



Antimicrobial stigmatization: Public health concerns about conventional pig farming and pig farmers' experiences with stigmatization

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ABSTRACT

According to the World Health Organization, antimicrobial resistance is one of the most severe threats to public health. Since the 1950's contemporary farming of pigs has been heavily dependent on the use of antibiotics. Recently, concerned experts of public health have become more outspoken, often, criticizing pig farmers for social irresponsibility and gambling with public health. Danish pig farmers are internationally renewed for their relatively low use of antibiotics. Nevertheless, the public criticism aimed at farmers is relatively strong in Denmark. Based on qualitative interviews with 30 pig farmers and 21 public health experts, this article sets out how pig farmers, according to public health experts, threaten public health and how pig farmers, according to the farmers, experience and internalize stigmatization related to their lives as farmers. By focusing on Danish pig farmers' experiencing public condemnation from scientific experts as well as in their local communities, this article proceeds along the line of existing research on health-related stigmatization.

1. Introduction

Research on social stigmatization focuses on people who possess 'discrediting attributes' (Goffman, 1963). Pescosolido and Martin (2015) classify stigmas associated with 'moral diseases' such as drug dependence (Harding, 1986) or 'immoral behavior' such as drunk driving (Fynbo, 2014). Public health studies explore stigmatized identities stemming from public perceptions of serious diseases such as cancer (Trusson and Pilnick, 2017) and contagious diseases such as herpes (Merin and Pachankis, 2011), hepatitis (Shi et al., 2013), and tuberculosis (Wynne et al., 2014). Furthermore, Rydström et al. (2016) show that children born with HIV experience stigmatization even though they do not carry any visible sign of the disease or can in no possible way be responsible for their infection. Furthermore, Faherty and Doubeni (2015) show that screening for Ebola itself carries the risk of stigmatization, even when the screening results are negative.

The present study proceeds along the lines of existing research on health-related stigmatization by focusing on stigmatization trends in a relatively new field. In Denmark and in several other countries such as the Netherlands, UK, and the US, the last two decades have shown a growing concern over the public health risks associated with the spread of antibiotic-resistant bacteria. Early on, critics focused on hospitals' lack of biosecurity in relation to so-called 'flesh-eating killer bacteria' (Dixon, 1996). More recently, however, the focus of many critics and

public media has been centered on conventional pig farming and the spread of methicillin-resistant staphs (MRSA) related to this type of farming. According to the World Health Organization, sub-therapeutic distribution of antibiotics at large production facilities causes antimicrobial resistance in both animals and humans (WHO, 2001). Therefore, health professionals, micro-bacteriologists and public health researchers in many Western countries have become increasingly critical when querying conventional pig farmers publicly about the health-related harm caused by their farming.

In this article, we analyze contemporary stigmatization processes directed at pig farmers and individual pig farmers' experiences with stigmatization. The analysis uses qualitative interviews carried out in 2015 with 30 pig farmers and an additional 21 public authorities, scientific experts and stakeholders from the Danish veterinarian and medical sectors. More specifically, we identify current stigmatization processes oriented towards Danish pig farmers and analyze how the farmers experience those processes. The goal of the article is to add further knowledge to the elaboration of health-related stigmatization by 1) studying stigmatization of possible carriers of antibiotic-resistant bacteria, 2) analyzing different types of stigmatization aimed towards a single category of people (pig farmers), and 3) critically embedding health-related stigmatization within public disputes between scientific experts and stakeholders representing human and veterinary medicine.

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2. Social stigmatization processes

From a sociological perspective, stigmatization is a social process that 'reduces' a person 'possessing an attribute that makes him different from others', a process whereby the person goes from 'whole and usual' to 'tainted' and 'discounted' (Goffman, 1963: 3). According to Goffman (1963: 2), stigmatization thus transforms a 'deviant' individual's 'social identity' from 'actual' to 'virtual'. Goffman focuses on three different types of stigma: bodily abominations, lack of willpower, and race. While the different types of stigma stem from different sources (physical deformities, immoral behavior and ethnicity), they have similar effects on the stigmatized individuals, who learn that they deviate from the 'normal' (Goffman, 1963: 5). According to Goffman's perspective, stigmatized individuals feel 'labelled', 'alienated', 'abolished' and 'not accepted' not so much because of their ostensibly deviant attributes but due to the social element of the stigmatization process (Link and Phelan, 2001). Stigmatization theory thus points towards a potential discrepancy between a stigmatized individual's two types of self: actual and virtual. Hence, the actual self relates to the individual's own awareness and possible acknowledgement of her or his deviation from the norm in question. The virtual self stems from the social stigmatization process and thus refers more to the stigmatizers and their conception of normality. Transitions between 'actual' and 'virtual' selves depend on 'labelling' of the deviation as 'dangerous' to public order or public health (Link, 1987).

