondents for each country, using a confidence level of 95%, a confidence interval of 3% and population estimates of 27 million (Cameroon) and 86 million (DRC) (Calculator.net, 2025).

The survey in DRC was implemented by Viamo (https://viamo.io/) using a pre-recorded and automated interactive voice response (IVR) approach, with respondents self-selecting their preferred language from French, Kikongo, Lingala, Swahili and Tshiluba. Respondents answered the questions by pressing the appropriate number on their phone keypad or providing a verbal response when indicated. Participants were recruited from Viamo's 3-2-1 database of users, who are members of the public seeking access to free and validated information on health, agriculture, finance and other topics (DigitalX, 2024). Viamo contacted users from this database with the intention of reaching a balanced distribution of genders and equal representation from across DRC's main geographic regions. These regions were artificially constructed by grouping nearby administrative provinces together to create six geographic regions (northeast, northwest, south, east, west, centre). An equal number of people in each region were contacted as much as the 3-2-1 database allowed, though there were more people registered for some regions than others. We piloted the IVR survey with five respondents for each language and received participant feedback before rolling out the survey with users of the 3-2-1 database. In DRC, the survey was undertaken between 18 June 2021 and 22 August 2021.

In Cameroon, the survey was conducted by GeoPoll (http://geopoll.com) via live telephone calls with respondents in either Pidgin English, French, Fang, Bulu, Foulbe, Bassa, Eton/Ewondo or Bamileke. Respondents spoke directly to an operator. GeoPoll sought to achieve a balanced gender distribution, but it was not possible to target potential respondents from different regions in advance. Instead, data were collected on administrative region during the interviews, but the large number of these made it hard to aim for regional balance. GeoPoll sent the first 600 responses for us to check before completing the full survey, and no problems were found. In Cameroon, data were collected from 25 May to 15 June 2021.

We aimed for 1500 responses in Cameroon and 2000 in DRC to allow for incomplete responses; the difference in survey target was because we expected a higher rate of complete responses using telephone calls compared to the automated service. We collected mobile phone coverage data and rural population percentage for both countries from the World Bank (World Bank, 2020, 2021a, 2021b) in order to understand the representativeness of the respondents as part of the population as a whole.

The same survey instrument (Table 1) was used in both countries, with some adaptations needed due to the different means of administering the questionnaire (Data S13). It comprised multiple choice questions on respondent demographics, trusted information sources, perceptions around wild meat and disease risk, wild meat consumption behaviours, and an open question on reasons for changed wild meat consumption, to which respondents provided a verbal response. The questions were not mandatory; therefore, the number of responses varied across questions. Respondents who completed the survey in full received USD 0.5 (Cameroon) and USD 1 (DRC) worth of mobile phone credit; levels were decided based on advice from experts and the companies implementing the surveys.

We used statistical models to test our hypotheses on whether demographic characteristics and perceptions were correlated with trust in media (Hypothesis 2), stated wild meat consumption frequency (Hypothesis 4), changes since COVID-19 (Hypothesis 4) and support for a proposed wild meat ban (Hypothesis 5). We used R version 4.1.2, along with 'stats' (R Core Team, 2021) and 'stargazer' (Hlavac, 2018) packages in RStudio (2021.09.1), to run generalised linear models (GLMs) with a binomial family and logit link function (R Core Team, 2021). Prior to the analysis, all variables passed Cramer's *V* test for covariance, which was calculated using the DescTools package

TABLE 1 Phone survey questions in both countries, which comprised multiple choice questions and one open verbal response question.

	Question	DRC	Cameroon
1	What is your age?	1 = Under 18 2 = 18–24 3 = 25–34 4 = 35–44 5 = More than 45 0 = Repeat the question	What is your age? (Record the age in years)
2	What is your gender?	(In Q16)	1 = Woman 2 = Man 3 = Prefer not to say
3	Currently, which province does your household reside in?	1 = Region Centre 2 = Region East 3 = Region Northeast 4 = Region Northwest 5 = Region South 6 = Region West (These regions were artificially constructed by grouping nearby administrative provinces together to create six geographic regions. The original province data was based on existing records in the Viamo database.)	1 = Adamawa 2 = Central 3 = East 4 = Far-north 5 = Littoral 6 = North 7 = North-west 8 = South 9 = South-west 10 = West 11 = Don't know 12 = Refused
4	In what type of area do you live?	1 = Village 2 = Medium-sized town 3 = Big City 0 = Repeat the question	1 = Village/Rural 2 = Medium-sized town 3 = Big city 4 = Don't know 5 = Refused
5	How often do you consume wild meat?	1 = Daily 2 = Weekly 3 = Monthly 4 = A few times a year 5 = Never 0 = Repeat the question	1 = Daily 2 = Weekly 3 = Monthly 4 = A few times a year 5 = You never consume bushmeat 6 = Don't know 7 = Refused
6	What is your most important reason for eating wild meat? (Conditional questions based on the answer to Q4, only participants that answer 1–4 to Q5.)	1 = It is healthy and nutritious 2 = It tastes good 3 = It is easily available 4 = It is for special occasions (e.g. a wedding) 5 = It is traditional 6 = None of the above 0 = Repeat the question	1 = It is healthy and nutritious 2 = It tastes good 3 = It is easily available 4 = It is for special occasions (e.g. a wedding) 5 = It is traditional 6 = None of the above 7 = Don't know 8 = Refused
7	Which of the following foods do you think has the highest risk of disease to humans?	1 = Red meat such as pork/beef/sheep and goat 2 = Poultry 3 = Wild meat 4 = Fish 5 = You think red meat/poultry/bushmeat and fish all have the same risks 6 = None of the above 0 = Repeat the question	1 = Red meat such as pork/beef/sheep and goat 2 = Poultry 3 = Wild Meat 4 = Fish 5 = You think red meat/poultry/bushmeat and fish all have the same risks 6 = None of the above 7 = Don't know 8 = Refused
8	Do you think that humans might catch new infectious diseases from bushmeat?	1 = Yes 2 = No 3 = Don't know 0 = Repeat the question	1 = Yes 2 = No 3 = Don't know 4 = Refused

(Continues)

TABLE 1 (Continued)

