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Precious blood and nourishing offal: past and present slaughtering perspectives in Sámi reindeer pastoralism

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Abstract

In the Arctic, indigenous reindeer herding peoples rely on a pastoralist food and knowledge system that supplies them with protein, vitamins, and minerals. Reindeer pastoralism is a product of the interaction between animals' physical needs, their behaviour, and the skills of the herders. The food systems of Sámi reindeer pastoralists depend on indigenous knowledge about mountain slaughtering. When the first stationary reindeer slaughterhouse opened in Guovdageaidnu (Northern Norway) in 1957, rationalisation of reindeer husbandry and methods of reindeer slaughter took place. Animal welfare and reindeer slaughter within slaughterhouses are well-documented in Norway; the historical knowledge about slaughtering reindeer in the mountains, however, is barely documented and is in danger of being lost. A qualitative study entailing interviews with five Sámi reindeer herders (50–80 years old) from Guovdageaidnu and Varanger explains indigenous, nomadic methods of killing and slaughtering reindeer. The traditional Sámi way of killing reindeer (Sámi: *giehtadit*) was to pierce the heart with a large knife through the chest (Sámi: *mielga*), particularly in the pastures close to where the herd grazed to avoid distressing the reindeer before taking their lives. This allowed reindeer herders to use the whole reindeer for food, unlike the practice in stationary slaughterhouses, which merely utilises select muscles for human consumption. Although the Supreme Court of Norway in 2008 ruled that traditional slaughter practice without stunning was illegal, this historical account provides evidence that the *giehtadit* method was a rational way to kill a reindeer, as bleeding (haemorrhage) in the thorax offers both high-quality blood, offal, and meat for human consumption. We conclude that the traditional Sámi method is based on systematic, complex, and holistic indigenous knowledge and determines the foods reindeer herders eat.

Keywords: Indigenous, Reindeer, Nomadic, Welfare

Introduction

“Nomads interact with their animals by either adapting their actions to animal behaviour or by changing this behaviour in ways that suit them.” (Istomin and Dwyer 2010).

Nomadic reindeer herders rely on deep knowledge of their food systems, achieving sustainability through interaction with the land, water, and animals (Burgess et al. 2018, 15). Herders observe each reindeer in the herd before deciding which ones to slaughter (Sara and Eira 2021), and reindeer herders' pastoral knowledge and skills (Paine 1994, 20) are crucial to the process. As early as 1952, Newhouse reported that the Norwegian government suggested building centralised slaughterhouses in Sámi reindeer herding areas where limited slaughtering would take place. Sámi reindeer pastoralists from Northern Norway met the suggestion with hostility or

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unwillingness (Newhouse 1952, 136–137), which according to Johnsen and Benjaminsen (2017) can be explained by a wish to maintain control over their livelihood (2017) and their food system. Recently, Röver (2021) concluded “that reindeer has undergone a number of fundamental shifts of meaning in Swedish Sápmi over the past century”. Further, she asks “how the reindeer’s roles and functions evolved in Swedish Sápmi from ca. 1920 to 2020 and examines how, why, and by whom the reindeer has been negotiated” (2021, i). Such changes in Arctic pastoral communities were also documented in reindeer husbandry in Chukotka in Russia. Davydov and Davydova (2021) argue that the attitude towards the animal at the time of its slaughter and butchering ultimately determines the taste of the produced meat, revealed by comparing slaughter practices in the tundra and in a reindeer slaughterhouse in Chukotka.

The foundation for rebuilding local food systems and social-ecological resilience is traditional knowledge, culture, and language. According to Eira and Mathiesen (2016), “the way you kill the animal depends on how you are going to use the meat afterwards.” This statement indicates that several slaughtering methods exist, that the choice between methods depends on traditional knowledge about Sámi pastoralism and reindeer slaughter, and that the transformation from the animal to the edible has changed over time (Bjørkdahl and Syse 2021). We argue that it is vital to consider indigenous knowledge about food security in achieving sustainable food production systems.

Our study uses historical literature, ethnography, interviews, and narratives from Sámi reindeer pastoralists to investigate the change in slaughtering practice and its influence on the current food culture, which in turn has changed what they eat today. Our aim is to understand the traditional Sámi killing method of reindeer and explore how these changes might have reduced the general knowledge about reindeer as a source for food.

Study area

While pastoralism is similar across the Arctic, the Sámi reindeer food knowledge is diverse. Sámi reindeer pastoralism is one of the primary livelihoods in western Finnmark—the largest reindeer herding area in Sápmi (the traditional homelands of Sámi peoples)—and entails a special knowledge autonomy. Therefore, the *Rievdan* project (No. 238326), which funds this study, chose Guovdageaidnu, Finnmark, Northern Norway, 69° 0′ 41.44″ N, 23° 2′ 29.33″ E (see Fig. 1), as main study and research area. Approximately 1300 of 3000 inhabitants in Guovdageaidnu are private reindeer owners, with approximately 76,300 reindeer migrating between winter pastures in Guovdageaidnu and summer pastures near the Finnmark coast and northern Troms (Landbruksdirektoratet 2021).

Sámi is the prevailing language. The permission to carry out the study with knowledge holders was approved by the Norwegian Centre for Research Data (NSD).