The social labelling, which derives from current dominant norms, is crucial when individuals learn to perceive themselves as normatively different or socially deviant (Morone, 1997). Dominant norms, in other words, provide an important social context for stigmatization. In the same vein, Rasmussen (2012) specifies stigmatization of obese people as significantly dependent on social setting. Equally, in a review of 36 articles analyzing stigmatization of people with mental illnesses, Parcesepe and Cabassa (2013) show that this type of stigmatization depends on social setting. Several other studies similarly conclude that certain diseases and habits tend to invoke public stigmatization processes. These include HIV and AIDS (Brent, 2016), smoking (Holdsworth and Robinson, 2008) and lifestyle-related cancers (Bresnahan et al., 2013). Furthermore, Kim and Yi (2014) find that public stigmatization may persist even after people have recovered from cancer, while Farrugia (2009) reveals that stigmatization oriented towards autistic children also stigmatizes their parents.

Link and Phelan (2001) define stigmatization as a social process that evolves in four phases: 1) labelling, 2) stereotyping, 3) cognitive separation and 4) status loss and discrimination. Labelling refers to characterizing a person or group as 'noteworthy different'. Stereotyping refers to conceiving the difference as undesirable. Cognitive separation occurs when the labelling of certain characteristics entails a distinction between 'us' from 'them'. Finally, status loss and discrimination imply that stigmatized persons or groups experience social demotion. Acknowledging the risk of social demotion, Livingston et al. (2012) conceive health-related stigmatization as a social process that 'devalues', 'rejects', and 'excludes' entire groups of people solely on the basis of their 'socially discredited' disease characteristics. Health-related stigmatization can thus occur already with initial diagnoses of potential diseases. Similar to Livingston et al. (2012), Ploug et al. (2015) relate stigmatization to MRSA-screenings of certain social groups, such as pig farmers and their relatives. In relation to MRSA, Bisdorff et al. (2011) indicate that people who live close to pig farms are at a higher risk of becoming infected with MRSA than people who live further away. Finally, Skyman et al. (2010) find that lack of knowledge about MRSA is a major driver of the social stigmatization of pig farmers.

Turning the perspective from how stigmatization processes develop to how they are experienced by the stigmatized individuals, sociological research outlines three ways in which stigmatization is experienced: as internalized stigmatization, socialized stigmatization and institutionalized stigmatization (Corrigan et al., 2006; Herek et al., 2009;

Livingston and Boyd, 2010).

Internalized stigmatization refers to how stigmatized individuals acknowledge their stigma. That is, their understanding of being socially rejected or treated in a special way by their surroundings because they carry a specific stigma (Crocker and Major, 2003). In order to avoid further stigmatization, internalized stigmatization may cause stigmatized individuals to avoid contact with their stigmatizers – or the general public – or to hide their special attributes and 'pass' as 'normal' (Goffman, 1963). Internalized stigmatization can also imply that people in anticipation of being rejected by the 'surrounding community' direct their attention towards other people who carry the same stigma, thereby, grouping with other people who have been subjected to similar stigmatization (Young, 1971) – such as smokers getting together at social functions. *Social stigmatization* refers primarily to the experience of collective stigmatization. Social stigmatization thus depends on the construction of stereotypes about groups of people who, according to the stigmatizers, possess some sort of deviant attribute. According to Corrigan et al. (2005) this type of stigmatization is experienced both at the individual level, for example, when socially interacting with other people, and at the social level, for example, when public speakers or media refer to entire groups of people in condescending or discriminatory ways. *Institutionalized stigmatization* refers to differentiated treatment by which formal institutions set up special procedures for certain groups of people. Corrigan et al. (2005) relate institutionalized stigmatization to scientific knowledge, for example, about health risks associated with particular groups and/or on ongoing processes of social stigmatization. Maternity wards isolating women married to pig farmers is an example of institutionalized stigmatization.

In the following analysis, we present findings from qualitative interviews with 30 pig farmers and 21 experts and stakeholders. We clarify how pig farmers according to scientific experts and stakeholders deviate from important norms by representing a significant risk to public health and how the farmers experience stigmatization related to their perceived risk-based deviance. We do not *per se* conceptualize the pig farmers' selves as either actual or virtual but instead focus on how the interviewees account of their own social position – as potentially dangerous to society. How do they, if at all, understand themselves as a risk to society? How do they view themselves in terms of society's perception of them as dangerous? And how do they feel about possible stigmatization processes stemming from public risk assessments of modern day pig farming?

3. Methods and data

The sample of interviewees for this study represents significant groups related to the use of antibiotics in Denmark: practitioners (doctors, farmers and veterinarians), public authorities, scientific experts, and stakeholders from human or veterinary medicine. The study adheres to prescribed standards for social research (ASA, 1999) and was carried out in accordance with the ethical guidelines for the social sciences specified by the Danish Council for Independent Research. At the beginning of all interviews, interviewers informed participants about the research project and obtained the interviewees' informed consent to participate in a recorded interview. For this article as well as all other publications based on the present data interviewees are thoroughly anonymized.