	Question	DRC	Cameroon
9	Who do you trust the most when getting information about disease risks associated with meat?	1 = Meat sellers 2 = Friends and family 3 = Government 4 = NGOs 5 = Journalists 6 = None of the above 0 = Repeat the question	1 = Meat sellers 2 = Friends and family 3 = Government 4 = NGOs 5 = Journalists 6 = None of the above 7 = Don't know 8 = Refused
10	Has the Covid-19 pandemic affected how often you want to eat wild meat?	1 = You eat bushmeat less now than before the Covid-19 pandemic 2 = You eat bushmeat more now than before the Covid-19 pandemic 3 = You eat bushmeat the same now as before the Covid-19 pandemic 0 = Repeat the question	1 = You eat bushmeat less now than before the Covid-19 pandemic 2 = You eat bushmeat more now than before the Covid-19 pandemic 3 = You eat bushmeat the same now as before the Covid-19 pandemic 4 = Don't know 5 = Refused
10a	Why has the Covid-19 pandemic affected how often you eat bushmeat? (Eat less)	Single selection: 1 = You eat less bushmeat because of a perceived infectious disease risk 2 = You eat less bushmeat because it is now less available 3 = You eat less bushmeat because it now costs more 0 = Repeat the question	Multiple selection: 1 = You eat less bushmeat because of a perceived infectious disease risk 2 = You eat less bushmeat because it is now less available 3 = You eat less bushmeat because it now costs more 4 = None of the above 5 = Don't know 6 = Refused
10b	Why has the Covid-19 pandemic affected how often you eat bushmeat? (Eat more)	Single selection 1 = You eat more bushmeat now because other meats are less available 2 = You eat more bushmeat now because other meats cost more 3 = None of the above 0 = Repeat the question	Multiple selection: 1 = You eat more bushmeat now because other meats are less available 2 = You eat more bushmeat now because other meats cost more 3 = None of the above 4 = Don't know 5 = Refused
11	How likely do you think it is that the COVID-19 virus originated from a wild meat market?	1 = Yes 2 = No 3 = Don't know 0 = Repeat the question	1 = Yes 2 = No 3 = Don't know 4 = Refused
12	Some people have said that wild animals should not be sold for food in urban markets to stop a future outbreak of a new infectious disease. Do you agree?	1 = Yes 2 = No 3 = Don't know 0 = Repeat the question	1 = Yes 2 = No 3 = Don't know 4 = Refused
13	Free response to Q12	(In Q17)	In a few words, please explain why you agree / do not agree. Free response
14	How much do you spend on food for your household each day?	1 = <5000 Congolese francs 2 = 5000–10,000 Congolese francs 3 = >10,000 Congolese francs 4 = Prefer not to say 0 = Repeat the question	1 = 1–2500 CFA 2 = 2501–5000 CFA 3 = 5001–7500 CFA 4 = 7501–10,000 CFA 5 = More than 10,000 CFA 6 = Prefer not to say 7 = Don't know 8 = Refused

TABLE 1 (Continued)

	Question	DRC	Cameroon
15	Which is the highest level of education you received?	1 = Primary school 2 = Secondary school 3 = University 4 = You didn't go to school 5 = Prefer not to say 0 = Repeat the question	1 = Primary school 2 = Secondary school 3 = University 4 = You didn't go to school 5 = Prefer not to say 6 = Don't know 7 = Refused
16	What is your gender?	1 = Woman 2 = Man 3 = Prefer not to say 0 = Repeat the question	(In Q2)
17	Free response to Q12	In a few words, please explain why you agree, or not, and the reasons why? Free response (If answered 1 or 2 for question 11)	(In Q13)

Note: The survey in DRC was automated while the survey in Cameroon was administered by an operator. Slight variation in the wording of some questions was to ensure understanding and to facilitate automation of the survey in DRC.

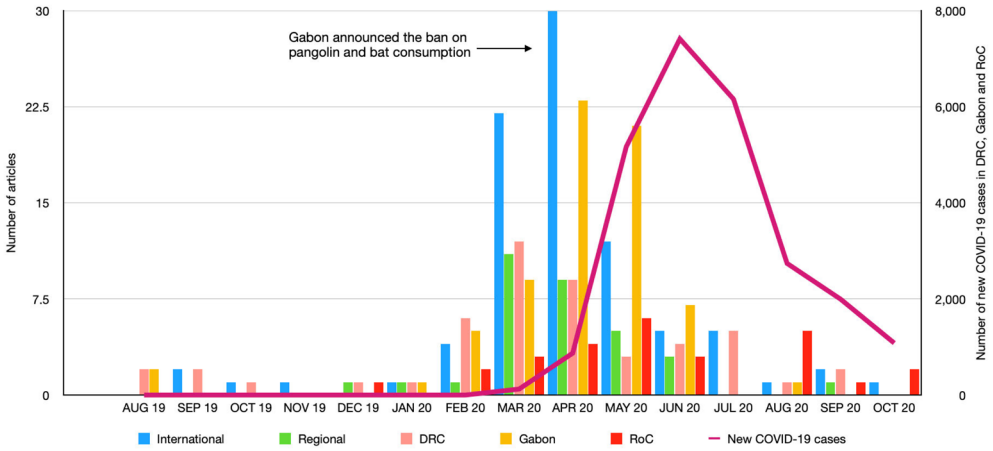

FIGURE 2 Publication timeline for articles published in DRC, Gabon and RoC and by regional and international media discussing zoonotic diseases and wildlife (*Y*-axis on the left), alongside confirmed COVID-19 cases in DRC, Gabon and RoC from August 2019 to October 2020 (*Y*-axis on the right) (WHO, 2022b). Bars represent the number of articles and the line represents the number of confirmed COVID-19 cases.

in RStudio (Signorell et al., 2021) and no two variables had a value of >0.50. We manually translated verbal responses to the open-ended question into French or English, and analysed the results qualitatively in MS Excel by identifying and grouping responses by the key themes related to wild meat consumption and disease risks (Bernard et al., 2017).

2.3 | Ethics approval and research permit

Research ethics clearance was provided by the University of Oxford (R70841/RE001) and the Wildlife Conservation Society (20-52/20-55). An oral script was played before the survey questions to gain consent from the participants (Data S13). Research permission is held ex officio by the co-authors from the national institutions concerned.

3 | RESULTS

3.1 | Data overview

3.1.1 | Media content analysis

Of the 264 articles meeting our search criteria, 49 were from DRC, 69 from Gabon, 27 from RoC, and 119 articles were from international outlets (e.g. the BBC, including 32 from regional outlets in Africa) (Figure 2). Before March 2020, Ebola was the most frequently discussed disease in the media ($n = 12$), with primates ($n = 19$) and bats ($n = 18$) being the most frequently mentioned groups of animals that were consumed as wild meat and sources of the transmission of Ebola to humans across the whole dataset. However, over two-thirds (68%) of all articles were published

between March and May 2020 (Figure 2). The first articles discussing COVID-19 and wildlife consumption appeared in February, after the pandemic was recognised globally but before the first wave of cases in DRC, Gabon and RoC, which increased in April and peaked in June 2020 (Figure 2). Among our focal countries, Gabonese outlets published the most articles, despite DRC being the country with the most news outlets (RSF, 2022); Gabon also received the most coverage from international (63%, $N = 87$) and regional (75%, $N = 32$) news outlets because of its wildlife management policies in response to COVID-19, including the ban on the consumption of bats and pangolins.