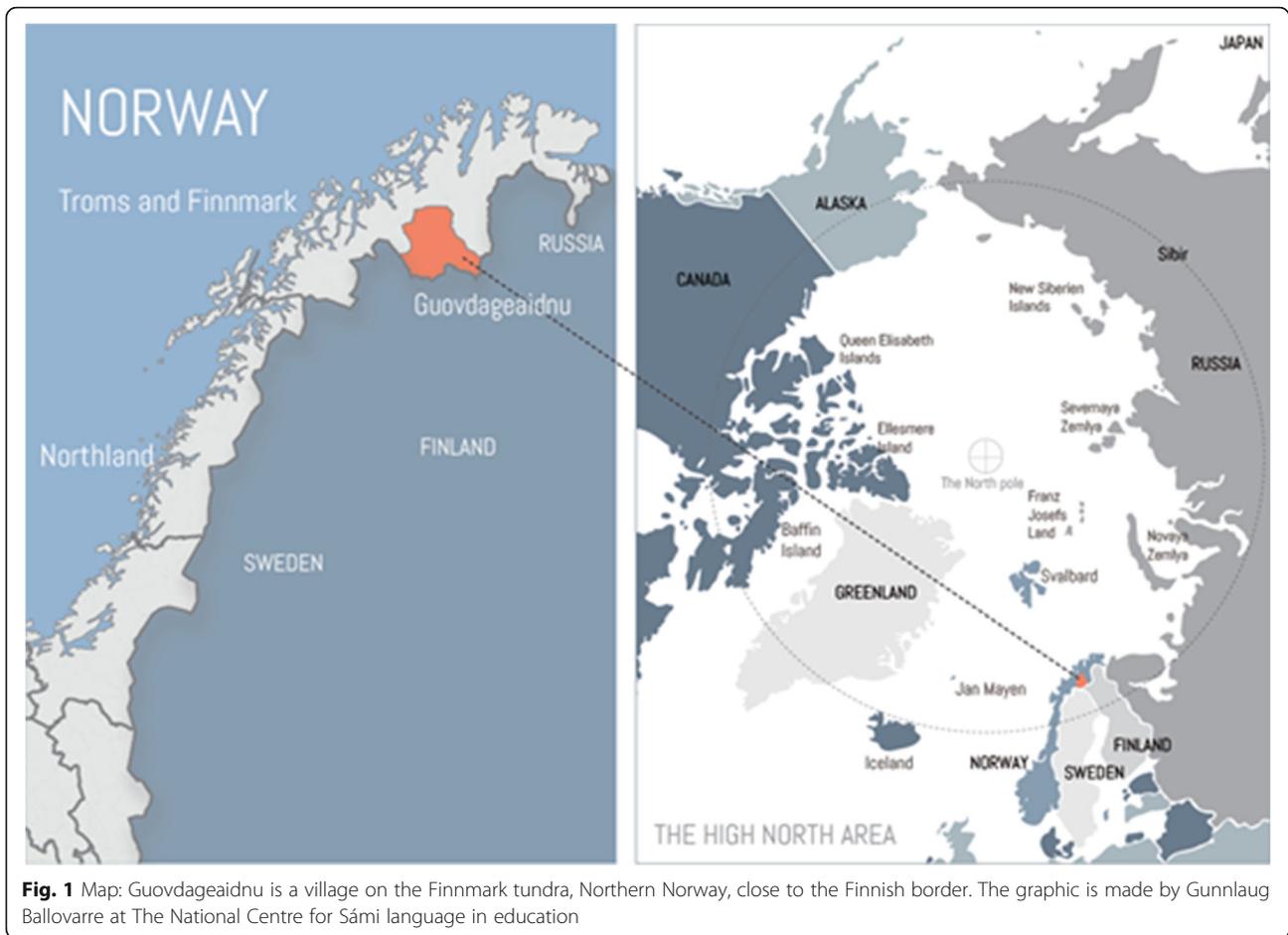
Methods

This paper is based on an ethnographic investigation including interviews and fieldwork among Sámi reindeer herders in Guovdageaidnu and Varanger (Northern Norway). A selection of historical sources provides historical depth to the analysis.

We have carried out in-depth interviews with five male Sámi reindeer herders from Guovdageaidnu and Varanger between 50 and 80 years old. We questioned them about the indigenous methods for killing reindeer and slaughtering practices used in their youth. All five narrators grew up using the *giehtadit* method, meaning “kill with a knife, stick (esp. reindeer)” (Nielsen 1979). Their interviews present examples of a traditional killing method banned by Norwegian legislation in 2008 (Norges Høyesterett Dom 2008), as well as new methods herders developed after the introduction of slaughterhouses and mandated stunning. We anonymously quote the interview participants as Reindeer herders H, I, T, M, and S.

The interviews were deliberately carried out in the herders’ own landscape, or what the anthropologist Ingold (1993, 153) would call *taskscape*, which emphasises the human use of the senses. The term landscape encapsulates both land and scenery, form, function, context, process, and various aesthetic dimensions (Syse 2010, 471). The landscape encompasses the subjective understanding of a place’s meaning, which in turn shapes identity (Syse 2010, 472). The philosopher Meløe (1997) explains the importance of grasping how other people understand and see the world: the objects an actor operates on—in this case, reindeer and reindeer pastures—must be seen from the perception in which the actor operates (Meløe 1997, 344). Those who do not use the land lack the practical or moral implications of this land, so outsiders visiting a particular landscape may see it as scenery and do not see nor understand the same things as the reindeer herders who live off and on the land, and who have indeed embodied it (Meløe 1990, 400). Our article concerns Sámi reindeer herder’s indigenous knowledge about nomadic mountain slaughtering of reindeer; these herders embodied the land through their interaction and by devouring the products of the land itself through the blood, meat, and offal of the animals they herd and let graze in this land.

While scientists seek objective knowledge, knowledge always adjusts to the political and managerial systems to which they belong. Moreover, science is socially and contextually constructed (Jørstad and Skogen 2008; Syse 2010). Because of this, critical reflection is crucial both for researchers and for legislative and administrative purposes.



Traditional ecological knowledge (TEK) can improve and reinforce scientific knowledge about environmental management (Silvano and Begossi 2009). Scholars often contrast TEK with scientific knowledge and purport it to be a necessary addition to science, especially when working with indigenous peoples (Berkes 2012; Huntington et al. 2004). On the other hand, TEK, indigenous knowledge and scientific knowledge both use empirical observations as a starting point (although the context and basis for questioning might be very different) (Andersen 2012). To understand TEK in the context of the Sámi reindeer herders, we use the indigenous permanent participants in the Arctic Council's definition of traditional knowledge as "transmitted through indigenous languages having a systematic way of thinking verified through generations, based on multi-generational experiences, observations, skills, and lessons" (Arctic Council Permanent Participants 2015).

Sámi reindeer herder knowledge has the same characteristics as indigenous knowledge (Sara and Eira 2021). Sámi reindeer herders transfer traditional knowledge and practices orally from generation to generation. The indigenous knowledge of Sámi herders is continuously tested and adjusted in situations that arise locally, and each generation

adapts and collects knowledge to tune these (Sara 2010; Eira 2012). Food processes belong to this multi-faceted knowledge system (Sara et al., forthcoming 2022), yet reindeer herder's food knowledge is seldom if ever incorporated in scientific research or reindeer herding management (Krarup Hansen et al. forthcoming 2022.). For instance, the smoking of reindeer meat needs examination and inclusion through co-production or self-determination methods across scientific disciplines (Krarup Hansen et al., 2020).

The Inuit Circumpolar Council (ICC) definition of indigenous knowledge (IK) acknowledges it as a system of knowledge that goes beyond observations and ecological knowledge, offering a unique *way of knowing* (ICC ALASKA 2020). IK can both identify research needs and also be applied to them, and ultimately inform decision-makers (ICC Alaska 2020). This study captured such knowledge through recording and transcribing interviews that were analysed in accordance with the research questions.

Results

History of Sámi killing method

The primary killing method used in Sámi reindeer husbandry was heart-piercing with a knife (Schefferus 1956

(1673); Linnaeus 1995 (1732); Leem 1808 (1767)). The Sámi used a special, large knife (see Fig. 2) to let the reindeer's heart bleed out inside the thorax (Dahlström 1923; Nissen 1924; Reinert 2012).

However, there is very little literature on the traditional killing methods used by indigenous pastoralists. The Sámi author, Johan Turi, was the first Sámi to write about slaughtering a reindeer (2010 (1910)). In the

following excerpt, he describes the method and quality of knives used in the slaughter:

About reindeer slaughtering

Reindeer slaughtering is men's work. When a Sámi picks out a reindeer from the herd, he leads it to the *boaššo* side of the *goahti* to hone his knife so that it is very sharp and clean, so that it will kill the