The sample consists of 30 farmers and 21 public authorities, scientific experts and stakeholders; ten women and 41 men. The shortest interview lasted 42 min and the longest 151, and the average duration of the 51 interviews was 88 min. The sampling of interviewees followed two parallel tracks: one for pig farmers and one for public authorities, scientific experts, and stakeholders.

Author one requested an experienced veterinarian working with conventional pig farmers to take him on as an observer for a week. During this week, author one visited fourteen pig farms. The veterinarian introduced him to the farmers and farm workers on all the

farms, thereby allowing him to describe the research project. Together with the veterinarian and the farmer, author one inspected each pig farm while discussing, for example, current outbreaks of diseases, new medications, or the use of antibiotics. After the inspection, author one then asked the farmers if he could contact them later to organize a qualitative interview without the presence of the veterinarian. All but one farmer agreed to an interview. Author one also approached the head of a local farmers' organization, who in the national news had called for more knowledge about the actual risks related to antimicrobial resistance. At first, this person was reluctant to be interviewed. However, after author one appeared at a public meeting in the local farming community, presenting himself and the research project, this farmer agreed to an interview, as well as allowing us to interview his employees. From here, we used snowball sampling (Biernacki and Waldorf, 1981) and soon made contacts to farmers in different parts of the country. After three rounds of snowballing we finished this part of the data generation process. At that time, we had interviewed thirty farmers. The interview guide with the farmers covered six topics: 1) the type and size of production, 2) personal background and education, 3) collaboration with the veterinary surgeon, 4) use of antimicrobial agents, 5) their view of the general public's attitudes towards contemporary pig farming, and 6) potential improvements and ideas about 'good farming'.

Parallel to interviewing pig farmers, author two interviewed 21 public authorities, scientific experts, and stakeholders. The sampling of those interviewees derived, at first, from a preceding outline of the most significant organizations in relation to the distribution of antibiotics in Denmark. At the end of the first round of interviews, author two asked the interviewees to recommend other relevant interviewees, which many of them did. Through this 'snowballing', we thus ended up with the complete sample of 21 interviewees, representing agencies and research departments working under the Ministry of Health or Danish Regions; microbiological and pharmacological sections at large hospitals; associations representing veterinary and human health; and non-government organizations representing Danish pig producers, the pharmaceutical industry, as well as nature conservation and environmental protection. Due to the anonymity of the interviewees, we cannot, however, reveal the organizations' names.

The interviews with public authorities, scientific experts, and stakeholders aimed at acquiring the interviewees' knowledge and opinions about veterinary and human use of antibiotics and the public health risks caused by overuse of antibiotics. The interviews followed semi-structured interview-guides streamlined to each of the three types of organizations. For instance, interviews with public authorities focused on the governing of antibiotic distribution, whereas interviews with scientific experts concentrated more on risk assessment and identifying patterns of antimicrobial resistance propagation within both human and veterinary sectors.

For the analysis of stigmatization, we proceeded as follows. First, we highlighted and selected all quotes touching upon stigmatization. Second, we categorized the selection of quotes touching upon stigmatization into two general categories describing either a type of stigmatization process or individual experiences of stigmatization. Third, we constructed an analytical framework based on classic and contemporary stigmatization theories and empirical stigma-research, highlighting institutionalized, social, and internalized stigmatization processes – as described in the theory section. Fourth, we organized all the quotes from each of the two categorized selections by associating them with one of the three types of stigmatization processes. Finally, we singled out the quotes that we agreed represented the three types of stigmatization processes most precisely.

4. Concerns about conventional pig farmers and antimicrobial resistance

The starting point for stigmatization of certain groups or types of behavior is that they differ from societal perceptions of normality. In

this section, we highlight a conception of pig farmers as harmful to public health by analyzing interviews with public authorities, scientific experts, and stakeholders. The interviews did not set out to discuss veterinary use of antibiotics as the main cause of resistance but rather, the risk of antimicrobial resistance related to antibiotic consumption in general. However, the interviewees primarily related the risk of antimicrobial resistance specifically to contemporary pig farming. Following Link and Phelan (2001) the interviews enabled us to identify core elements of different stigmatization processes aimed at pig farmers. In the following, we therefore focus on interviewees' statements that characterize 'labelling' and 'stereotyping' of pig farmers and 'cognitive separation' between professionals of public health and practitioners within the veterinary sector.