3.1.2 | Mobile phone surveys

We received 1500 completed responses from Cameroon and 2144 from DRC (see Data S4 for demographic characteristics of respondents), including 1050 open question responses from Cameroon and 195 from DRC. Respondents were predominantly young, with 75% of Cameroon and 87% of DRC aged between 18 and 35 years old. This corresponds with the two countries' overall age distribution, with >50% of the population aged between 18 and 35 in 2020 (PopulationPyramid, 2020). Male respondents were the majority: 89% in DRC and 64% in Cameroon. In DRC, respondent distribution was balanced between rural (45%) and urban areas (55%, including big cities and towns); the country overall has 54% of its population living in rural areas (World Bank, 2021b); in Cameroon, 93% of respondents resided in urban areas and only 7% in rural areas; for context, 42% of Cameroon's overall population lives in rural areas (World Bank, 2021a). Education-wise, 58% of DRC respondents had high school education and 21% had attended university, whereas in Cameroon, the majority (65%) had a university education. Therefore, our sample was somewhat biased towards male, urban, educated respondents, especially towards urban dwellers in Cameroon and men in DRC. Such bias is important to recognise when intending to generalise the interpretation of our results.

> **Hypothesis 1.** The media reported the disease risks associated with wild meat with evidence.

In the media, COVID-19 was the most frequently mentioned infectious disease in our analysed articles ($n = 208/264$), followed by Ebola ($n = 111$), SARS (Severe Acute Respiratory Syndrome) ($n = 51$), AIDS (Acquired Immune Deficiency Syndrome) ($n = 29$) and MERS (Middle East Respiratory Syndrome) ($n = 18$) (Table 2). Since the emergence of COVID-19 cases in Central Africa in March 2020 (WHO, 2022b), COVID-19 dominated the media discussion. Among 92 articles that addressed wild meat and zoonotic risks, 56 articles (30 national, 4 regional and 22 international articles), including 24 published in DRC, highlighted disease risks associated with wild meat. The majority of these (45 out of 56) were published between April and May 2020, and fewer articles discussed the issue at other times, with <3 articles mentioning it each month.

The origins of COVID-19 emerged as a frequently discussed theme in media articles ($n = 166$), but how evidence and scientific uncertainties were presented in these articles were varied. Fifty-three articles discussed the link between COVID-19 and the wet market in Wuhan, China, where the virus was detected in December 2019. Among these, 35 (66%) stated that COVID-19 categorically originated from a wet market or the Wuhan market, while 18 (34%) took a more cautious tone, for example 'the first cases appeared in Wuhan market'. Three species or groups were suspected of transmitting COVID-19 to humans according to the articles, including pangolins ($n = 135$), bats ($n = 111$) and snakes

TABLE 2 Examples of diseases mentioned in articles and their association with wildlife.

Infectious diseases	Examples
COVID-19 Appeared in 208 articles	'The wet markets are certainly linked with COVID-19…' (DRC)
Ebola Appeared in 111 articles	'…bats were probably the source of the outbreak, but it could have been transmitted to humans through people eating mammals infected with the virus, such as bonobos…' (International) 'Ebola virus, which killed some 11,000 people in West Africa between 2014 and 2016, is believed to have come from people eating bushmeat, such as monkeys and bats'. (International)
SARS Appeared in 51 articles	'The SARS epidemic was mainly caused by a coronavirus, with civet being the intermediate host. Chinese prefer the meat of the civet…' (DRC) 'SARS is associated with bats and civets…' (Regional)
HIV Appeared in 29 articles	'Ebola, Covid-19, SARS, AIDS, all these viruses thrived in wild animals before crossing the species barrier'. (Gabon) 'In the 1920s, when HIV is thought to have emerged in what is now the Democratic Republic of the Congo, scientists believe transmission to humans could have been caused by a bushmeat hunter cutting themselves while butchering a chimpanzee'. (International)

(*Serpentes*) ($n=4$). The theory that COVID-19 originated in a laboratory was discussed ($n=16$); 14 articles specifically mentioned Chinese or US laboratories. Another nine articles presented opinions that refuted this suggestion; seven articles reported both sides of this argument.

Regarding information sources of COVID-19 origins cited by the media articles, academia was the primary source cited ($n=103$), followed by government spokespeople ($n=18$), other media (e.g. Agence France-Presse) ($n=14$), NGOs ($n=9$) and the World Health Organization ($n=8$). Other stakeholders, including hunters ($n=4$), wild meat consumers ($n=2$) and a wild meat supplier ($n=1$), also appeared in articles. The quoted wild meat supplier and consumers all held the opinion that the risk of contracting COVID-19 or other infectious diseases from wild meat is low; and a statement from a Gabonese pangolin seller that 'we eat pangolins all the time and we never get disease' appeared relatively often in regional ($n=5$) and international media articles ($n=6$).

Not every statement in the media about the origin of COVID-19 was linked to an evidence source. For example, statements such as 'the virus came from Chinese labs' or 'the virus was first introduced by Americans', were quoted as views of diplomats from the US, UK, China, or the Philippines (29 national articles, 4 international articles, Data S5). Seven articles stated that the Wuhan market sold pangolins or bats but did not present supporting evidence.

Similarly, reports on the impact of COVID-19 on wild meat consumption varied in their selection and presentation of evidence. In total, 33 articles mentioned that the COVID-19 pandemic had reduced wild meat consumption—14 were published by international media outlets, 11 by regional outlets in Africa and 8 by national outlets. However, 32 of these 33 articles focussed on Gabon, and all used the statement that Chinese consumers no longer purchased pangolin meat in Gabonese markets. The change in wild meat consumption among local people was rarely discussed. Only one article in DRC quoted an expert interview saying that COVID-19 would contribute to a decrease in consumption of wild meat among the youth in big cities, as wild meat had already become less favoured compared to Western food. The same interview included the opinion that there had been an increase in wild meat consumption among rural villagers due to food shortages caused by transportation restrictions. Two international media articles suggested that COVID-19 could increase wild meat hunting and consumption, because of the increased price of other meat.

Hypothesis 2. People trusted the information from media.

Trusted information sources on disease risks associated with meat differed between Cameroon and DRC respondents, with respondents generally favouring information sources other than journalists. In DRC, friends and family (34%, total $N=1852$), government (21%) and meat sellers (20%) were the most frequently reported trusted information sources, whereas in Cameroon the top trusted sources of information were government (31%, $N=1492$) and NGOs (22%) (Figure 3). Journalists were not among the top trusted information sources in both countries, and according to our GLMs, in DRC, only those respondents who consumed wild meat less frequently and had more money to spend on food, were more likely to trust the media (Data S6).

Hypothesis 3. People believed that there were disease risks associated with wild meat.