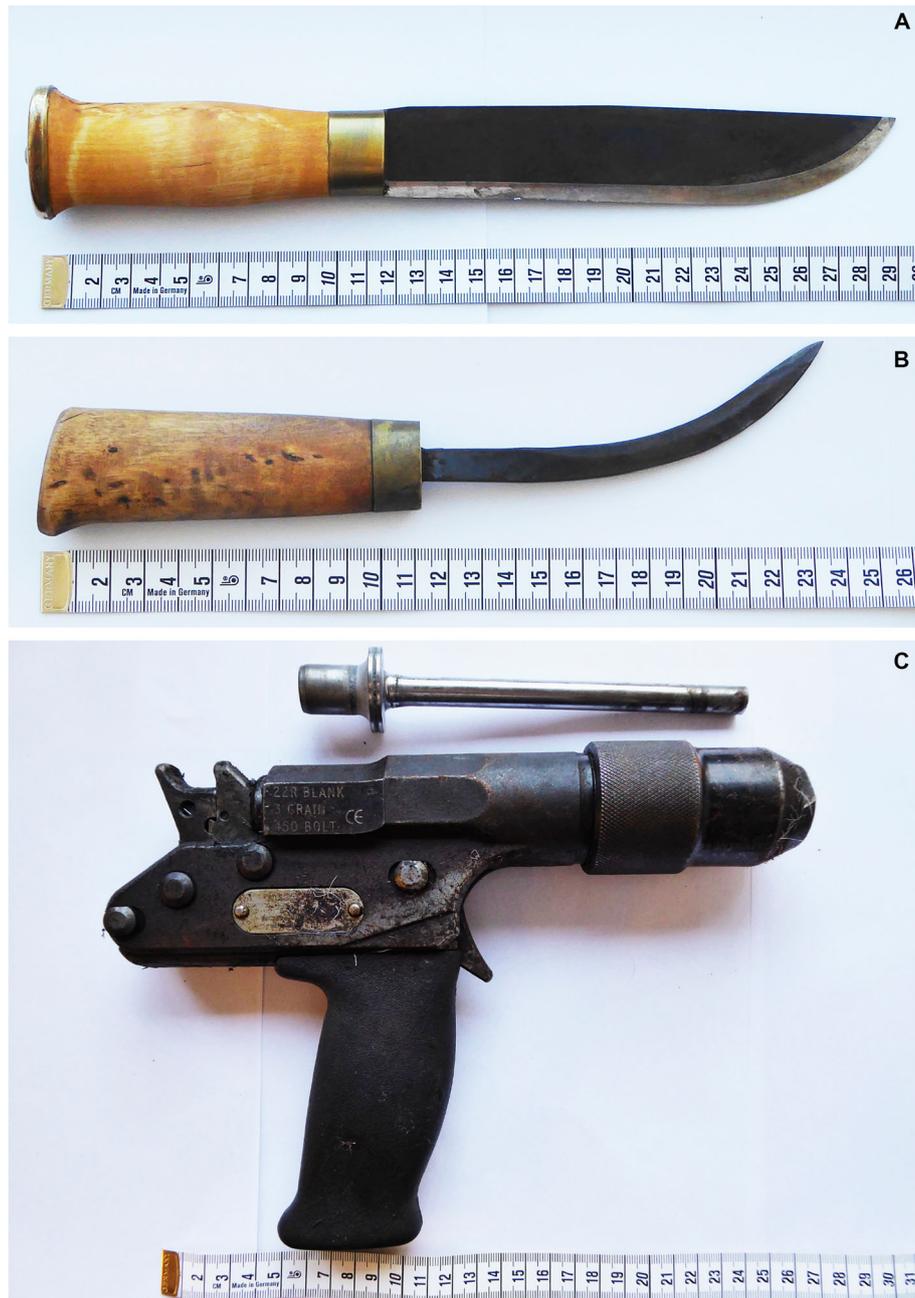


Fig. 2 A A large Sámi knife used for traditional slaughter. B Curved knife used for stunning before killing. C Modern bolt pistol used in stationary slaughterhouses today. All pictures are by Ravdna Biret Marja E. Sara and photo collage by Johti Productions

reindeer quickly. If the knife is dirty, it will not kill the reindeer quickly and the reindeer will suffer for a long time before dying. And some knives are bad for killing: if the steel is hard, the knife is good for killing, but soft steel is very poor. And when the Sámi has gotten everything ready, then he comes outside and takes a companion along if there are people about. And then the two of them knock the reindeer over and stab the reindeer in the chest and then let it loose from the line. And if the knife is good, then it won't be able to get the back up on its feet. But if it is only somewhat good, it will get to its feet but fall down again right away. And if it is a dull, dirty knife, the reindeer will live for a long while, and if it gets loose it will run a long way before it lies down in death convulsions. (Turi 2010 (1910), 58)

In the nineteenth century, Swedish and Norwegian experts began efforts to transform traditional reindeer slaughter with anaesthetic procedures that reduced reindeer suffering (Dahlström 1923; Nissen 1924; Röver 2021). Nissen noted that the slaughtering procedure was just as important to animal welfare as how the killed animal was treated afterwards (Nissen 1924, 5). In the 1882 edition of an animal welfare journal named *Djürvännan*, a writer from northern Sweden claimed that reindeer herders' killing methods were disgusting (Swe: *vämlig*) (Dahlström 1923, 41). Experts claimed that the Sámi methods were brutal and called for a more humane approach (Nissen 1924, 3; Reinert 2012). Inspecting veterinarians reported general animal welfare violations by Sámi reindeer herders to the authorities, because observers considered the Sámi technique of piercing the heart without stunning the animal to render it unconscious to be ruthless (Reinert 2012). "Investigation committees described Sámi practices as outdated and inadequate, and contrasted them to the new and ostensibly modern methods they proposed" (Röver 2021, 137).

In 1929, Norwegian legislation required stunning prior bleeding. A so-called curved knife was used to improve the traditional Sámi slaughtering method. When used correctly, herders would insert the knife directly into the animals' brains and leave them unconscious. The method was tested by Swedish and Norwegian scholars, veterinarians, and a number of reindeer herders from Southern Norway before being introduced as a general requirement for reindeer slaughter (Reinert 2012, 36).

Unlike the *giehtadit* method, which used a large knife to pierce the reindeer's heart, the new method required that a curved knife (Nor: *krumkniv*) be pierced into the neck to the spinal cord to stun the reindeer before cutting the jugular vein and letting it bleed out.

In the 1960s, the cooperative slaughterhouse in Guovdageaidnu tried to persuade reindeer herders to sell

more reindeer to the slaughterhouse but failed since many herders opposed increased production (Paine 1994). Paine further explains that the parties did not share an understanding of what reindeer husbandry ought to be (1994, 134). Paine (1994) concludes that modernisation between the 1960s and 1970s involved "unprecedented state intervention in the management of Saami reindeer pastoralism. Some see it as state *control*, others as *guidance*, even as *help*. For some, it was *unwarranted*, while for others it was *overdue*" (1994, 141).

Skum et al. (2016) identify four factors that affected Sámi knowledge about the castration of reindeer bulls. Similar factors in reindeer slaughtering over the past 100 years are revealed in this study. First, came the law, adopted in 1929, which technically made the *giehtadit* method (heart-piercing method to kill a reindeer) illegal as a method of killing, which secondarily led to the introduction of the curved knife to pierce the neck for stunning, claimed by some researchers to be a Sámi tradition (Pareli 2003; Reinert 2012). The third identified change replaced ground slaughter with hanging slaughter; hanging the carcass by its hind legs up on a scaffolding built of wood. This became common after World War II. (Skjenneberg 1965) The fourth and final transition was from outdoor ground slaughter (Sámi: *dievá's njuovvat*) to indoor slaughtering in a slaughterhouse (see Fig. 3). The new modern slaughterhouse in Guovdageaidnu opened in 1957. These four changes in reindeer slaughtering had a profound influence on Sámi herders that led to the erosion of traditional knowledge.