The analysis shows that interviewees engaged in public health issues are deeply concerned about the veterinary sector and its heavy use of antibiotics. The interviewees conceive pig farmers and the veterinary use of antibiotics as a major risk to public health. One medical expert employed at a large hospital explains:

Resistance [to antibiotics] problems are not something that the farmers experience. The animals may as well live with those resistant MRSA-bacteria. They are completely indifferent. It is only when humans encounter them that it becomes problematic. And [the farmer] is paid just the same for the meat.

And further:

Of course, the challenge is not that we cannot deal with antibiotic resistance right now. But one year from now, we may have an epidemic of resistant bacteria fostered by the way we farm. This could mean that we will have thousands of humans dying of pneumonia in Denmark. And when that happens, I don't think that that we will accept having millions of pigs walking around the countryside [...] if we will die like flies of banal diseases.

Central to this interviewee's approach to the risk of antimicrobial resistance caused by conventional pig farming is the risk that humans may die of diseases, which since the discovery of antibiotics have been relatively harmless. Following Link and Phelan (2001), the citations represent 'labelling' and 'stereotyping' of pig farmers. The interviewee labels the heavy use of antibiotics of conventional pig farming as irresponsible stereotyping that it will cause many people to die of pneumonia.

Another medical expert, employed at an agency under the Ministry of Health, similarly emphasizes that the veterinary sector does not have the will or the ability to control its consumption of antibiotics because conventional pig farmers are dependent on antibiotics to maintain a high level of productivity. This interviewee constructs an abstract dialogue between himself as a concerned critic and an imaginary representative of the veterinary sector as an obstinate other:

Denmark is one of the largest pig exporting countries in the world. That's how we earn big money. There is a huge risk. They [the pigs] are kept closely together in confined spaces, which is why they need a lot of antibiotics. Obviously, you need to treat animals when they are sick, but let me tell you how the farmers always argue: 'We have to use antibiotics because we must treat the sick animals'. 'Yes, fine, but then only treat the sick animals'. 'No, that is too costly, we can't ... If we have 10,000 chickens, we can't just remove one sick chicken. We must give all of them antibiotics'. 'Okay, but what if they were free-range chickens?' 'Sure, but then we won't make any money'. And so on, and so on.

This interview excerpt criticizes sub-therapeutic 'herd medication', which conventional farmers can use for both economic (it's easy and relatively cheap) and prophylactic purposes (it can prevent unforeseen bacteriological outbreaks). However, from a public health perspective herd medication strongly violates existing norms about how and when to administer medicine. Pig farmers' use of herd medication thereby

separates them normatively from human medical specialists and general practitioners. Furthermore, herd medication resembles antibiotic growth promotion, that is, the feeding of pig herds with antibiotics not for genuine health reasons but to speed growth (Hughes and Heritage, 2004). Antibiotic growth promotion is still common in large pig producing countries like China and the US but has been effectively banned in the European Union since 2005. Prior to the European ban, Danish farmers had themselves outsourced antibiotic growth promoters continuously since the mid-1990s. Nevertheless, as we will show in the following section, Danish farmers are often keen to deny this type of potentially profitable, and illegal, form of antibiotic distribution.

Cognitive separation, which according to Link and Phelan (2001) is a central element of a stigmatization process, is also part of the following citation from an interview with another expert in human medicine:

We don't think the farmers are so clever [when they use herd medication]. We try telling them how we always make sure to test each individual patient before prescribing medicine. We only treat people who are sick. If we encounter a child in a day care nursery with otitis media, we don't start treating all the other children in the nursery with penicillin. We remove the sick child and treat only this child with penicillin.

In the same interview, after pointing out how the veterinary sector 'constantly downplays the problems of antimicrobial resistance' while the public health sector assesses the 'real problems in order to deal with them', this interviewee also emphasized that the veterinary sector has a lot of political influence:

The veterinary sector is very powerful, and therefore people like us [outside the veterinary sector] must speak up. After all, we have the right to speak out, and the veterinary sector cannot come after us. There are other professions – like ours – with lesser capacity to speak out.

In this excerpt, the interviewee argues that the powerful Danish veterinary sector basically deprives veterinarians of criticizing farming. Despite an overlap in medical and veterinary academic programs and a common interest in improving the health of their clients, the two sectors belong to two different worlds, according to this expert in human medicine.

To sum up, even though public health representatives' opinions about conventional pig farming do not automatically cause stigmatization, the opinions have a lot of resonance in large parts of the Danish population and in public media. Furthermore, public disclosures about specific problems with antimicrobial resistance often entail considerable public debate between scientific experts and stakeholders representing different organizations within both the health and the veterinary sectors. In 2014, for example, a professor of microbiology publicly criticized the veterinary sector, as well as the National Board of Health, for allowing school children to visit the 'dangerous pig farms' (Thomsen, 2014).