While in the media articles, the dominant discourses were that 'COVID-19 originated from a wild meat market' and 'wild meat has disease risks', survey respondents had different perceptions. When asked 'do you believe that COVID-19 originated in a wild meat

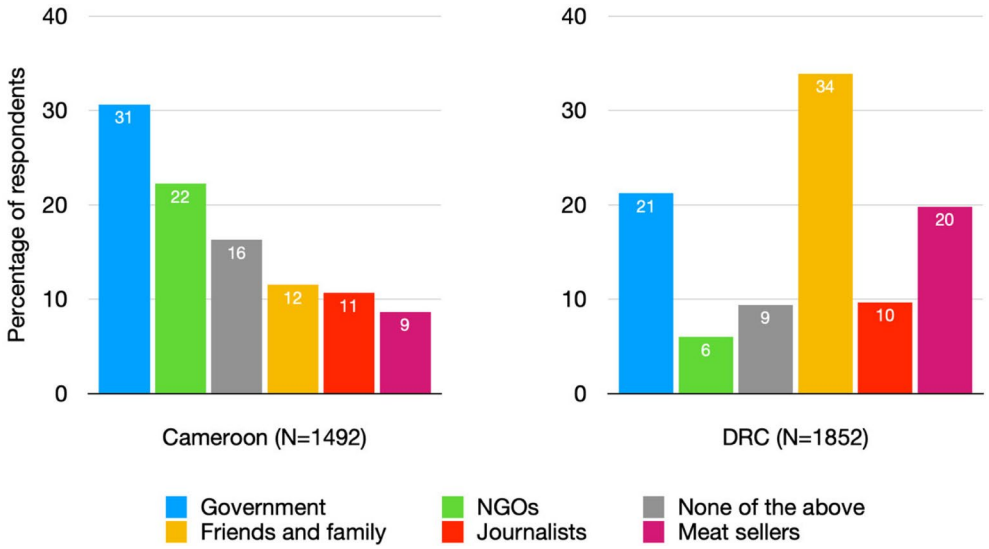

FIGURE 3 Percentage of respondents who selected particular information sources as trusted in the mobile phone surveys in Cameroon and DRC.

market', 64% of the Cameroonian respondents ($N = 1489$) selected 'no'; 17% selected "yes" and 19% did not know. In DRC, on the other hand, 37% believed that COVID-19 had originated in a wild meat market ($N = 1886$), while 24% selected 'no', and 39% did not know (Data S7).

Respondents in both countries (Cameroon: 36%, $N = 1379$, DRC: 51%, $N = 1586$) selected domestic red meat as the type of meat most likely to transmit diseases and ranked wild meat second (26% and 29% of respondents in DRC and Cameroon, respectively). Few respondents chose poultry or fish as the food with the highest disease risk (Data S8).

Despite the statement that 'humans might catch new infectious diseases from wild meat' being widely reported by media outlets in DRC ($n = 24$), around half of the DRC respondents (48%, $N = 1780$) agreed with the statement, 16% disagreed, and the rest said they did not know. In Cameroon, the majority of respondents (73%, $N = 1495$) agreed with the statement, 18% disagreed and 9% did not know.

Hypothesis 4. Disease risks were the primary concern when people made decisions about wild meat.

Before COVID-19, wild meat consumption was common: 73% of respondents in DRC and 81% in Cameroon reported consuming wild meat, but the frequency varied by country (Data S9). More than half of the Cameroonian respondents, no matter whether they lived in rural villages, medium-sized towns or big cities, stated that they only consumed wild meat a few times a year. In contrast, 59% of the DRC respondents reported consuming wild meat monthly or more frequently.

According to our GLMs, among Cameroonian respondents living in big cities and towns, women consumed wild meat less frequently than men. In DRC, urban respondents over the age of 25 consumed wild meat less frequently than those aged 18–24 (Data S10). No demographic variable was significant in explaining wild meat consumption frequency for rural village respondents in either country (Data S10).

The influence of the COVID-19 pandemic on the wild meat consumption behaviour of respondents was mixed. When selected from the statements provided ('consumed less', 'more' or 'the same'), half (47%, $N = 1257$) of the Cameroonian respondents reported reducing their wild meat consumption, 50% stated that their consumption of wild meat had remained the same, and 3% reported an increase in their wild meat consumption. In DRC, the change in consumption due to COVID-19 was more balanced ($N = 1608$); 38% of respondents had increased, 32% decreased their frequency of wild meat consumption, and others remained the same.

'Perceived infectious disease risk' was the primary reason selected by respondents in both countries to explain reduced wild meat consumption, compared to other statements provided; followed by 'wild meat less available' and that 'wild meat costs more' (Figure 4). When comparing respondents living in cities, towns and villages, the ranking of the reasons remained the same, except for rural Cameroonian respondents, among whom 'wild meat becoming less available' was the primary reason (Data S11).

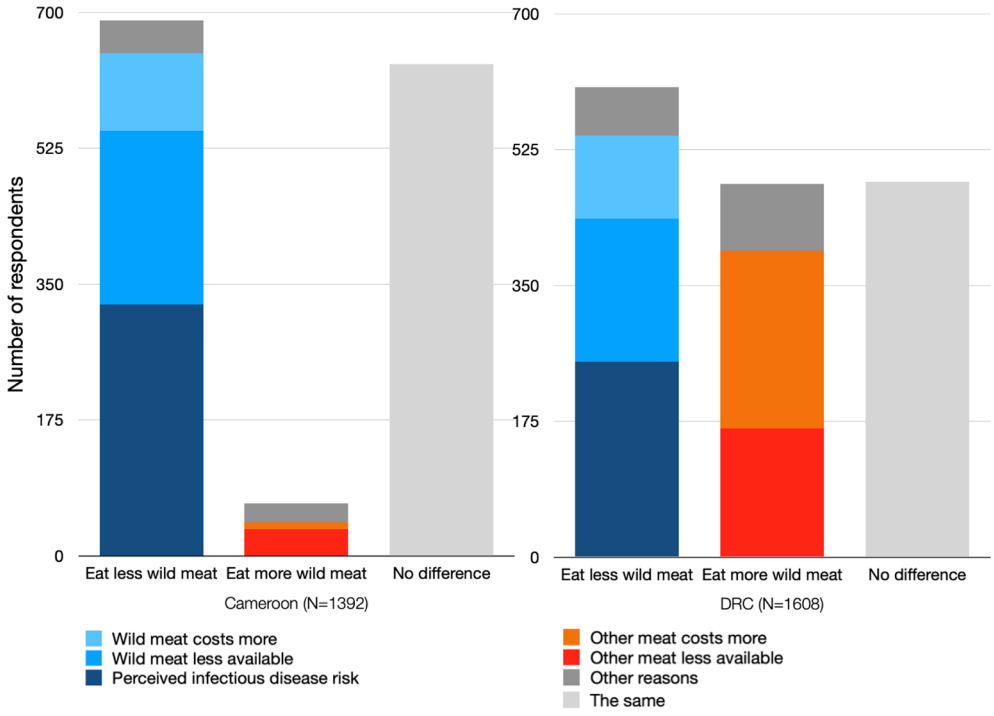

FIGURE 4 Reasons why respondents had increased or decreased wild meat consumption due to COVID-19 in Cameroon and DRC. In this question, the Cameroon survey allowed respondents to choose multiple statements while DRC survey respondents could only choose one statement. Therefore, the total responses in Cameroon ($N = 1392$) exceeded the number of respondents who selected from the three statements ($N = 1257$).