Sámi reindeer herders' narratives on the *giehtadit* method *Traditional killing, blessing, and baggan*

According to reindeer herders, there is a whorl on the reindeer chest where the fur swirls in opposite directions. The *giehtadit* method is used just above this spot. The knife should go where the hairs meet in a triangle on the middle of the chest (Reindeer herder H; Reindeer herder I). According to Reindeer herder M, "You must hold the knife well in your hand because it can slip, and you can injure yourself. You should pierce in the back end of the chest just before the edge of the bone, because that is where the heart lies." One reindeer herder spoke about how the reindeer should always be lying on the right side due to the spleen being on the left side; it is the same side where the reindeer legs are tied for transportation purposes (Sámi: *gurpat*), for animal welfare purposes.

Like in other Nordic traditions (Lid 1924), waxing or waning moons factored into the choices Sámi herders made about how to use the meat and blood. Reindeer herder T explains that the traditional heart-piercing method produces more and better blood: "By the way, and when it comes to the amount of blood, Sámi



Fig. 3 **A** In Sámi, *dievá's njuovvat* means ground slaughtering reindeer in the pastures. **B** The first stationary slaughterhouse in Guovdageaidnu (opened in 1957). Photo **A** is by Svein D. Mathiesen, and photo **B** is used with permission given by the Sámi Archives, archive reference: Kautokeino produksjonslag AL/Reinslakteriet AL SAMI/PA-1048, photographer unknown. Photo collage is by Johti Productions

reindeer herders are very content with the new moon, the growing moon” (Reindeer herder T).

After piercing the heart, a few minutes pass before the reindeer dies. To treat the animal well and with care, reindeer herders bless the animal. Reindeer herder H says he learned from his uncle that one should say a blessing when killing a reindeer (Sámi: *sivdnidit*).

After the reindeer is dead, it is crucial to knot the oesophagus in the throat to prevent rumen content from entering the mouth and then leave the carcass for a while afterwards to tenderise the meat. *Baggan*—leaving the carcass so the rumen inflates—is an important routine of the slaughtering process which improves the meat quality (Reindeer herder H; Reindeer herder M; Reindeer herder T; Reindeer herder I; Sara and Mathiesen 2020).

The meat got better with this method, and it is important that you let it *baggat* afterwards. It is important to tie the oesophagus so that the rumen contents do not enter the mouth and head and destroy it. When you use the neck stunning method, the reindeer would spit out rumen content into the mouth that destroys the head, and you cannot eat it. (Reindeer herder M)

Finally, when heart-piercing calves for clothing (Sámi: *beaskanáhkit*), it was necessary to avoid bloodstains to preserve the hide quality. Blood can destroy both the fur and hide, and a hide covered with blood does not have the same high quality. (Reindeer herder T)

Knife

Reindeer herder T spoke about how the knife was also significant when killing reindeer. When using a large

knife and piercing through the chest, the bleeding must be stopped by hand. It is inappropriate to kill with an inadequate knife: if it is too short, the herder must observe if the heart is still beating. (Reindeer herder T)

Reindeer herders H, M, and I all say herders must hold the hand on the wound for a while:

The knife does not have to be in the chest for that long, maybe a minute, then you take it away and hold your hand in front of the wound. The reindeer can still move a little, as in a cramp, it is dying (Sámi: *viráida*). (Reindeer herder H)

The knife should stay inside until the reindeer makes a sound, like a grunt. It is a good sign. Then you can hold the wound together, preferably with snow, so the blood coagulates right there because it is necessary if you are going to make blood sausage so that blood does not run out. (Reindeer herder M)

It is important that the knife is long enough and that it is clean and sharp. A good way of disinfecting the knife is to keep it over a fire for a short time. A dirty knife can infect the meat. With a sharp knife, it will go straight in. You pierce only the chest. If you have a shorter knife, you must pierce in the side and always focus on the heart. The reindeer does not react until the knife hits the heart, then you should move the knife a little. When you hit the heart, it does not take long before the reindeer is dead. I hold my hand in front of the wound so that the blood does not run out. The blood is medicine. (Reindeer herder I).

Position of the knife

How one pierces a reindeer's chest is significant for the blood and meat. The reindeer must be lying down when using the *giehtadit* method. In order to calm the reindeer and persuade it to lie still, herders lifted the front leg of the reindeer towards the head and placed it behind the antler. This protects the herder from getting injured (Reindeer herder I).

Reindeer herder M said, "you must knock the chest with your fist to feel where the heart is, and then it starts beating harder. Then you must use your fist to hit the knife through the sternum and into the heart." Heart-piercing is the only method that targets the aorta. In the case of big bulls, the herder must exert more force to pierce the chest (Reindeer herder H). The heart-piercing method can guarantee meat without blood, since all the reindeer's blood drains from the veins and collects inside the thorax (Reindeer herder T).

Blood coagulating

In traditional Sámi food culture, families use non-coagulated blood for foods like blood sausage. Multiple interview participants reported a difference in the reindeer's blood depending on whether the neck-stunning or heart-piercing method was used. Using only the heart-piercing method, the heart pumps all the blood out of the vessels inside the chest. Some blood might coagulate when a herder pulls out the knife quickly because air enters the chest cavity. In that case, people historically scooped out the non-coagulated blood and left the rest in the stomach for dog food, which was freeze-dried into the rumen net (Reindeer herder T).

When a reindeer is stunned with a curved knife and bleeds out through the jugular vein, a different quality of blood flows into a basket. In Reindeer herder T's experience, blood coagulates more with the neck-stunning method, and need to stir the blood to avoid coagulation. Reindeer herder T believes there is a practical problem with blood coagulation if you want to use the blood in cooking. He does not use coagulated blood, although others may do so.

Reindeer herder I had the same experience: "When you use the heart-piercing method, there is no coagulated blood. The blood you get is easier to take care of using *giehtadit* method." He also advised that blood needs to be stirred immediately when reindeer bleed through the jugular vein and into a tub. Otherwise, it will coagulate, and usually, Sámi people will not consume coagulated blood (Reindeer herder I).

Stress

In addition, Reindeer herder M said more blood coagulates when reindeer are stressed. Reindeer herder I says the reindeer need peace and should stand alone for a

while before slaughter. Both agreed stress would negatively affect the meat. One should never kill a reindeer when its legs are tied together (Reindeer herder I).

Reindeer herder T feels that the particular taste that reindeer herders perceive as the slaughterhouse taste, e.g. the flavour of stress for instance dark, firm, and dry (DFD) meat results from exhaustion or stress and thus from a depletion of glycogen before slaughter (Adzitey and Nurul 2011). This is something the Sámi do not want in good meat. He said there will be a different, slaughterhouse taste when using a bolt gun to kill a reindeer. With the traditional killing method, no such taste will appear.

Quality is several things, and taste is part of it. If you have spoiled the meat, then it does something with the quality and taste. It can also be temporal or seasonal. Also, in terms of the period during the actual slaughter, the tenderising process starts during slaughtering. (Reindeer herder T)

Blood in carcass for best meat quality

When slaughtering a reindeer for household consumption (Sámi: *niesteboazu*) and for drying meat (Sámi: *gidaniesti*), the reindeer herders we interviewed said the heart-piercing method (*giehtadit*) resulted in the best meat quality. While the newer neck-piercing method stunned and numbed the reindeer, it also reduced the quality of the blood, offal, and meat.