5. Pig farmers experiencing stigmatization

The public debates have infused increased public concern about antimicrobial resistance linked to conventional pig farming. It is especially the MRSA zoonotic clonal complex 398, often referred to as *swine-MRSA*, which has attracted the attention of the media and public by pointing out pig farmers as moral culprits responsible for risking the well-being of others. For example, a handbill distributed anonymously to farmers and put up in local supermarkets in areas with many pig farms states:

MRSA CC398 is extremely contagious and [...] there is no cure for people working on pig farms. If you work on a pig farm, you should refrain from having sex with others or seeing anybody who are not themselves infected with MRSA.

5.1. Institutionalized stigmatization

Institutionalized stigmatization occurs when institutions follow special procedures for different groups of people. If pig farmers and their relatives are treated differently than the rest of the population when admitted to hospitals in order to reduce the risk that farmers pose to other patients, or if children of pig farmers are given special attention at kindergartens and not allowed to participate in certain activities, we regard those measures as contributing institutionalized stigmatization, even though they might be based on objective rules and formal regulations and not specifically intended as demeaning or socially demoting (Link and Phelan, 2001; Livingston et al., 2012).

Amongst the thirty interviewed farmers, we encountered a couple of interviewees who opposed some of the new measures taken by hospitals to protect themselves against MRSA. For example, Peter (57 years) argues that 'hospitals only concentrate exclusively on farmers because they don't want to consider their own contribution to the spread of MRSA'. Paul (27 years) says that hospitals 'make a fool out of themselves, scaring patients with spacesuits, masks and isolation wards'. He views the measures as a 'massive waste of resources'. Timmy (41 years) does not question the hospitals' measures but nevertheless explains that when admitted for leg surgery, he felt 'somewhat awkward about having to enter the hospital through a back door'. However, most of the interviewed farmers and farm workers tend to regard special measures at hospitals against MRSA as a minor nuisance that does not entail stigmatization. Rather, the interviewees tend to tolerate the hospitals' current measures against MRSA.

Liz (46 years) and Carl (45 years) recall how they were placed in a solitary ward after the delivery of their second child:

Today, I might regard such measures as unnecessary because we know now that we don't have MRSA, but back then, they didn't really concern us. 'It was standard procedure', they told us, and they made sure that we didn't feel excluded or like we had done something wrong or untoward. To me, and [addressing his wife] to you, too, it was just as normal as anything else.

Similarly, Henry (45 years), the only interviewee actually diagnosed with MRSA CC398, condones the special measures to which he is subjected whenever he interacts with the health system. For example:

I don't have a problem with special measures taken by hospitals to safeguard other patients. I know that I carry these bacteria, and therefore, I must go into solitary after surgery, such as after the knee-surgery I had last year. The isolation is not aimed at protecting me but at protecting other patients. There is nothing strange about that [...] as long as the hospitals are open about their procedures and don't withhold any of their services from me or from others like me.

To sum up, the examples illustrate how farmers stress the importance of basing institutionalized measures on facts in order to avoid stigmatization when treating particular groups of people differently than the rest of the population. Most of the interviewees appear to agree with the hospitals' measures, as long as they are based on knowledge and are reasonable. Those farmers do not relate stigmatization to the labelling of themselves as a high-risk group. The examples, however, also show how some farmers find the special measures taken by hospitals somewhat difficult to comprehend, accusing hospitals of singling out farmers to protect their own reputation. In the following subsection, physicians' assessment of MRSA stands out as a much more significant condition for the farmers' experiences of social stigmatization.

5.2. Social stigmatization

Many interviewees touch upon social stigmatization related to

having a child attending day care centers (nursery or kindergarten). Danish media has covered several episodes where farmers' children are discriminated against and not invited to birthday parties and other social functions. The social exclusion occurs within the environment of the children's day care centers and often includes parents' meetings where anxious parents apply social pressure on the facilities to set up special measures to safeguard their own children from MRSA. This stigmatization of farmers' children has an institutionalized context. The day care institutions themselves, however, refuse to take such special measures against the farmers' children. On the contrary, the institutions generally attempt to manage the parental conflicts by downplaying the risks that might arise when children of different backgrounds play together. The day care centers thus avoid contributing to processes that would cause institutionalized stigmatization. Instead, the potential stigmatization of farmers' families related to the social life within day care centers expresses itself through social interaction and informal social regulations (such as deciding not to invite a farmers' child to a home birthday party, that is, outside the institutional setting).