The primary reason selected for increased wild meat consumption differed between Cameroon and DRC. Cameroonian respondents chose 'other type of meat was less available' as the top reason, regardless of whether they were urban or rural dwellers. On the other hand, DRC respondents, regardless of where they lived, ranked 'other types of meat cost more' as the primary reason; the percentage of respondents who chose this reason increased from city (42%, $N = 36$) to towns (44%, $N = 190$) and then rural villages (51%, $N = 196$).

According to our GLMs, a range of factors, including demographic variables and respondents' perceptions, were associated with the likelihood of stated change in wild meat consumption due to COVID-19 (Table 3). In both countries, respondents who believed that there were disease risks associated with wild meat were less likely to increase their wild meat consumption during COVID-19, compared to those who did not believe this. In Cameroon, respondents who had previously consumed wild meat less frequently, for example a few times a year or monthly, were more likely to increase wild meat consumption during COVID-19, mainly due to other meats being less available. Regarding DRC respondents, those living in big cities were more likely to increase their wild meat consumption compared to those in rural areas. Other factors, such as the amount of money spent on food or trust in the media, did not have statistical significance.

Hypothesis 5. People supported the wild meat ban due to the perceived disease risks.

Whether or not to ban the consumption of wild meat in response to COVID-19 was a frequently discussed theme in the media.

TABLE 3 Generalised linear model for the association of increased wild meat consumption frequency due to COVID-19 with demographic factors and factors hypothesised to influence consumption decisions.

		Cameroon, $N = 1187$	DRC, $N = 885$
Origin	*Reference: COVID-19 not from wild meat market*		
	COVID-19 from a wild meat market	−0.216 (−0.542, 0.109)	−0.173 (−0.525, 0.178)
	Don't know	0.025 (−0.313, 0.364)	0.013 (−0.377, 0.403)
Disease	*Reference: No disease risk from wild meat*		
	Disease risk from wild meat	**−0.813*** (−1.128, −0.498)**	**−0.463** (−0.863, −0.063)**
	Don't know	−0.279 (−0.822, 0.263)	0.014 (−0.426, 0.454)
Consumption frequency	*Reference: Consumed monthly*		
	Never consumed wild meat	**0.977*** (0.436, 1.518)**	/
	A few times a year	**0.317* (−0.008, 0.641)**	0.167 (−0.255, 0.588)
	Weekly	0.168 (−0.300, 0.637)	0.214 (−0.161, 0.588)
	Daily	0.584 (−0.474, 1.643)	−0.261 (−0.666, 0.144)
Education	*Reference: Secondary school*		
	Did not attend school	1.698 (−0.468, 3.863)	0.299 (−0.526, 1.124)
	Primary school	0.227 (−0.475, 0.928)	−0.293 (−0.657, 0.070)
	University	**0.277** (0.011, 0.543)**	0.101 (−0.267, 0.469)
Spending on food per day	*Reference: Spend less than 5000 Congolese francs or 2500 CFA*		
	5001–10,000 Congolese francs or 2501–5000 CFA	0.099 (−0.161, 0.358)	0.097 (−0.208, 0.403)
	More than 10,001 Congolese francs or 5001 CFA	0.040 (−0.356, 0.437)	−0.044 (−0.497, 0.410)
Area	*Reference: Rural*		
	Medium-sized town	**0.440* (−0.066, 0.946)**	0.113 (−0.189, 0.415)
	Big city	0.093 (−0.386, 0.573)	**0.493* (−0.012, 0.999)**
Gender	*Reference: Male*		
	Female	0.051 (−0.202, 0.305)	−0.221 (−0.678, 0.237)
Age	*Reference:18–24*		
	25–34	**0.331** (0.030, 0.631)**	0.132 (−0.209, 0.473)
	35+	**0.657*** (0.305, 1.009)**	−0.093 (−0.531, 0.345)
Media	*Reference: Not trust media*		
	Trust media	0.100 (−0.275, 0.474)	−0.114 (−0.703, 0.474)
	Constant	−0.344 (−0.987, 0.300)	0.569** (0.050, 1.088)

Note: Family of distribution: Binomial. ***, ** and * represent statistical significance ($p < 0.001$, $p < 0.01$ and $p < 0.05$ respectively). Text in bold indicates variables with statistical significance. Numbers in brackets are 2.5% and 97.5% confidence intervals.

Gabon's ban on the consumption of pangolins and bats was widely reported in the country ($n=43$ articles), by regional media outlets across Africa (n = 18) and international media outlets ($n=19$). The ban was implemented on the basis that pangolins and bats could be potential hosts of COVID-19, as reported by the media using quotations from scientific publications, although the link was not well supported at the time. Articles also mentioned this type of measure in DRC ($n=1$) and Gabon ($n=27$) in response to Ebola. The article relating to DRC discussed that although there was a previous ban, wild meat was still a popular dish and an important source of nutrition for the public. The previous Gabonese ban, which focused on primates, was mentioned by the Minister of the Environment as an example of banning the consumption of highly infectious disease risk taxa, in the announcement on the ban relating to the consumption of bats and pangolins (France24, 2020). While these 43 articles discussed a ban on wild meat as a policy option, another 35 articles, the majority of which were from international outlets, presented clear opinions about these measures. Twenty articles, including 12 international (14% of all international articles), 3 regional, 2 DRC and 3 Gabon articles, included opinions which supported banning wildlife markets nationally and internationally. Such articles reflected the positions of international NGOs (e.g. the Wildlife Conservation Society [WCS, 2020]), with stated aims of reducing disease risks and simultaneously conserving wildlife. Conversely, 15 articles presented reasons against a ban, including concerns that bans would not be effective, could be negative for conservation (e.g. by pushing trade underground), and could be harmful to food security due to the lack of alternative protein sources. Forty-nine articles also called for more comprehensive policies, including providing alternative protein sources ($n=4$), reducing contact with wild animals ($n=18$), implementing outreach programs ($n=9$), and more fundamentally, stopping deforestation ($n=35$).

Though no particular policies relating to wild meat markets were implemented in DRC and Cameroon in response to COVID-19, mobile phone survey respondents had distinct views on whether policies such as bans on the consumption of wild meat would be supported. In Cameroon, slightly fewer respondents favoured a ban (43%, $N=1488$) than were against it (47%). In DRC, a similar proportion of people supported the ban (49%, $N=1840$), but far fewer people opposed the idea (19%), and the rest chose 'I don't know' (32%).

