The Perception of Veterinarians in Bali Towards Antimicrobial Resistance

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Abstract

Antimicrobial resistance (AMR) is a global crisis that will greatly impact human and animal health. This phenomenon is mostly caused by veterinarians who use antimicrobial to their patient irresponsibly. This study aims to know how the perception of veterinarians toward AMR phenomena in Bali. As many as 204 clinical practitioner veterinarians who were officially registered in the province of Bali divided into two group namely pet and livestock veterinarians. Both of groups were asked to answer a Likert-type scale questionnaire. The Kruskal-Wallis H test was performed to determine significant differences in median responses and mean ratings between different veterinary groups for each question. Both of groups strongly agreed with the factor of patients did not finish antimicrobials therapy and using antimicrobials from previously unfinished therapy greatly contributed to the problem of AMR. Vet clinic, human clinic, human hospitals, livestock, aquaculture, and irregular use of antimicrobials contribute greatly to AMR. Patient health in a general hospital, the general public, livestock and food industry from animals are considered quite problematic due to AMR phenomenon. The role of many parties seems very important in managing and preventing AMR from both veterinarian groups. Our finding provided valuable insight into the awareness of AMR on Bali veterinarian and have important implication for the future studies.

Keywords: antimicrobial resistance, veterinarian, perception

Introduction

Antimicrobial resistance (AMR) is a phenomenon that occurs when bacteria can adapt and thrive in an environment that has been exposed to antibiotics. AMR is a significant threat to worldwide public health systems (Founou *et al*., 2017). The fact that infectious diseases caused by bacteria can no longer be treated with antibiotics, illustrates the uncertain future of the post-antibiotic resistance era of human health (Chokshi *et al*., 2019). The phenomenon of AMR events has an impact on increasing disease fatalities, prolonged patient care in hospitals, increasing patient care, and treatment costs, higher costs for second-line antimicrobial drugs, and patient treatment failures (Shrestha *et al*., 2018).

AMR is mostly caused by veterinarians who use antimicrobials to their patients irresponsibly and excessive use of Antibiotic Growth Promotors (AGP) in the intensive farm. The main goal of antimicrobial treatment is to limit the spread of pathogens in sick animals, but over-treatment by veterinarians is often done in non-infected animals (Economou and Gousia, 2015).

Nowadays, animal welfare is a social obligation for an animal practitioner with set rules that had been recognized internationally (Vale *et al*., 2020). The relationship between animal health and animal welfare is well acknowledged and both of them will combine and become "One Welfare", one of "One Health" approaches. Both of the concepts have a beneficial close relationship between humans, animals, and the environment (Garcia Pinillos *et al*., 2016). Therefore, AMR is very important from the perspective of animal welfare in veterinarians who have medical authority in administering antimicrobials to animals. This study aims to know how the perception of veterinarians toward the AMR phenomenon in Bali.

Method

As much as two hundred four clinical practitioner vet who officially registered in Bali divided into two group based on the animal they handle the most namely pet veterinarian and livestock vet. Both of groups were asked to answer a Likert-type scale questionnaire that had been described by Norris et al., (2019) with minor modification. The Kruskal-Wallis H test in IBM SPSS software was performed to determine significant differences in median responses and mean ratings between different veterinary groups for each question.

Result

The majority of veterinarians considered the current levels of antimicrobial use in human hospitals, general medical practice, farms, aquaculture and globally unregulated use of antimicrobials immensely contribute (median = quite problematic) to antimicrobial resistance. Factors in human dental practice as well as in companion animals that are considered to slightly contribute (median = slightly problematic) to AMR by both types of respondents. As for the factor of antimicrobial use in the respondent's practice, the pet doctor stated that it was quite a contribution (median = moderately problematic). In contrast, livestock veterinarians stated that it contributed slightly (median = slightly problematic). Likewise, the use of antimicrobials in nursing homes where pet doctors stated that they had a small contribution (median = slightly problematic) while the other group stated that they did not contribute at all (median = no problem) to AMR. Factors that contribute according to respondents from pet doctors and farm animals to AMR are patients/clients who do not finish the prescribed antibiotics and patients/clients who use antibiotics from previous unfinished therapy. Meanwhile, the contributing factors for these two types of practice are too many antibiotics prescribed, the long duration of antibiotic treatment, low antibiotic doses, using antibiotics in mild or self-limiting diseases, not removing

the place/source of infection, and prescribing antibiotics when the benefits are for the patient. uncertainty, prescribing broad-spectrum antibiotics when equally effective narrow-spectrum antibiotics are available, environmental contamination with waste antibiotics, and the transfer of resistant bacteria between humans, animals, and the environment. Regarding the factor of continuing antibiotic therapy without laboratory examination, livestock veterinarians thought that these factors significantly contributed to AMR compared to pet veterinarians who considered these factors to be quite a contribution but livestock veterinarians regarded as factors of poor hand hygiene and poor environmental hygiene to be considered a small contribution compared to with pet doctors who think enough to contribute.

According to the two groups of respondents, the AMR problem for human medical hospitals, the general public, livestock, and the animal feed industry is quite problematic. While the factors of themselves, their patients, residents in nursing homes, and the health of dogs and cats are considered a bit problematic. Livestock veterinarians stated that the health factors of patients in human dental hospitals and patients in animal clinics in AMR problems were categorized as quite problematic, which was different from the other groups who stated that they were slightly problematic.

Both groups agree that the role of itself, co-workers, clients and patients, the general public, pet owners, farmers and food producers, dentists, general practitioners, nurses, pharmacists, researchers, government, and the mass media are very important in preventing the problem. AMR. The two groups of respondents also agreed that the role of world organizations is extremely important in preventing this phenomenon. The role of veterinarians, hospital doctors, and pharmaceutical companies according to livestock veterinarians is considered extremely important when compared to pet doctors who consider it only very important.

In conclusion, all respondents agreed that AMR is a serious enough threat in the future.

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