Where institutionalized stigmatization relates to formal regulations of observed differences and is bound to scientific knowledge and objective risk assessments, social stigmatization resembles a power play between different viewpoints and attitudes towards farmers. Social stigmatization does not necessarily derive from scientific knowledge *per se* but from a complex conception of contemporary farmers as a morally inferior group. The interviews with stakeholders and experts showed how farmers can be conceived consistently as one social group with a number of core attributes open to criticism: tolerance of animal mistreatment (inhumane), enriching themselves by putting others at risk (selfish) and turning a deaf ear to scientific knowledge (ignorant). Though our material includes responses by the farmers experiencing social stigmatization ranging from the very offensive to the more tolerant, overall the farmers conceive social stigmatization as building upon simplistic lumping together of farmers. Will (42 years):

Of course, there are farmers who break the rules, farmers who care more about their income than about their animals, farmers who almost by definition refuse to listen to reason. It's like that with farmers as with everybody else: farmers are not more correct and law-abiding than anybody else. So, I'm not contradicting that the rules must be respected and that we need to have some sort of system in place for monitoring; for instance, our use of medicine and how we treat the animals, and the like. But I don't mistreat my animals and I do not use medicine on entire herds or otherwise to cheat. So, when I see a poster down at the local supermarket accusing me of doing this and doing that, it makes me really angry. Who are they lumping us together like that?

Curt (33 years) similarly explains that the criticism affects him differently depending on whether he sees himself as a farmer or as an individual:

To me as a farmer [the critique] doesn't mean anything because I know that we never feed our animals antibiotics unless they are really sick, and we have a very high standard of hygiene. But as a person, I feel hurt when the accusations are fanciful rather than based on facts, and I sincerely believe that the media is more concerned about people's hunger for a good story than about telling the truth.

Other interviewees relate social stigmatization as 'based on misconceptions' (Hal, 61 years) and 'hypocrisy' (Mike, 35 years) rather than facts and reality. Mike:

If you go down to the supermarket and look at what people are buying, you'll see that most people buy conventionally farmed meat, even a lot of foreign produce, which has been raised on a lot more medicine than the Danish meat. But if you ask people what they buy, then nine out of ten will tell you that they only buy organic produce

and that conventional meat ought to be banned. It's just hypocrisy, it's fake.

The material also shows how many farmers, on the one hand, feel socially excluded while, on the other hand, they tend to prioritize socializing with other, like-minded, farmers. They describe how they sometimes try to 'pass' (Goffman, 1963) as non-farmers in order to avoid getting into pointless discussions about their categorical mistreatment of animals. Henry (45 years), who early on described how he does not 'have a problem' with the special measures taken by hospitals to minimize the risk of MRSA infections, explains:

I sometimes withhold stating my occupation as a pig farmer when talking to people I don't know well. Out of experience, I know how people like you, you know, city dwellers, how they tend to find it very hard to think of me, a pig farmer, as an equal.

Similarly, Will (42 years) describes how he takes care not to resemble 'everybody's aversion against pig farmers' when going out:

After work, I always make sure that I shower and put on new clothing. I don't park the car near the stables and I never pick up the kids or go to sports smelling of pigs. [...] I care about how I present myself to other people. If I look normal, like just any other citizen, not smelling of pigs, then I don't have to enter discussions about MRSA all the time.

This citation sums up how pig farmers sometimes perceive of non-farmers as automatically having a condescending attitude towards farmers. More generally, the citations show that farmers react differently to social stigmatization than to institutional stigmatization. They tended to accept the reasoning for hospitals taking precautionary measures, but when it comes to social stigmatization, the farmers feel insulted and angered by the simplistic conception of farmers as a single group with a fixed set of problematic attributes. The pig farmers are clearly aware of the potentially profitable, but illegal, use of antibiotics as growth promoters and that they in their capacity of pig farmers are suspected of this type of greed-driven selfish behavior – contrary to regulation and the general public's health. In this perspective, the farmers also defend themselves against a public stigma resembling the stigma experienced by drunk drivers, which is caused fundamentally by a public conception of their behavior as anti-social, selfish, and dangerous to the population (Fynbo, 2014). The farmers, however, react differently to feeling socially stigmatized: some farmers feel sad and worry about what the stigmatization may lead to, others try to pass as non-farmers, whereas others again tend to isolate themselves with other farmers amongst whom they feel more comfortable.

5.3. Internalized stigmatization

Internalized stigmatization refers to a social process in which a person exposed to stigmatization learns to acknowledge her- or himself according to the image (the virtual self) presented by the stigmatizers. Internalized stigmatization is always a matter of nuance: how much does a stigmatized person relate her or his actual self-conception to the virtual self that her or his stigmatizers have set forth? In our sample, the internalized stigmatization process thus shows remarkable variations between some farmers who tend to accept themselves and their use of antibiotics as entailing a risk to society and other farmers who strongly resist any attempts at such an overlap of virtual and actual selves, thus, refusing to conceive of themselves as putting others at risk.

Amongst the latter, we find Larry (48 years) who owns a large farm raising piglets for export. He has been fined by the Danish Veterinary and Food Administration for infringements of the Danish law against mistreatment of animals and for exceeding his antibiotics allowance. Out of the thirty interviewees, Larry presents the strongest reluctance to acknowledge himself or his farm as a threat to public health:

There is nothing, absolutely nothing wrong with my production. We are being harassed by the authorities even though they don't have a

clue about pigs.