According to GLMs, compared to the reference level, respondents in both countries were more likely to support the idea of a wild meat consumption ban if they believed or were unsure about the statement that 'COVID-19 came from a wild meat market', and believed that 'there was disease risk associated with wild meat', compared to those who did not believe these statements (Data S12). Cameroonian respondents who never consumed wild meat, and those who lived in towns and cities, were more likely to support the ban. DRC respondents who spent 5001–10,000 Congolese francs (2.5–5 US dollars, 31% of the respondents) on food per day, were less likely to support the ban compared to those who spent less money on food (44% of the respondents).

Respondents offered their reasons for supporting a ban on the consumption of wild meat, or not, through free responses. The disease risks, whether it was COVID-19 or other diseases, were the main reason for supporting a ban in both countries (67%, $N=664$). The second most popular reason for supporting a ban was 'the lack of proper handling of wild meat in the market and at home' (26%, $N=664$), which may also be indirectly linked to disease risk (Table 4). Forty-eight Cameroonian respondents (10%, $N=503$) also stated 'wildlife conservation' as another reason to ban wild meat trade; no respondents in DRC provided this response.

Among those who were against the ban, 'little disease risk from wild meat' was the most popular response in both countries (55%, $N=581$). Thirty-seven Cameroonian respondents (7%, $N=547$) and three respondents in DRC (9%, $N=34$) argued that COVID-19 was not transmitted by wild meat but was created in a laboratory or 'brought by white people'. Seventeen Cameroonian respondents (3%, $N=547$) mentioned that banning wild meat to reduce disease risks was not reasonable, as livestock could also transmit infectious diseases. Around 15% of respondents in both countries suggested that instead of banning wild meat, better management of wild meat markets and proper cooking would be more useful in reducing disease risks. Another important reason for 19% of Cameroonian and 18% of DRC respondents being against the ban was that people relied on wild meat for income and food, therefore the ban would pose a severe threat to livelihoods. Five per cent of Cameroonian respondents who were against the ban also mentioned that wild meat was natural and better than other types of meat.

4 | DISCUSSION

In this study, we examined a series of hypotheses about the relationship between information dissemination, trusted information sources, public perceptions, stated consumption behaviours of wild meat and support for wild meat bans in Central Africa using media content analysis and mobile phone surveys (Figure 5). Our results showed that even though infectious disease risks associated with wild meat were the main subject of discourse in the media, the situation on the ground was more complicated, with people's perceptions influenced by their personal experience as well as price and availability of wild meat and other meat. This meant that the stated change in wild meat consumption in response to COVID-19 differed between the two countries and between respondent groups. We start by discussing the implications of our results related to media communication and how this affects public perceptions around wild meat, before going on to discuss wild meat consumption behaviours and the policy implications of our findings.

4.1 | Media coverage of wild meat and disease risks

COVID-19 received a high level of media coverage, globally and within Central Africa (Ogbodo et al., 2020). Given this experience,

TABLE 4 Examples of reasons for supporting or being opposed to a ban on the consumption of wild meat from respondents in Cameroon and DRC.

	Reasons	Detailed description
Support the ban Cameroon (503 respondents provided reasons, 33% of all respondents) DRC (161 respondents provided reasons, 9% of all respondents)	*COVID-19 from wild meat* Cameroon $n=32$; DRC $n=46$	Wild animals transmit COVID-19 and infectious diseases, that is why they need to be banned
	General disease risks Cameroon $n=268$; DRC $n=96$	The sale of the dangerous wild animals brings diseases
	Lack of management or proper cooking Cameroon $n=155$; DRC $n=19$	Wild meat doesn't go through any tests before consumption
	Wildlife conservation Cameroon $n=48$; DRC $n=0$	To protect the animals
Against the ban Cameroon (547 respondents provided reasons, 37% of all respondents) DRC (34 respondents provided reasons. 2% of all respondents)	*The ban won't be effective* Cameroon $n=19$; DRC $n=0$	Because it will change nothing
	Wild meat has no or little disease risk Cameroon $n=296$; DRC $n=23$	Wild meat causes no disease COVID-19 is brought to us by white people COVID-19 does not come from wild meat but from the lab
	Livestock is as risky as wild meat Cameroon $n=17$; DRC $n=0$	Infectious diseases can pass through both domestic and wild animals
	Wild meat needs to be managed and cooked well Cameroon $n=80$; DRC $n=5$	The market needs to be managed well Because the virus cannot survive 100% heat
	People rely on wild meat for income and food Cameroon $n=106$; DRC $n=6$	Wild meat is a source of some people's income We eat wild meat because there is no other food. We have no other choice, the disease, we see that it exists
	Wild meat is natural and better Cameroon $n=29$; DRC $n=0$	Because it's good meat

a pertinent question is how and what to communicate to the public in future situations. The number of relevant media articles in our focal countries increased sharply from March 2020 and this reporting peak took place prior to the actual COVID-19 outbreak. Disease risks associated with wildlife dominated the media discussion. Given this focus and the early reporting, there was more time for relevant information to be communicated via media reporting than other countries had.

During health crises such as COVID-19, the media is crucial for circulating updated information regarding the disease, scientific findings and health advice, and has the potential to influence public attention and behaviours which can curtail the spread of disease (Anwar et al., 2020; Fleerackers et al., 2022; Yan et al., 2020). Research conducted after the peak outbreak of COVID-19 in Cameroon also found that, traditional media (e.g. television, radio and newspapers) was viewed as more trustworthy than social media (Simo et al., 2024). However, we found that, though academia, government and the WHO were frequently cited as the information sources underpinning media reports, suggesting the information was reliable, there was still space for improvements with regard to evidence-based reporting. A common statement in the articles was that the Wuhan market sold pangolins and bats. While there was scientific evidence suggesting that bats and pangolins could be hosts for COVID-19, the link was not clearly supported, and there is no evidence that these species were being sold in the Wuhan market (Xiao et al., 2021). Some information had also lost its original meaning in transit, especially when regional media were quoting international sources. For example, several articles cited the Agence France-Presse as a source and stated that the wild meat trade in pangolins had declined in Gabon since the pandemic. However, the articles failed to mention that the original context for fears about COVID-19 transmission related to Chinese consumption, not local Gabonese consumption (e.g. Le Temps, 2020). Furthermore, reports stating that COVID-19 originated from laboratories in China or the US did not present any scientific evidence; this raised concerns that the politicisation of the pandemic's origins could divert the public's attention to blaming certain countries instead of taking preventive measures at home (Anwar et al., 2020; Ogbodo et al., 2020).

In an independent free press, the media will always seek out newsworthy stories, which may not take the line that public health authorities would desire. Other entities (e.g. government ministries) have the responsibility to put out appropriate and evidence-based public health messaging. However, it is important to recognise that the media can initiate and amplify the spread of untrustworthy information. Therefore, it would be worth governments, NGOs and academics having regular dialogues with media organisations about the importance of evidence-based reporting in public health crises.