You get the best meat when you kill by piercing the heart. The reindeer die quietly and calmly which in turn affects the meat. When you stun into the neck first and then let it bleed out (author explanation: through the jugular vein), the reindeer dies fast. Death is longer when piercing the heart, the blood collects in the chest, and all the blood vessels are emptied. It seems to me there is a difference in the meat; the one killed by heart-piercing has better meat. (Reindeer herder M)

According to Reindeer herder T, the *giehtadit* method was best because piercing the heart drains the muscles of blood. Inside the chest cavity, blood is collected in a waterproof container and does not enter the meat, and there is no blood elsewhere in the carcass. The fact that one does not spill blood all over the carcass is traditional knowledge, and herders typically avoid blood-soiled meat for private use because they consider it damaged (Reindeer herder T). Reindeer herder T asserts that the *giehtadit* method guaranteed herders a certain quality of hide, flesh, and blood.

When it comes to slaughtering at home, we were trained to slaughter hygienically, where especially blood spills were frowned upon. Even though I know that it is an irrational feeling, I cannot avoid feeling that the animal is disgraced when I see a blood-soiled carcass and a very bloody slaughterhouse. I get the same feeling every time I look at hanging, bleeding and handling of slaughter at the so-called ‘modern’ slaughterhouses. *Njuovvan dego gumpe livččii gaikkodan dan bohcco* (Eng: slaughtered as if the wolf had attacked the reindeer) as the elders used to say if we did not handle the slaughter properly. (Reindeer herder T)

Based on Reindeer herder T’s narrative, the traditional method also has a hygienic aspect. Slaughters should have as little blood-soiling as possible. Hygiene is the most vital aspect of heart-piercing because there is no need to wash that meat of blood—as washing takes a lot of flavour and spreads bacteria—and the blood produced for consumption is pure from coagulation.

The heart-piercing method was especially important when the reindeer herders slaughtered before Christmas and in January. They removed the rumen from the carcass, left the hide on, and buried it in the snow to freeze. Such carcasses were not dressed until the spring. When the carcasses thawed, the blood was fresh and non-coagulated because it had not been in contact with air, and the meat was tender. This method allowed herders to utilise everything from the reindeer (Reindeer herder S).

Experiencing different killing methods

Reindeer herder I said he has been discussing killing methods with a veterinarian. During hunting of wild animals, the hunter shoots towards the heart and the animal will run. Compared with the shooting method, piercing the heart directly makes a big bleeding hole: the heart cracks (Sámi: *váibmu luoddana, dego suorgana jámas*). The reindeer lies still on the ground, held down by the herder, and does not run anywhere.

In the old days, herders only used the heart-piercing method to kill a reindeer. There is a big difference between neck-stunning and heart-piercing, but herders began to use both methods in more recent times. Herders could stun the reindeer by neck-stunning, which caused the animal to fall over, and then kill with heart-piercing so that blood flowed into the thorax. They did not have access to the curved knife, but it was common and effective to use a regular mora knife (Sámi: *buiku*) to stun the reindeer before killing. (Reindeer herder M)

Many people still question the effectiveness of the curved knife versus the straight knife for stunning. In

the past, herders did not have access to the curved knife, and Reindeer herder T had not used it. Instead, he used an ordinary small knife (Sámi: *buiku*) in the neck. Reindeer herder T experienced that it is easier to stun a reindeer in a corral with a curved knife. However, stunning with a curved knife often causes reindeer to spit out rumen content and requires more training to be effective. Reindeer herder I had the same experience:

Reindeer should not stand when being killed. Today they use the curved knife, and then the reindeer falls to the ground, on its stomach. That way the stomach content is pushed up into the mouth, which then destroys the head. You can use the head if you rinse it well. With the heart-piercing method, the head is not destroyed by rumen content. (Reindeer herder I)

Discussion

Change in the slaughtering practices

Historical sources and narratives presented in this article show that Sámi reindeer herders rely on their intergenerational indigenous knowledge, which has conflicted with the Norwegian Food Safety Authority’s scientific-driven knowledge. Different knowledge systems reign in the tundra than in the slaughterhouses developed in the 1950s. Vorren (1946) argued that Sámi reindeer herding in western Finnmark needed to be modernised and rationalised because it was antiquated. However, a Sámi worldview continues to influence the Sámi reindeer herders’ understanding of the relationship between humans, reindeer, nature, and snow cover—even more than 40 years after Norway instituted transformative policies (Johnsen 2018).

The changes in Sámi reindeer pastoral slaughtering practices were part of a global trend. Food production started to change globally at the same time as the relationship between animals and humans changed. In early 1900s, people were “physically and psychologically removed from the animals that produce the products they use” (Fitzgerald 2010, 58). Meat butchering for the household became a task for a specialist, and seeing the various animal carcasses with heads intact became less common in both homes and butcher shops in the 20th century. (Fitzgerald 2010, 59; Syse and Bjørkdahl 2021).

In 1953, the Development Fund for Northern Norway suggested building slaughterhouses and freezers in Finnmark for agriculture and reindeer husbandry. A modern slaughterhouse owned by the cooperative *A/L Kautokeino Produksjonslag* with different shareholders opened in autumn 1957 in Guovdageaidnu (Norwegian Ministry of Agriculture 1977). Holistic indigenous knowledge and rules-of-thumb—essential in Sámi reindeer husbandry

(Eira 2012)—were less important at the new slaughterhouses.

New slaughter methods were an early sign of the transformation from pastoralist practice to industrial slaughtering. Firstly, the reindeer chosen for slaughter was brought to the village, away from the mountains and the herd. Secondly, the reindeer was taken inside a warm building and killed with a new method: stunning the reindeer with a bolt gun (see Fig. 2) and bleeding out via the jugular vein. Stunning the head with a bolt pistol thus contaminated the brain, which was previously used as food for humans. The slaughterhouses brought a change to slaughtering practices in stark contrast to mountain slaughtering.

Reindeer herders were motivated to sell reindeer to the new slaughterhouse, but this was not in the herders' favour as Nils Kemi said; "On-the-hoof sales are only practical for the rich owner...All of us others have to take ourselves some of the meat from each animal we slaughter...it's a loss for us Saami to sell to the Cooperative." (cited in Paine 1994, 133). As herding practices rapidly modernised, herders began slaughtering reindeer for consumption and sale on temporary wooden structures outdoors (Reinert 2008; 2012). Herder's slaughtering skills became an elementary part of their competence. New standards of commercial growth, food quality, productivity, and hygiene in the killing and slaughtering of reindeer resulted in fundamental changes and strict regulation (Reinert 2008, 88). Sámi herders in Guovdageaidnu were worried about the ongoing transformation and protested the transformative change of Sámi slaughtering practices (Paine 1994).

These new practices broke the long tradition of slaughtering reindeer in the mountains. According to the slaughterhouse, the quality of mountain-slaughtered reindeer meat was worse than that of the slaughterhouse (Paine 1994, 134). Sámi pastoralists from Guovdageaidnu challenged this modernisation at a Sámi reindeer herder meeting in Tromsø (Newhouse 1952). The interview narratives in this article confirm that the knowledge conflict expressed by the young pastoralists in Tromsø in 1948 still exists today.