Simon (46 years), who assists Larry in managing the production, is more concerned about the troubles they have had to endure to ‘keep the authorities happy’ than the potential harm related to their overuse of antibiotics:

It's amazing how much trouble we must go through every single day to keep them happy, [...] The food administration, the vets who come on unannounced inspections. We have three different stables, and each of them makes up its own enterprise with its own accounts of antibiotics and all. If they find a bottle from one of the other stables in this stable, then we're in trouble.

In a similar vein, other interviewees, often more senior farmers, either completely disregard the criticism of their farming methods by the outside world, calling it, for example, ‘pure gibberish’ or ‘fabrications of a few madcaps who have nothing better to do than sully our farming’ (John, 63 years). Those farmers play down the risk associated with pig farming in Denmark by comparing it with the risk presented by ‘foreign farm workers carrying MRSA across the borders’ (Joe, 59 years), the ‘feeding of antibiotics to pigs in China and Poland’ as well as a general ‘absence of regulations [of antibiotics] in Southern Europe’ (George, 63 years). John (63 years), who is president of a local farmers’ association, disregards the image of farmers as the ones responsible for MRSA:

In reality, [MRSA] does not come from the stables. It was carried into the stables by humans, from the hospitals, in the eighties, you know? Of course, it comes from the hospitals and now all of a sudden it's our problem, agriculture's problem.

Where some interviewees tend to dismiss the perception of conventional farming as a public health risk, other, often younger interviewees, are more susceptible to the criticism of scientific experts. ‘The public debates definitely affect me. Every time there is a big news’ coverage I get anxious about our future, about the kids, but only for a couple of days’, says Lisa (36 years) and continues:

What will happen to us? Will people stop talking to us? Are we being expelled from society, like some of the critics claim that we ought to be?! ... Of course, it affects you personally. How could it not [affect me] when I hear that other people should keep away from me and my children?

The more self-critical and often younger interviewees accept the major premise that overuse of antibiotics in the production of pigs entails a public health risk. However, contrary to the generalized image of pig farmers as a uniform group they present themselves as individual farmers who are capable of producing pigs responsibly. They therefore avoid merging their actual self (as responsible individuals) with the attributed virtual self of concerned public health experts.

6. Discussion and conclusions

This paper has analyzed how elements in a process of stigmatization of pig farmers among experts and stakeholders have taken place and how pig farmers have experienced institutional, social and internalized forms of stigmatization. Our analysis does not find (or look for) a causal relationship between the stakeholder and expert interviewees’ knowledge or opinions and the social stigmatization experienced by the farmers. Instead, we conceive the stigmatization processes embedded in the institutional and social environment that farmers are a part of. The interviews with scientific experts and stakeholders represent some of the discursive content contributing to the farmers’ social stigmatization. In the analysis, however, we have not considered whether the knowledge and argumentation of the interviewees is ‘true’ or accurate. Our sole aim has been to show how various types of stigmatization is experienced by a group of stigmatized persons.

According to Link and Phelan (2001), cognitive separation, which establishes a distinction between a ‘we’ and a ‘they’, is decisive to social stigmatization. In the analysis we encountered cognitive separation, for example, when an expert in human medicine described how the pig farmers use herd medication: ‘We [sic] do not think they [sic] are so clever.’ The cognitive separation leads the interviewees to suggest different measures against the pig farmers’ use of antibiotics, possibly entailing different types of stigmatization. Through a *rational approach*, establishing formal procedures within the public health system causes institutionalized stigmatization. These measures are based on the advice of microbiological experts on how to prevent the spread of MRSA by differentiating between different groups of people. The social interaction between health professionals and pig farmers is thus based, fundamentally, on rational risk assessments by human health experts who separate dangerous farmers from the rest of the population. The analysis shows that as long as the farmers perceive the cognitive separation as rational, the stigmatization does not really trouble them. Another approach to the farmers has more of a *social background* and is applied, foremost, by members of local communities and through public discourse. However, laymen without microbiological training have no consistent way of assessing the actual risk of, for example, shaking hands with a pig farmer or allowing their children to play together in a kindergarten. The uncertainty, which thus contextualizes stigmatization, appears more significant when it is linked with scientific experts’ public criticisms. Thirdly, through a somewhat *normative approach*, the pig farmers and the risk of MRSA are embedded in skeptical attitudes towards conventional farming that go beyond specific antimicrobial anxieties. Hence, critics of modern farming methods refer to pig farmers as somewhat stubborn and deviant from key social norms – such as social responsibility. This type of stigmatization resembles the culturally embedded stigmatization observed by Clair et al. (2016) and is consistent with stigmatization of other types of ‘selfish’ behavior.