4.2 | Understanding public perceptions with mobile phone surveys

Despite the general perception that media is powerful in influencing public opinions and behaviours (Anwar et al., 2020; Mheidly &

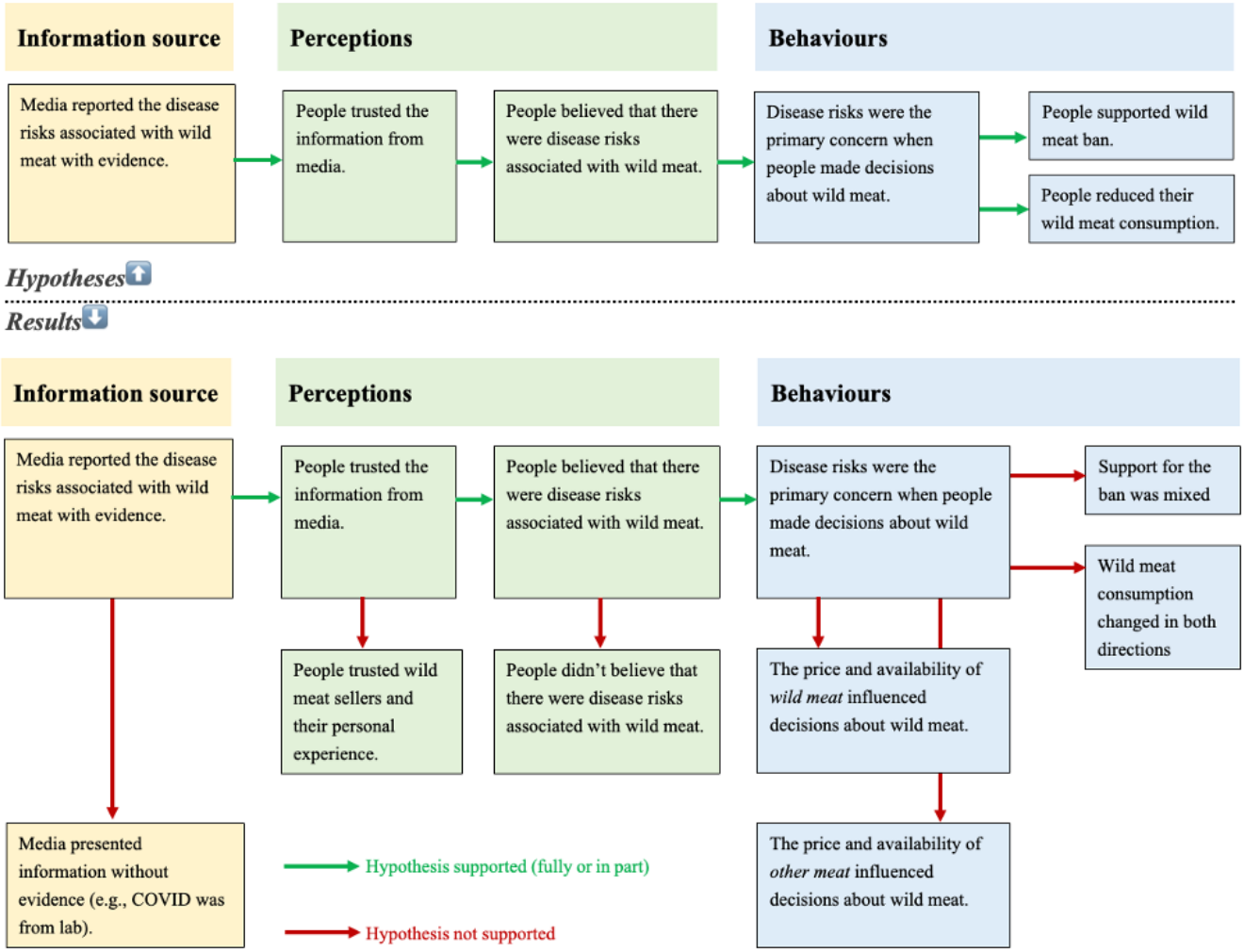

FIGURE 5 Hypotheses tested in this study using media content analysis and mobile phone surveys, and whether there is support for these hypotheses or not.

Fares, 2020; Suldovsky, 2017), our results indicated a different picture. Journalists were not well-trusted by respondents in both countries; there was a mismatch between media discourses and survey responses, particularly as regards the reasons why respondents consumed wild meat, whether wild meat poses a health risk, and conspiracy theories regarding COVID-19's laboratory origins and that it was a 'white people's disease'. Moreover, trust in media was not statistically significantly related to reduced wild meat consumption during the COVID-19 pandemic. This discrepancy might be for several reasons, including communication and accessibility issues; the online media has limited reach to some audience groups, with Cameroon having internet coverage for <35% of the population and DRC <15% (World Bank, 2019). This low internet coverage has previously been cited as a challenge for disseminating health information (Ajuwon & Rhine, 2008). It also means that despite the effort made by the media to communicate disease risk, their targeted audience may not view the media as trustworthy; for example, in DRC, those who consumed wild meat often or had less money to purchase food, were less likely to trust the media. Furthermore, the public does not passively carry out the behaviours suggested by the scientists and government officials in the media (Ashe, 2013; Lehner et al., 2021; Suldovsky, 2017); other factors, such as the price and availability of other meats, cultural attitudes and tailored communication strategies might be more important in influencing people's consumption choices.

Using mobile phone surveys to collect information about perceptions from the public did not require direct face to face contact, which was impractical during the COVID-19 pandemic due to social distancing requirements, and this approach generated data within a relatively short period of time and from an extensive range of respondents. The IVR method reduced the labour time required compared to researchers undertaking surveys using a telephone call, and the free response question still allowed respondents to provide personal opinions on wild meat issues (Dabalen et al., 2016). However, mobile phone surveys can be costly, especially with a large sample size and in places with low mobile phone coverage, which was why countries including Gabon were excluded from this research. Moreover, this type of survey depends on phone network coverage and phone access; Cameroon has 84 phone subscriptions per 100 people, while DRC only has 46 (World Bank, 2020). The method is also dependent on existing databases of phone numbers held by survey companies.

Women, Cameroonians from rural areas and those over 35 years old are not well-represented in the survey sample. This might be due to limited phone access, or it could have been influenced by the databases used by the service providers (Gillwald et al., 2010; Tagne et al., 2022). As women are more likely to make decisions on food purchases, and rural and urban people are known to have different wild meat consumption behaviours and dependencies (Coad et al., 2010; Wilkie et al., 2005), it is important to be aware of the biases caused by the low representation of these groups.