We argue the stationary slaughterhouses fostered early industrialisation in Northern Norway that resulted in the erosion of indigenous knowledge. The door of the slaughterhouses metaphorically represents a barrier between the reindeer owner and the reindeer: The reindeer is no longer in the owners' hands, but owned by the slaughterhouse cooperative. Moreover, the change in slaughtering practices transformed meat and blood quality and reduced utilisation of the whole animal. Slaughterhouses considered the ingredients of indigenous dishes which Sámi used to eat, such as *oaivemális*, intestines, and hooves (see Fig. 4), to be waste and not

commercially available. Today, this dish is only seen as suitable for dog food (Degteva et al. 2017). While some dishes disappeared when reindeer slaughter moved into the slaughterhouse, new dishes were developed (Röver 2021, 131) that were alien to the Sámi food culture, such as *surra reinstek* (Sara and Mathiesen 2020) and fillets (see Fig. 5).

Another example of this transition is the use of the reindeer blood. When using the *giehtadit* method of mountain slaughter, blood was an important, pure resource for the Sámi pastoralists. Modern slaughterhouses defined reindeer blood as waste, and due to new slaughtering practices, the blood was not suitable for human consumption in Norway.

Calming and stunning

The Sámi herders in the mountains calms the reindeer before slaughtering. According to three of our knowledge holders, laying a reindeer down on their right side and placing their left foreleg behind the antlers calms and apparently paralyzes it, so it lies still (Reindeer herder H; M; T). Turi (2010 (1910)) explained that he took a reindeer to the *goahti* (Sámi traditional hut) and left it there for a while before killing it. Although Turis' explanation was narrated for almost a century ago, our ethnography shows that the practice of calming is still important both for the animal's well-being and for the quality of its meat (Reindeer herder T). The relationship between the herder, animals, and environment is essential when slaughtering, resulting in harmony and interplay between the herd and its behaviour, the herder's knowledge and skill, and the land where the herd grazes (Dwyer and Istomin 2008).

While the relationship between Sámi reindeer herders and their reindeer is hands-on and direct, industrial slaughter is decoupled and fragmented. In fact, both Vialles (1994) and Patchirat (2013) demonstrate how the introduction of large slaughterhouses and the industrialisation of slaughter has resulted in both decoupling and fragmentation of the animals' killing. The people working in the slaughterhouse cannot say who killed an animal because the slaughter process is fragmented into so many small actions and divided among so many different people. Furthermore, the employees at slaughterhouses become alienated to the status of the animal as a living breathing being, because the slaughterhouses are distant from the places where reindeer and pastoralists live. The connection between animals and their meat has become nebulous if not invisible, decoupling the connection and understanding between humans and the animals they eat (Bjørkdahl and Syse 2019).

As a result, reindeer meat has become a highly accessible ingredient to modern consumers in Norway, rather than precious flesh begotten from the life and death of a



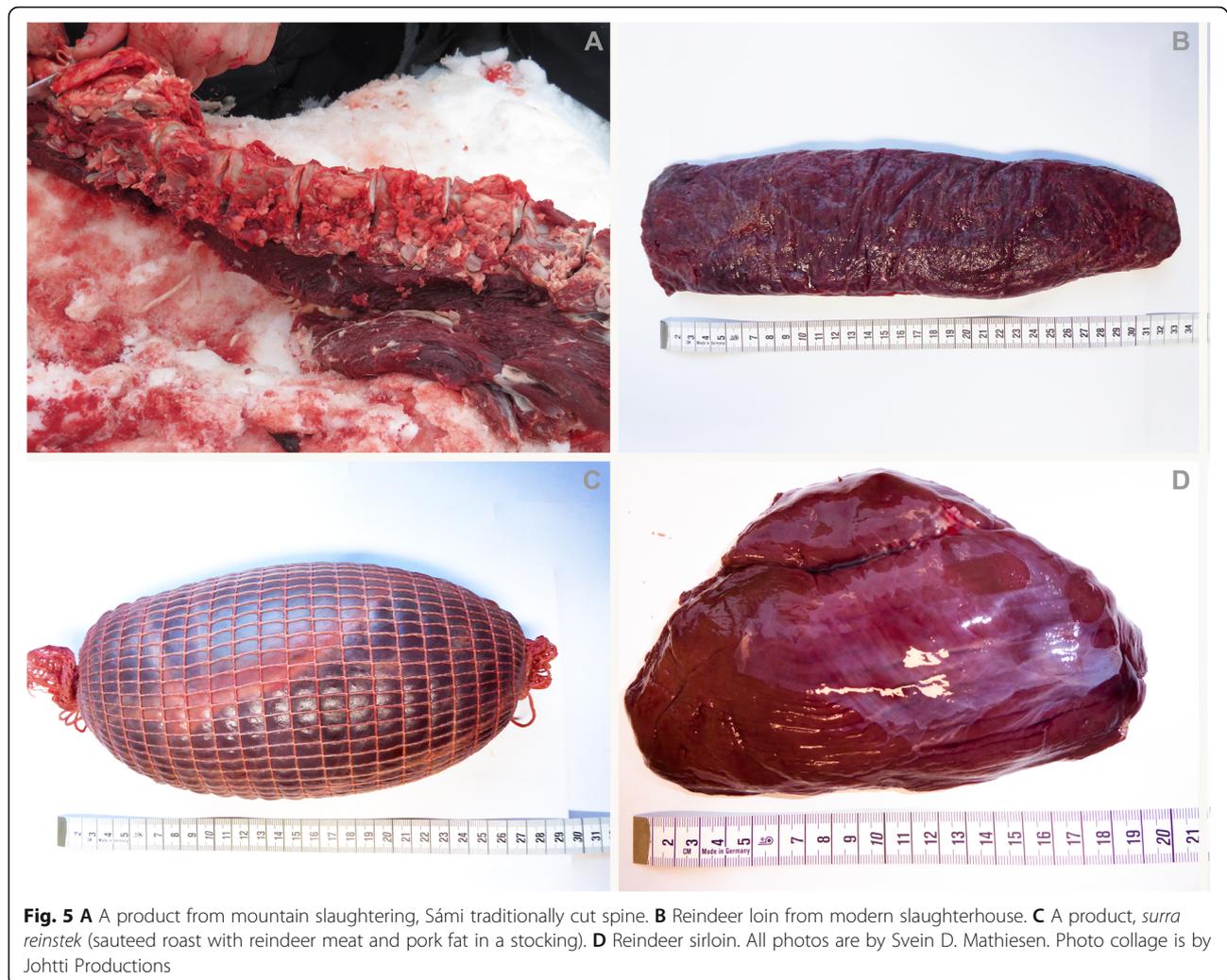
Fig. 4 *Oaivemállis*. **A** Reindeer head butchered and prepared for boiling. **B** Reindeer head boils for 2–3 h. **C** Ready to be consumed. All photos are by Ravdna Biret Marja E. Sara, and the collage is by Johtti Productions

sentient animal. Today, the implicit contract between humans and animals, established through domestication, needs renegotiation. By reintroducing the materiality – or in fact *meateriality* of meat, the connection between animals and their meat can potentially be re-established (Bjørkdahl and Syse 2013). According to Sahlin et al., “less but better meat”—or, more sustainably produced meat from animals given a worthy life with positive experiences—would be beneficial (Sahlin et al. 2020) for nature, animals and consumers.