Turning towards the farmers’ perspective, our analysis reveals variation in conceptions of and reactions to experiencing stigmatization. Some farmers accept and internalize the public image. Other farmers cope with the condescending public image by strengthening their ‘collective identity formation’ (Miller and Kaiser, 2001) with other farmers and reducing their contacts with non-farmers. The social pressure farmers experience due to using antibiotics thus encourage them to group together. Pig farmers, however, do not represent a submissive or marginalized social group such as, for example, illegal sex workers (Scambler, 2007) or homeless immigrants (Järvinen, 2003) and the ‘they’ expressed by scientific experts tends to strengthen the ‘us’-feeling experienced by the farmers, thereby, reinforcing the social differentiation between farmers and non-farmers. In Denmark, pig farmers are relatively powerful, economically as well as politically, and rather than submitting to social demotion, several farmers reverse the blame of antimicrobial resistance, instead trying to aim the blame at hospitals. Especially, older farmers are reluctant to understand pig farmers’ high use of antibiotics as a public health risk. At the same time, the analysis points towards younger farmers, who assimilate the stigmatization more consistently, especially if the stigmatization also affects their children.

Table 1 summarizes how farmers experience stigmatization.

A central observation in our study is that part of the process of stigmatization relies on a general societal uncertainty about antimicrobial resistance. The fact that the stigma is embedded in the domain of bacteriological syndrome and not in an observable ‘deviation’ gives both the process of stigmatization and the experience of being stigmatized some special characteristics. Instead of being based on clear-cut visible cues (looking ill, acting deviant, etc.) the definition of the risk related to antimicrobial resistance becomes dependent on expert knowledge. This means that expert knowledge becomes part of the labelling process leading to stigmatization. Only experts of microbiology can assess antimicrobial risk as well as promoting proper measures against antimicrobial resistance. In this respect, the labelling

Table 1
Examples of stigmatization of pig farmers.

Type of stigmatization	Institutional stigmatization	Social stigmatization	Internalized stigmatization
Examples of stigmatization	Differential treatment	Condescending public opinions in media or local communities	Self-reflections upon health-related risks of farming
Examples of reactions to feeling stigmatized	Resenting the hospitals' precautionary measures as a waste of resources based on scientific misconceptions <i>versus</i> Accepting the hospitals' precautionary measures if they are based on objective scientific knowledge rather than public discourse	Feeling unwelcome in the local community, staying away from (not invited or being asked not to attend) public gatherings. Anxieties over effect on family members <i>versus</i> Strengthening of the social relations between farmers and farm workers due to external pressure/stigmatization. Establishing an 'us' versus 'them' (uninformed outsiders)	Passing as non-farmers to avoid expressive public criticisms <i>versus</i> Rejecting possible connections between farming and antimicrobial resistance, instead, blaming public health officials and hospitals for harming pig farming

not only results from social interaction, as described by Link (1987). More significantly, the labelling is embedded in the practices of scientific knowledge and its dissemination.

Furthermore, the abstract nature of antimicrobial resistance transforms 'actual danger' into 'perceived dangerousness'. In a manner somewhat similar to the public fear of certain mental illnesses as unpredictable, incomprehensible and, therefore, dangerous or even prone to violence (Bos et al., 2013), pig farmers are perceived as dangerous due to the abstract nature of resistant bacteria. Finally, a central observation in existing research is that an immediate aversion to stigmatized individuals can be followed by a more controlled reflection by the perceivers: 'Research has shown that perceivers often manifest an immediate and automatic aversion to stigmatized individuals followed by controlled and thoughtful reactions which can either temper immediate negative reactions or further polarize them' (Bos et al., 2013: 7). In our data, we observed both tendencies. In some situations, immediate reactions implying stigmatization were followed by a more restrained reaction. For example, when children of farmers had been perceived as dangerous, the information from the day care center management about the scientific assessment of risks had a modifying effect on the public perception of risk related to the farmers' children. In other, more abstract, circumstances, polarization rather than moderation is encountered; this occurred, for example, when other citizens distributed flyers warning against having sexual relations with pig farmers.

Summing up, this article contributes to the literature about stigmatization within medical sociology by analyzing processes of stigmatization related to antimicrobial resistance. MRSA and other resistant bacteria threaten public health, and WHO describes the ongoing spread of antimicrobial resistance as one of the greatest health challenges in the world in the 21st century. This article has pinpointed an unintended consequence of the increased medical and public focus on antimicrobial resistance: potential carriers of resistant bacteria, like the pig farmers in our study, experience stigmatization. Professional considerations within the human medical field and ordinary citizens' uncertainty and insecurity about the risks of resistant bacteria frame some of the processes that lead to stigmatization. However, reactions to these processes differ among the individual farmers. Some farmers have experienced social stigmatization as unreasonable and offensive, whereas others use the stigmatization processes as stepping stones for criticizing hospitals and public health officials for an unreasonable threat to their livelihood.

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