4.3 | The impact of COVID-19 on wild meat consumption

Our survey results showed that wild meat consumption was quite common among respondents in both countries. In urban areas of DRC, the younger generation (18–24 years old) reported consuming wild meat more frequently than older respondents, which aligned with studies in Nigeria, DRC, RoC and Cameroon (e.g. Brittain et al., 2021; Friant et al., 2015, 2020; Wright, 2018), but contradicted others, such as in RoC, Burkina Faso and Côte d'Ivoire (Bannor et al., 2022; Luiselli et al., 2020; Mbete et al., 2011). There were more frequent consumers among the DRC respondents than in Cameroon, which might have been skewed by the proportion of urban respondents in Cameroon, with urban consumers generally consuming wild meat less frequently than rural consumers (Brittain et al., 2021; WildAid & CABAG, 2022). This could also be the result of respondent trust in the survey methods, as the Cameroonian respondents were surveyed through live telephone calls and DRC respondents were surveyed with pre-recorded messages.

COVID-19 and infectious disease risks have become a primary concern for respondents in DRC and Cameroon when making decisions about wild meat consumption, which aligned with findings in rural and urban Cameroon (Simo et al., 2024; Tagne et al., 2022). Regarding consumption behaviour, our study also showed that in both Cameroon and DRC, the majority of respondents reduced wild meat consumption, although the proportion varied. This contrasts with other studies, where most respondents in four regions (Centre, East, Littoral and South) in Cameroon and across settlements at the Kenya–Tanzania border stated that the amount of wild meat they consumed remained unchanged (Patel et al., 2024; Simo et al., 2024). Both Simo et al.'s (2024) and ours study focused on Cameroon, and the differences could be attributed to the study location and period. Our study covered a broader range of regions across Cameroon, with over 66% respondents from big cities; while Simo et al. focused on four regions in Cameroon, with a greater focus on rural towns and only around 10% of respondents coming from big cities ('very large cities' in the manuscript). Their sampling was also concentrated around central markets and areas where wild meat was sold. Additionally, our study was conducted immediately after the peak of the pandemic in Cameroon, when COVID-19 likely had a stronger impact. In contrast, Simo et al.'s study took place a few months later, by which time people may have returned to normalcy after the crisis, as seen with Ebola.

Apart from disease risk perceptions, the accessibility of meat was also an important factor influencing wild meat consumption behaviour during the pandemic. A third of DRC respondents and 5% of Cameroonian respondents increased their wild meat consumption during COVID-19 even though many of them believed wild meat could bring new infectious diseases. This was due to the increased price and reduced availability of other types of meat; rural respondents were more vulnerable to increased price compared to city and town respondents in DRC, and this pattern aligned with previous studies (Enns et al., 2023; McNamara et al., 2020; Tagne et al., 2022). A recent study conducted during COVID-19 in Nigeria also found that rural communities relied on wild meat to supplement their reduced food and income during the lockdown (Emogor et al., 2024). Therefore, an alternative meat supply at an accessible price could be a solution where public health is concerned, especially for less wealthy consumers. Access to fish at a reasonable price is one option, given that fish was viewed by respondents as having the least disease risk. Other researchers have indicated that fish was among the most preferred non-wild meats by villagers for its good taste, healthiness, and easy access; on the other hand, policy makers need to be aware of the risk of fish overexploitation (Brittain et al., 2022; Halpern et al., 2019; Milner-Gulland & Bennett, 2003; Wilkie et al., 2005). Moreover, apart from selecting the most feasible meat type, successful and sustainable alternative protein projects designed to prevent unsustainable exploitation of species for wild meat also require long-term funding, local partners with willingness and capacity, trusted and hygienic domestic meat supply chains, and enforceable action plans (Brittain et al., 2022; Wicander & Coad, 2018).

4.4 | Implications for policy formulation

Several countries worldwide enacted wildlife consumption bans in response to COVID-19. The Gabonese pangolin and bat consumption ban received widespread media attention. However, there were mixed reactions to such bans both in the media and among respondents in this study. These policies originated with the intention of avoiding future pandemics and conserving wildlife, but the efficacy of bans is generally untested or underwhelming. As one example, the wild meat consumption ban in Sierra Leone in response to the 2013–2016 Ebola outbreak was both ineffective and had unintended consequences, including wild meat trade shifting to illegal markets and fostering increased distrust and fear of national authorities among local communities (Bonwitt et al., 2018).

Our results showed that, in both Cameroon and DRC, less than half of respondents surveyed supported the idea of a wild meat trade ban. The main reasons given were that bans are ineffective, that 'wild meat is healthy' and 'people rely on wild meat for food and income generation'. Research has also demonstrated that in some contexts the sudden removal of wild meat from food systems could

have negative impacts on food security and drive land-use change, which may increase biodiversity loss and emerging infectious disease risk (Booth, Arias, et al., 2021; Booth, Clark, et al., 2021). On the other hand, while many of the species hunted in Central Africa are relatively fast-breeding and non-threatened, policy makers need to pay special attention to threatened species such as pangolins and primates (Coad et al., 2010; Mbete et al., 2011) and those with high zoonotic disease risks.

5 | CONCLUSION

This study highlights the complex interplay between media discourse, public perception and behaviour regarding wild meat consumption in the context of zoonotic disease risks. Effective policies that both protect human health and nature require comprehensive planning and an understanding of public perceptions around wild meat and its link to infectious diseases. Perceived disease risk is one, but not the only, important factor influencing people's wild meat consumption behaviours. COVID-19 and related trade bans may have reduced wild meat consumption in the short term, but in the long run, sustainable wildlife use goes beyond market controls. Evidence-based communication campaigns, collaboration with local influencers to build trust, targeted policies, the availability of wild meat substitutes, strengthened institutions, and enhanced law enforcement and monitoring all need to play a role.

AUTHOR CONTRIBUTIONS

All authors conceived the ideas and designed the methodology; Yuhan Li, Lude Kinzonzi, Paul Loundou, Divin Malekani, Krossy Mavakala, Christian Mikolo Yobo, Joss Wright, Lauren Coad, Juliet H. Wright and Daniel W. S. Challender collected the data; all authors analysed the data; Yuhan Li, Eleanor Jane Milner-Gulland, Lauren Coad, Juliet H. Wright and Daniel W. S. Challender led the writing of the manuscript. All authors contributed critically to the drafts and gave final approval for publication.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The authors have archived the information of the media articles and non-identifiable phone survey data through Dryad Digital Repository, https://doi.org/10.5061/dryad.866t1g22d.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Data S1: Search terms.

Data S2: Top 10 news websites in DRC, Gabon and RoC.

Data S3: Codebook.

Data S4: Demographic characteristics of respondents.

Data S5: Statements from diplomats that COVID-19 was from labs.

Data S6: Generalized linear model for the association between trust media and demographic factors.

Data S7: Respondents' opinion regarding whether COVID-19 originated from a wild meat market.

Data S8: Type of meat selected by respondents for high infectious disease risk.

Data S9: Wild meat consumption frequencies of respondents living in different areas before COVID-19.

Data S10: Generalized linear model for the association of wild meat consumption frequency of respondents living in cities and towns before COVID-19 with various factors.

Data S11: Reasons for reduction in wild meat consumption.

Data S12: Generalized linear model for the association of supporting wild meat consumption ban with various factors.

Data S13: Survey questions.

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