Historical accounts demonstrate how the old Sámi slaughtering customs have been questioned and criticised (Dahlström 1923; Nissen 1924; Röver 2021) changing reindeer slaughtering systems. When compared to the “civilised” and judicial slaughter carried out by industrial slaughterhouses, a series of binary oppositions arise: Sámi traditional slaughter is illegal, while industrial slaughter is legal; the absence of stunning renders traditional Sámi slaughtering customs inhumane, while slaughtering within slaughterhouses is allegedly humane. However, we argue that traditional slaughter practices are more humane. Reindeer that do not go to slaughterhouses pass away in an environment and with herders they know. The animals are not stressed and exhausted by transport, nor left waiting for many hours outside slaughter facilities. The knowledge holders explain that a reindeer dies within a few minutes when killed traditionally in the mountains, while transportation to the slaughterhouse could take several hours.

Reindeer slaughtering is a close, immediate, and direct action carried out by the reindeer herder that shows the connection between Sámi nature and Sámi culture, from birth to death, for both people and animals. A Sámi reindeer herder assesses the welfare of the whole herd and not just a single reindeer; this assessment and adaptation are the pillars for a herder when herding in different pastures. While direct and hands-on slaughter may be difficult for outsiders to watch, carry out, or even understand, it is logical and understandable to the Sámi themselves through the lens of indigenous knowledge.

Most cultures have had rituals for slaughtering animals. Although forgotten today, Norwegian farmers had plentiful rituals in the past (Lid 1924; Bjørkdahl and Syse 2021). Today, most Western people associate slaughter rituals with halal and kosher slaughtering. According to Grandin and Regenstein (1994), it is important for scientists to understand and critically consider *why* Muslim and Jewish faiths require specific acceptable animals for slaughter and why stunning prior slaughter is unacceptable in their practices; understanding the importance of religious codes is a precondition to judging this kind of slaughter morally or ethically (1994, 115). Religious codes stand next to *other* ethical codes connected to animal welfare. In the geographer Hibba Mazhary’s study, Muslim participants in a countercultural, alternative halal meat movement attempts to reconnect consumers with spaces of food production. These particular consumers navigate multiple complementary or conflicting, sacred, and secular ethical codes. They emphasise



spiritual motivations to reconnect with food production because they believe industrial halal slaughter, along with rising meat consumption, has eroded the spiritual sacred meaning of halal meat (Mazhary 2021).

“Halal” refers to what is permissible under Islamic law, but more specifically halal slaughter involves a single incision using a sharp knife across the animal’s throat, severing the carotid arteries, esophagus, and trachea without separating the head from the body...This must be carried out while uttering a specific prayer and blood must be drained from the animal”. (Mazhary 2021, 144 after Masri 1989).

Bleeding slaughtered animals without prior stunning has been banned in Norway since 1929 (Lov om avliving av husdyr og tamrein, §1), some time before the first animal protection law was passed in 1935; the requirement has since been upheld and extended by revisions to legislation (Lov om dyrevern 1974; Norges Høyesterett

Dom 2008). The European Union also requires animals to be stunned before the neck vessels are cut but allows countries to make exceptions for religious minorities. Most countries (except Norway, Sweden, Switzerland, and Iceland, which have explicit injunctions to stunning animals before bleeding on this basis) perform some slaughter without prior stunning. The debate on whether countries can be required to make exceptions for religious consideration is still ongoing (Mejdell and Lund 2008).

In a Norwegian District Court (2008), “*Hjertestikk-saken*” (Heart-piercing case) (Sis-Finnmárkku digge-goddi/Indre Finnmark Tingrett Dom 2008), a man was acquitted of illegal slaughter of domestic reindeer. He had killed the animal without stunning beforehand. The method of killing was explained to be an old Sámi custom. The accused explained that this is a killing method that is used when reindeer owners slaughter reindeer for their own use. In Sámi, the method of killing is called *giehtadit*. The accused was of the opinion

that the animal dies within three to four seconds when the knife is clean. According to the accused, the animal did not suffer, nor feel pain. The accused explained that the words "stun" (Sámi: *jámihit*) and "unconscious" (Sámi: *diedđuheapme*) have two different meanings. In the Court of Appeal, (2008) (Hålogaland Lagmannsrett Dom 2008) the man was fined for illegal slaughter of domestic reindeer. He had killed the animal without stunning it beforehand. The Court of Appeal found this to be a custom in clear conflict with the basic considerations of the Animal Welfare Act. The Supreme Court of Norway concluded in 2008 (Norges Høyesterett Dom 2008), that there is no indication that *giehtadit* is religiously or culturally justified. Recently, and on another topic concerning traditional Sámi pastoral practice, the Supreme Court of Norway in 2021 (Norges Høyesterett Dom 2021) found violation of the International Covenant on Civil and Political Rights Article 27 (ICCPR) due to development of a windmill park in reindeer herding areas. However, Article 27 in ICCPR has never been tested on traditional Sámi slaughtering methods.

We argue that the slaughterhouses brought experts to the reindeer herding areas who did not take into account nomadic Sámi reindeer herders' knowledge about slaughtering. The reindeer herders were not only restricted in the use of their knowledge but also lost direct contact with the meat market. Moreover, the modern slaughterhouse adopted the regulations of slaughter practices in agriculture: for example, we observe that regulations regard wild reindeer (e.g. *Rangifer tarandus*, a very similar animal to reindeer) as wild when hunted, while they regard the same animal as domesticated in the slaughterhouse.

Knowledge about blood, meat, and offal

The nomadic methods of Sámi reindeer herders encompass systematic, complex, and holistic indigenous knowledge. A herder's choice of which reindeer to slaughter depends on the herd structure, profitability, and production. Herd structuring is vital to the resilience of the herd (Hætta and Hætta 2004/2005). Understanding which food products to prepare from each slaughtered reindeer is also part of the Sámi herders' knowledge base. With the introduction of slaughterhouses, governance of reindeer slaughter influenced the relation between reindeer and people, eroded slaughtering practices and knowledge (Reinert 2012), and changed the value of meat and blood.

The value of meat and blood is an important factor in Sámi nomadic mountain slaughtering, and herders select a reindeer for their private consumption differently than for slaughterhouses. For instance, herders would choose an uncastrated male in the autumn for smoking purposes due to its high fat content. Such males are not

suitable for food later in the winter after the rut. For private consumption, a castrated male (Sámi: *spáillit*) or a female without a calf during the given year (Sámi: *rotnu*) would be a better option. The preferred type of reindeer sold to the slaughterhouse is the calf, different from the one chosen for mountain slaughtering (Paine 1994), i.e. 1.5-year-old males and old females (Sara et al. forthcoming 2022). As such, Sámi reindeer herders only use the traditional assessment of reindeer meat quality on mature reindeer, not calves. Sámi herders require deep and detailed knowledge when assessing meat quality and designating purposes for slaughtered reindeer (Sara and Eira 2021).

Advanced and systematic knowledge about meat quality and the degree, content, and extent of fat reflects the deep Sámi knowledge base of food (Sara and Eira 2021). Herders utilise multiple processes before, during, and after traditional slaughtering to influence meat quality. In Sámi families, prerequisites for preparing everyday food are "use of the whole animal, the traditional knowledge, high-quality food resources, and cooking methods" (Sara and Mathiesen 2020, 46). Traditionally, reindeer herders followed particular customs in accordance with important variables, such as the phase of the moon (e.g. a waxing moon), killing method, season, pastures, and the type of reindeer (Oskal et al. 2019).

Compared to traditional mountain slaughtering, industrial slaughterhouses makes it difficult use of the whole reindeer for human consumption. Blood and offal and other edible body parts are seldom available to those who do not slaughter with the heart-piercing method. Since the introduction of slaughterhouses, young people today are not used to eating blood sausage, blood food, hooves, or heads anymore. Therefore, the site and methods of slaughtering influence the food Sámi pastoralists can eat. We argue that the traditional killing method focuses on food quality, and reindeer products from slaughterhouses lack Sámi traditional quality levels.

In 2001, prior to adopting the Reindeer Husbandry Agreement (*Reindrifstavtalen*), a group of Norwegian parliamentarians in the Standing Committee of Business and Industry (*Næringskomiteen*) suggested raising the income of Sámi reindeer herders by allowing them to sell to others than only slaughterhouses. They introduced the concept of mountain-slaughtered reindeer (Nor: *fjellslakta rein*), which could be labelled as a traditional product under the new labelling scheme. In the recommendation to Stortinget, "The Parliament asked the Government to consider whether the new regulations for the labelling scheme for Norwegian food should facilitate the sale of mountain-slaughtered reindeer to local markets and as a niche product" (Næringskomiteen

2001). This recommendation was in the minority and not adopted.

Killing of reindeer influences food knowledge systems

The Sámi and the Nenets reindeer herders have different traditional methods for slaughtering reindeer. One Nenets tradition exemplifies their holistic understanding of reindeer and the environment: they prefer to consume a unique quality of raw reindeer meat and blood (Burgess et al. 2018; Serotetto and Lublinskaya 2018). Such quality results from a distinct killing method in which herders anaesthetise the chosen reindeer by twisting a lasso around the neck twice until the reindeer falls over. In this case, the blood coagulates in the brain and the muscles. This method causes less discomfort for the animal according to Nenets herders (Serotetto and Lublinskaya 2018). The Nenets method of killing reindeer determines their diets and manner of eating.

Like the Nenets reindeer herder's knowledge system, the Sámi food knowledge of reindeer and slaughtering encompasses a complex system using fuzzy logic (Berkes and Berkes 2009). According to Dwyer and Istomin (2008), the skilled interaction between reindeer herders and reindeer is the basis for the nomadic movement of reindeer and herders' indigenous knowledge. This relationship collapsed after the introduction of modern slaughterhouses. Bringing reindeer, which have always been outdoor animals, into buildings for slaughter created a sharp departure from the nomadic livelihood. The quality of meat, blood, and offal from slaughterhouses transformed the Sámi diet.

Nevertheless, the *giehtadit* method (Sámi: *giehta* = hand) is an example of historical Sámi indigenous knowledge, which could explain that the reindeer is "taken care of" as Reindeer herder I expressed. Firstly, the Sámi reindeer herders select specific reindeer for mountain slaughter, and these had qualities that filled their family's dietary demands while also ensuring adequate herd structure. Secondly, they used a special large knife to pierce the heart so the reindeer died quickly, probably by an abrupt decrease in blood pressure as sufficient blood flowed into the thorax. This knowledge of killing was adapted to the unique manner of Sámi nomadic mountain slaughtering, where limited logistics were available.

The knowledge on the traditional killing method provided by Sámi reindeer herders contrasts the earlier reports by Dahlström (1923) and Nissen (1924). Bjørkdahl and Syse (2021) discusses how laws and regulations in Norwegian society have taken over the role of traditional slaughter rituals, transferred the responsibility of killing and slaughter, and removed it from the cultural sphere of consumers:

"A push to make slaughter "humane" expelled the old rituals, and replaced them with requirements for preslaughter stunning and the reduction of needless animal suffering and elaborated on recent Norwegian legislation on slaughter, to show how laws and regulations, in our time, have taken over the job of justifying and framing animal killing almost completely. During the last 100 years or so, the framing of animal deaths has moved from a cultural sphere, which was widely shared, to a legal sphere, which is dominated by technical expertise. By framing slaughter in this thoroughly technical manner, laws and regulations have contributed to removing the need for consumers to confront the fact that animals are killed for their consumption." (Bjørkdahl and Syse 2021, 19)

Conclusion

Indigenous knowledge about slaughtering procedures, such as the *giehtadit*, heart-piercing method, was adjusted to a pastoralist way of life. We argue that the tightly coupled relationship between reindeer herders and reindeer positively affected animal welfare before the nomadic Sámi reindeer husbandry was modernised in Norway.

Historical literature and narratives from Sámi reindeer herders show how slaughtering procedures have changed and affected what people eat. Until 1929, the *giehtadit* method was widespread among Sámi pastoralists. The *giehtadit* method contributes to the rich food culture of the Sámi nomadic reindeer herders, like *oaivemális* (boiled reindeer head, ears, cheeks, chin, and tongue) (Sara et al. forthcoming 2022; Sara and Mathiesen 2020; Sara and Eira 2021). The traditional method was later replaced by first stunning with a curved knife introduced by European experts and, next, killing with the heart-piercing method. In the 1950s, regulations and the introduction of modern slaughterhouses industrialised slaughtering. During the process of transformation, key European experts defined the indigenous way of slaughter as inhumane and might have excluded Sámi reindeer herder's indigenous knowledge.

Changing the traditional means of killing and slaughtering seems to have affected the Sámi indigenous food knowledge system. The main products from the slaughterhouses—fillets and steaks—have never been a part of traditional Sámi food culture (Sara and Mathiesen 2020).

The *giehtadit* method used by Sámi reindeer herders in Guovdageaidnu focused on the quality of food and animal welfare. The practice of traditional killing in the mountains has continued for private purposes using the combination of stunning with curved knife and *giehtadit* method. However, there are concerns that the knowledge base of mountain slaughtering might be lost.

It can be difficult to reconcile the traditional knowledge of nomadic mountain slaughter with industrial slaughterhouses. However, the best available knowledge, including reindeer herders' indigenous knowledge and scientific knowledge, should develop new technologies for reindeer slaughter that safeguard both animal welfare and the quality of food. In 2017, the ministerial report to the Arctic Council supported the "establishment of Arctic standards of indigenous food production, based on food security and safety, but adjusted to Arctic indigenous cultures, food practices, and traditional knowledge, as well as our Arctic food production realities" (Burgess et al. 2018, 26). In conclusion, we recommend strengthening the family-based economy of reindeer pastoralism with Sámi indigenous knowledge about food systems.

Abbreviations

ICC: Inuit Circumpolar Council; IK: Indigenous knowledge; NSD: Norwegian Centre for Research Data; TEK: Traditional ecological knowledge

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Authors' contributions

RBMES and SDM contributed to the study design and conducted the key informant interviews. RBMES wrote the first draft of the manuscript, and SDM and KLS added additional theories and text. All authors analysed the data, concluded, and contributed to the revised drafts. The authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analysed during this study are included in this published article.

Declarations

Ethics approval and consent to participate

The permission to carry out the study with knowledge holders was approved by NSD - Norwegian centre for research data (Ref. 56838/3/LAR), Harald Hårfagres gate 29, N-5007 Bergen Norway. Written informed consent was obtained from all participants of knowledge holders prior to participation. Participants were informed that they can choose to withdraw from the interview or focus group discussions without fear of reprimand or reprisal. Informed consent forms were signed.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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